

State of Oregon

Cascadia Subduction Zone

Catastrophic Earthquake and Tsunami

Operations Plan

Component One of the Oregon Cascadia Subduction Zone Earthquake and Tsunami Operations Plan



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Preface

The purpose of this plan is to provide operational concepts unique to a Cascadia Subduction Zone catastrophic earthquake and resultant tsunami to meet the needs of Oregonians following an event of this horrible magnitude.

This plan serves as a supplement to the State of Oregon Emergency Operations Plan (EOP) and is intended to outline the priorities, capabilities, general response assets, catastrophic event operational challenges and the support needed from outside of the State after the event.

This plan describes the roles and responsibilities of state agencies in addressing emergency response and recovery missions in a coordinated manner with local, tribal, and federal agencies after a catastrophic earthquake and tsunami. All emergency incidents, including one this large begin locally, with initial response being managed by local first responders. Because of the dire impact of this event, this plan contains information gathered from Oregon Counties on their response capabilities and needs. It is the intent of this plan to describe Oregon's needs to deal with this event as a whole, not just State agency needs.

The State of Oregon Cascadia Subduction Zone Earthquake and Tsunami Response Plan is divided into three Components:

- 1. Oregon Cascadia Subduction Zone Earthquake and Tsunami Operations Plan** This component contains the planning scenario and the responsibilities, operational concepts, functional task assignments, and attachments which provide specific planning guidance for earthquake and tsunami response actions.
- 2. Individual ESF Annexes** utilizing the Emergency Support Function (ESF) concept for each of the major response functions/activities. These ESF Annexes describe the hazard-specific concept of operations, actions, and responsibilities that pertain to the function being covered.
- 3. Cascadia Subduction Zone Plan - County Response Information Annex** was developed after a series of meetings with counties, cities and other local responders in order to determine community response capabilities and likely needs post-event.

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Authority and Adoption Letters

Legal Authority

The Oregon Cascadia Subduction Zone Earthquake and Tsunami Operations Plan is developed, revised, published, and distributed in accordance with Oregon Revised Statutes (ORS), Chapter 401.

It is issued by the Director of Oregon Emergency Management under the provisions of ORS 401.092 to “coordinate the activities of all public and private organizations providing emergency services within this state,” and to “provide for and staff a State Emergency Coordination Center to aid the Governor.”

As stated in ORS 401.035, “the Governor is responsible for the emergency services system within the State of Oregon.”

The Director of Oregon Emergency Management utilizes the emergency management system described in this plan in advising the Governor and assisting in coordinating state responses to emergencies or disasters.

The Governor, Director of Oregon Emergency Management and appropriate state agencies have reviewed this plan and support it.

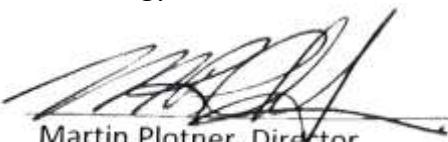
Letter of Adoption

The Oregon Cascadia Subduction Zone Earthquake and Tsunami Operations Plan delineates the policies, procedures, and organization that the Office of Emergency Management (OEM) uses when activating the State Emergency Coordination Center in response to a catastrophic Cascadia Subduction Zone earthquake and resulting tsunami.

This event will require the coordination of all levels of emergency response: local, state, federal, private sector, volunteer and non-governmental service agencies. The scale of this event will push all responders well beyond their day to day efforts and require close collaboration and the ability to adapt to meet the challenges.

This plan was developed under the same spirit of coordination. It takes into account the unique issues and needs of Oregon Counties and how the State and Federal assistance will need to assist our local jurisdictions. The responsibility for first response and managing emergency operations still rests at the local government level. However the scale of this event will require all levels of government and responding agencies to work from the same playbook to effectively assist the people of Oregon in what will be the most challenging time in our State's history.

Periodic changes to this plan will be made as the review process, events, and technology dictate.



Martin Plotner, Director
Oregon Military Department, Office of Emergency Management

Date:

Oct 5, 2012

Plan Administration

Record of Plan Changes

All updates and revisions to the plan will be tracked and recorded in the following table. This process will ensure that the most recent version of the plan is disseminated and implemented by emergency response personnel.

Cascadia Subduction Zone Catastrophic Response Plan

Authority and Adoption Letters

Plan Distribution List

All agencies will be provided copies or information on where to access this plan.

Agency	Agency
Oregon State Agencies	
Governor's Office	Oregon Dept. of Education
Dept. of Administrative Services	Dept. of Geology and Mineral Industries
Oregon Emergency Management	Dept. of State Lands
Oregon Dept. of Agriculture	Dept. of Human Services
Dept. of Aviation	Dept. of Justice
Office of State Fire Marshal	Oregon Health Authority
Oregon Business Development Department	Dept. of Land Conservation and Development
Dept. of Consumer and Business Services	Parks and Recreation Dept.
Dept. of Corrections	Public Utility Commission
Criminal Justice Information Services (LEDS)	Water Resources Dept.
Dept. of Environmental Quality	Oregon State Library
Oregon Office of Energy	Dept. of Transportation
Office of State Medical Examiner	OHSU – Oregon Poison Center
Dept. of Fish and Wildlife	Emergency Response Program ODOT Office of Maintenance
Dept. of Forestry	Dept. of State Police
Oregon Military Dept.	Oregon Judicial Department
Local Jurisdictions Distribution List	
Baker County Emergency Services	Lane County Emergency Services
Clatsop County Emergency Management	Malheur County Emergency Services
Crook County Emergency Management	Multnomah County Emergency Management
Douglas County Emergency Services	Tillamook County Emergency Management
Harney County Emergency Services	Wallowa County Dept. of Emergency Services
Jefferson County Emergency Services	Wheeler County Emergency Services
Lake County Emergency Services	Clackamas County Emergency Management
Linn County Emergency Services	Coos County Emergency Services
Morrow County Emergency Management	Deschutes County Emergency Services
Sherman County Emergency Services	Grant County Emergency Management
Union County Emergency Management	Jackson County Emergency Management
Washington County Office of Consolidated Emergency Management	Klamath County Emergency Services
Benton County Emergency Management	Lincoln County Emergency Services
Columbia County Emergency Management	Marion County Emergency Management
Curry County Emergency Services	Polk County Emergency Management
Gilliam County Emergency Services	Umatilla County Emergency Management
Hood River Emergency Management	Wasco County Emergency Services
Josephine County Emergency Services	Yamhill County Emergency Services
Tribal Distribution List	
Confederated Tribes of the Umatilla Indian Reservation	Burns Paiute Tribe
Confederated Tribes of the Grand Ronde Community	Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians

Cascadia Subduction Zone Catastrophic Response Plan

Authority and Adoption Letters

Agency	Agency
Confederated Tribes of the Warm Springs Reservation	Coquille Indian Tribe
Confederated Tribes of the Siletz Reservation	Klamath Tribes
Cow Creek Band of the Umpqua Indians	

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Component 3: Cascadia Subduction Zone Plan County Response Information Annex

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Overview

1.1 Purpose

This document, designed to serve as a Cascadia Subduction Zone Catastrophic Incident Annex to the State of Oregon Emergency Operations Plan (EOP), describes Oregon's response to a catastrophic Cascadia Subduction Zone earthquake and resultant tsunami. It is written to support the Regional Planning Effort led by FEMA Region X, with the States of Washington, California and Province of British Columbia. This document contains:

- Projected impacts of the earthquake and tsunami
- Objectives, Courses of Action (COAs) and Decision Points
- Response capabilities
- Response actions that can or will be taken
- Expected shortfalls and needs of the State and of local governments immediately following the event.

This plan is segregated into three components:

1. **Oregon Cascadia Subduction Zone Earthquake and Tsunami Operations Plan**

This component contains the planning scenario and the responsibilities, operational concepts, functional task assignments, and attachments which provide specific planning guidance for earthquake and tsunami response actions.

2. **Individual ESF Annexes** utilizing the Emergency Support Function (ESF) concept for each of the major response functions/activities. These ESF Annexes describe the hazard-specific concept of operations, actions, and responsibilities that pertain to the function being covered.

3. **Cascadia Subduction Zone Plan - County Response Information Annex** was developed after a series of meetings with counties, cities and other local responders in order to determine community response capabilities and likely needs post-event.

1.2 Scope and Applicability

1.2.1 Scope

This plan was developed for a scenario describing a catastrophic magnitude 9.0 Cascadia Subduction Zone (CSZ) earthquake including tsunami inundation. It is likely that the resources needed for the response are applicable to any catastrophic event in the State of Oregon. The scope and applicability are described below.

1.2.2 Scope of Operations

The plan describes the scope of work for the response of the State government and supporting entities. State operations and coordination will support the direct response of local, State, regional, tribal, and private-sector entities. This catastrophic response plan, in the CSZ Emergency Support Function Annexes (ESF) describes briefly the specific response efforts of State agencies entities and designates the resources that will be likely deployed by the State of Oregon and by other entities, when appropriate. The CSZ Plan does not address tactics; agency and local jurisdiction specific response information are located in their Emergency Operations Plans.

1.3 Authorities and Guidance

The Plan is consistent with the principles of the National Incident Management System (NIMS) and will be implemented in accordance with the National Response Framework (NRF), the State of Oregon Emergency Operations Plan and corresponding Emergency Support Functions, Annexes, and Appendices. State actions described in the appendix will be implemented in support of local, State, regional, tribal, and private sector entities, which have responsibility for the public safety, health, and welfare within their jurisdictions.

1.3.1 Emergency Support Functions and Core Capabilities

The Plan was written using a combination of the traditional ESF response planning and FEMA Core Capabilities. The State of Oregon and its Counties and Cities use ESF as the basis for their planning.

This plan identifies ESF priorities, assets, capabilities, catastrophic event operational challenges, and support needed immediately following a catastrophic event for all State agencies and adjunct agencies having a role in the EOP.

Core capabilities as described by FEMA are “a reshaping how we prepare for a catastrophic event. This reshaping led to the development of the “Maximum of Maximums” approach, which was to stabilize an all-hazard event within 72

1. Overview

hours. This Strategic Plan expands on this initiative by challenging FEMA to build the Nation's capability to initially recover within 60 days and fully recover within five years".

FEMA has identified twelve core capabilities for stabilizing and restoring basic services and community functionality for essential city service facilities, utilities, transportation routes, schools, neighborhood retail businesses, and offices and other workplaces. This does not presume that every such facility or system would be re-opened, or that they would be operating at 100 percent of pre-disaster levels, but that these critical systems would be back on line and local commerce would be returning.

State of Oregon Core Capabilities – Enabling Response

- Situational Assessment
- Public Messaging
- Command Control and Coordination
- Critical Communication
- Environmental Health and Safety
- Critical Transportation

State of Oregon Core Capabilities – Enabling Survivor Needs

- On-Scene Security and Protection
- Mass Search and Rescue Operations
- Health and Medical Treatment
- Mass Care Services
- Public and Private Services and Resources (Essential Services and Commodities)
- Stabilize and Repair Essential Infrastructure

This Oregon Cascadia Subduction Zone Earthquake and Tsunami Operations Plan component, response, is described using "Core Capabilities". Appendix C, "State of Oregon Core Capabilities for Enabling Response and Delivering Essential Needs" of this plan component describes which ESFs are involved in meeting the Core Capability approach for stabilizing and restoring basic capabilities post-earthquake.

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Situation and Scenario Parameters

2.1 Situation

This plan is based on the threat posed by a magnitude 9.0 Cascadia Subduction Zone earthquake and resultant tsunami. The scenario for this incident was developed using FEMA's HAZUS – MH loss estimation program. Specific analytical information was provided by the National Infrastructure Simulation and Analysis Center Homeland Infrastructure Threat and Risk Analysis Center Office of Infrastructure Protection National Protection and Programs Directorate and contained in the *Draft Analytical Baseline Study for the Cascadia Earthquake and Tsunami* (September 12, 2011, U.S. Department of Homeland Security).

2.2 Oregon Geographic Differences and Challenges

Assumptions regarding county-level response capabilities must vary based on impact of the incidents. Coastal counties will experience a devastating tsunami on top of severe ground shake. While shaking intensity will be less in the I-5 Corridor and Southern Oregon than in the coastal areas, the high inventory of older unreinforced buildings are not expected to react well to extended shaking (up to five minutes) even if intensities are only in the Richter 6.5 range.

Therefore assumptions vary for various geographical areas based on the impacts expected in that area.

2.2.1 CSZ Area 1, Oregon Coast



In the **coastal counties of Curry, Coos, Douglas, Lane, Lincoln, Tillamook and Clatsop**, being the closest area to the epicenter of the earthquake, extreme effects are to be expected. Shaking will be very severe and populated areas are subject to a massive tsunami within 15-30 minutes. Structures not built to modern codes are not expected to survive. Much of the coastal residential inventory is likely to

2. Situation and Scenario Parameters

be damaged or destroyed by the following tsunami which may travel more than a mile inland in places. Tsunami waves are expected to begin arriving in about 30 minutes from the earthquake itself, leaving very little time for individuals to seek higher ground. Waves may continue periodically as aftershocks continue well past the initial quake.

Consequently, a relatively high fatality rate will be an additional impact. These counties are reached by a relatively small number of roads which all traverse hilly, landslide prone terrain and cross rivers with bridges that are not expected to survive. Access by road following the earthquake is likely to require a month or more of continuous effort by construction crews and engineers.

Coastal County shortfall expectations are:

- Electrical power will fail.
- Communications methods will largely fail.
- Fuel will be needed for response and for power generation. Propane will also be needed for some generators and heating.
- Normal response centers at police and fire stations will be severely disrupted.
- Travel in many areas will have to be by foot as roads will be broken, displaced, undermined, covered by debris or washed away.
- Isolated survivor communities in the coastal areas will likely be short on all supplies and those individuals exposed to the environment will have to be found and relocated to safe areas due to the severity of winter on the Oregon Coast.
- Large-scale shelter areas will have to be established on short notice. Large-scale evacuation of the surviving population is not logistically possible in the short term. Self-evacuation from the region will not be practical for a month or more.
- Logistical support except from the sea will be very resource intensive.
- Health centers will be non-operational in the traditional sense. Some patients will require relocation and large number of injured will be treated by any reliable means – probably not to current standards of care.
- Pharmaceuticals will be in very short supply.
- Hasty sterilization such as by bleach immersion may be the only means available.
- Health response centers will have to be supported at multiple locations along the coast including, offshore platforms.

2. Situation and Scenario Parameters

- Augmentation of personnel will be required for all elements of response – fire, police/security, emergency management, utility maintenance, shelter staffing, etc.

2.2.2 CSZ Area 2, Metropolitan Oregon Counties

In the Oregon Metropolitan Counties of Washington, Multnomah and

Clackamas (and to a lesser extent the cities of Eugene (Lane County) and Salem (Marion County)), effects related to the earthquake include: Power supplies will fail and be unavailable for a month or more except by generator. The general situation for roads will pertain to bridges that will



be unavailable due to collapse or separation from approach abutments. Many will only allow limited traffic. Neighborhoods in urban centers will be initially isolated by road damage and debris. Railroad facilities including bridges will be damaged in multiple locations. Pipeline delivery of fuels will cease due to damage of compressors or pumps until they can be tested. They may run at less than full capacity for months or years. Many masonry structures will sustain significant damage including historical buildings. Areas with older, masonry apartment stock will require significant shelter capacity to be opened nearby. Much housing stock will survive with varying damage but loss of sanitary sewer, the need for gas, electrical and plumbing inspection will prevent prompt re-occupying of existing housing stock. Some hospitals / health facilities will sustain serious damage, though loss of water and power may be more significant factors initially. PDX International and The Port of Portland will be closed for weeks and possibly months. Partial reopening of the airport and port and their access to nearby warehousing and fuel storage will be critical. Older firehouses and police stations as well as logistical support centers for trains, busses, and public safety will sustain damage requiring relocation of those operations.

Oregon Metropolitan Counties shortfall expectations are:

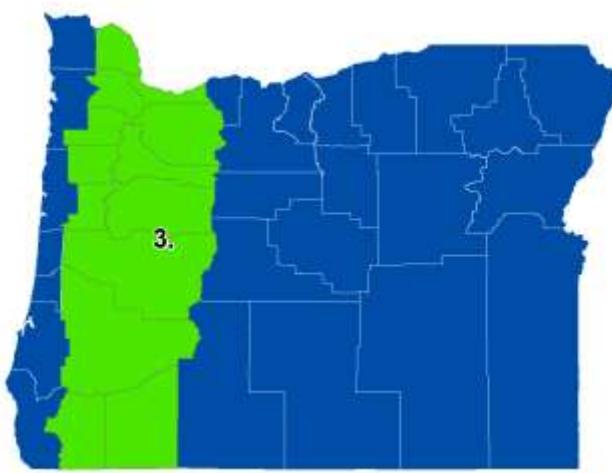
- Priority reconnection to main line for air and marine ports and petroleum terminals as well as hospitals and water utilities.
- Electrical power will fail.

2. Situation and Scenario Parameters

- Communications methods will largely fail. Surviving communication systems will degrade as generators run out of fuel.
- Normal response centers at police and fire stations will be disrupted in some areas.
- Road clearing and debris management may have to be apportioned on an area or regional basis.
- Communities may be isolated and require either re-supply of food and medicines or relocation of some residents.
- Large-scale shelter areas will have to be erected on short notice in larger urban areas.
- Multiple urban search and rescue teams will be required in each of the cities of Portland and its suburbs, Salem and Eugene; and to a lesser degree in smaller cities throughout Western Oregon).
- This area will be a significant center of the health services response and recovery activity to the impacted area overall and will require a variety of support systems to enable leveraging the world-class facilities located here.
- Pharmaceuticals supply will be reduced.
- Augmentation of personnel will be required for all elements of response, fire, police, security, emergency management, utility maintenance, shelter staffing, etc.
- Immediate / initial response in first 96 hours will be from local residents and resources.
- Limited operational state of radio transmission / overloaded with high volumes of emergency responder traffic.
- Fuel and food deliveries will be required within one week. Diesel and gasoline are priority fuel deliveries for generators and responders and propane for some generators and heating. Utility restoration support will be a priority in these areas.
- Support for voluntary self-evacuation by providing transport to relocation assistance.
- Control of vehicle access to surviving freeways and state highways will be required to minimize non-emergency traffic.

2. Situation and Scenario Parameters

2.2.3 CSZ Area 3, Oregon Counties West of the Cascade Range



In Western Oregon Counties including Josephine, Jackson, Douglas, Lane, Linn, Benton, Marion, Polk, Yamhill and Columbia, (including areas of Washington, Multnomah and Clackamas Counties not described in the Oregon Metropolitan Counties shortfall

expectations) significant effects primarily related to shaking and impacts along rivers and roadways are to be expected. Freeways and associated bridges will be damaged, rail lines will be damaged or buried by landslides in multiple places, and communities will be isolated by interrupted roads through direct damage or landslide. Certain dike structures may fail causing localized flooding and possibly some deaths. Industrial plants in the area will experience emergency shutdown of processes which may result in some catastrophic failures and deaths/injuries at those plants. Some bulk storage facilities for petroleum or other hazardous products will rupture due to mechanical strain through shaking, sloshing of contents, or liquefaction of supporting soils. A certain percentage of this loss can be expected to escape secondary containment. Many of these facilities are associated with major cities along rivers and along Interstate 5. If this occurs during fish runs, entire reproductive year-groups may be lost. Severe environmental contamination will result. A mechanical rearrangement of Columbia River sediment may block shipping channels and create unexpected currents. All response activities adjacent to the Columbia River will need to be coordinated with State of Washington Counties across the Columbia and Washington EMD.

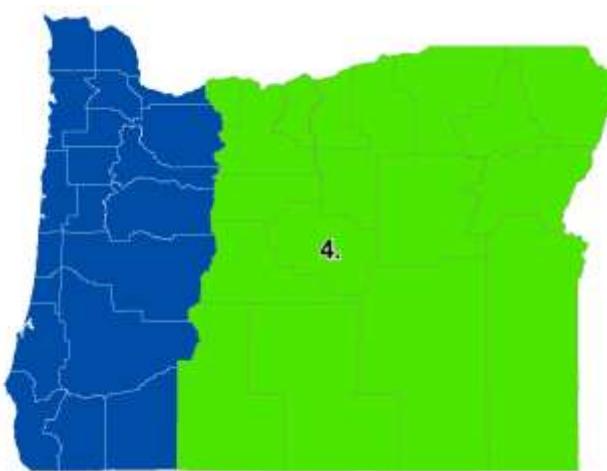
Western Oregon County shortfall expectations are:

- Electrical power will fail.
- Communications methods will largely fail. Surviving communication systems will degrade as generators run out of fuel.
- Normal response centers at police and fire stations will be disrupted in some areas but less so than on the coast.

2. Situation and Scenario Parameters

- Bridges throughout Western Oregon may be severely damaged, fail or perhaps block vital traffic on the Columbia River.
- Smaller, rural communities may be isolated and require either resupply of food and medicines or relocation of some residents.
- Large-scale shelter areas will have to be erected on short notice in larger urban areas.
- Multiple urban search and rescue teams will be required and possibly teams with specialized experience with industrial plants.
- Logistical support will likely come via Eastern Oregon through to surviving airports in Western Oregon Counties.
- Health centers will be damaged and operate at reduced capacity. Some patients will require relocation and large number of injured will be treated by available means – probably not current standards of care.
- Pharmaceuticals supply will be severely reduced.
- Augmentation of personnel will be required for all elements of response - fire, police, security, emergency management, utility maintenance, shelter staffing, etc.
- Immediate / initial response in the first 96 hours will be from local residents and resources.
- Many warning systems and methods used locally are not interconnected between neighboring jurisdictions i.e., Public System Answering Points (PSAP's / 911).
- Limited operational state of radio transmission / overloaded with high volumes of emergency responder traffic.
- Fuel and food deliveries will be required within one week. Diesel and gasoline are priority fuel deliveries for generators and responders. Propane will also be needed for some generators and heating.
- Generally, all fuel delivery via pipeline will be halted for a period of a month or more.
- Water and sewage treatment will be compromised and be out of service for an indefinite time.

2.2.4 CSZ Area 4, Counties East of the Cascade Range



In all counties **east of the Cascade Mountains**, effects related to the earthquake include: indirect impacts related to transportation corridors (roads, rail, and air), power disruption, supply chain distribution (including fuel, food, and natural gas), demand for logistics and staging areas, shelter, and relocation of individuals and animals from

the impacted areas. Transportation interruptions and prioritization of emergency supplies to Western Oregon will disrupt raw material imports and finished-agricultural product export. Financially this is an extreme impact and alternate routing to ports of opportunity will be required. This will increase shipping costs, affecting Oregon's agricultural economy. Massive staging areas are likely to be required in various areas of Central and Eastern Oregon with the primary location of relief supplies likely at an established federal ISB at Roberts Field Airport in Redmond, Oregon, Deschutes County. River traffic on the Columbia River will be an important response and recovery lifeline. Mutual aid from Eastern Oregon local jurisdictions will be sought to the maximum degree possible. Many building inspectors, police, firefighters, medical personnel, engineers, and public works personnel may deploy to the impacted areas of Western Oregon.

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Scenario

3.1 Parameters

The development of an earthquake scenario hinges on a number of parameters. A key parameter for analysis is the strength of the earthquake, often measured in terms of a magnitude. Magnitude in turn depends on the fault area that slips, how much slippage occurs during the earthquake, and the fault's proximity to the Earth's surface. Other important parameters include the specific date (so that seasonal population changes can be considered in the analysis), time of day of the event, the expected number and severity of aftershocks, and, temporal evolution of the associated tsunami. The description of the scenario constructed for this analysis can be found below (HITRAC, September 12, 2011, p.5).

3.2 Earthquake Scenario in the Cascadia Subduction Zone (CSZ)

Both direct and indirect impacts of an earthquake impacting the Pacific Northwest were examined by the analytical baseline study produced by RDMB-NISAC. The scenario is not intended to generate the greatest impacts across the entire region, but rather to demonstrate earthquake modeling capabilities that produce both direct and indirect results that can be used for planning and exercises. The direct impacts are damage caused by the earthquake and tsunami. The indirect impacts are cascading impacts to infrastructure systems and the local population.

Stretching from Brooks Peninsula on Vancouver Island to Cape Mendocino in Northern California, the Cascadia Subduction Zone is where the Juan De Fuca Plate meets the North American Plate along an 800-mile (1,300 kilometers) long line off the Pacific coast. The Juan de Fuca Plate is the seafloor and is made up of heavier rocks than the continental mass of the North American



3. Scenario

Plate. These two pieces of the Earth's crust constantly push against each other, and the seafloor subducts, or sinks, below North America.

The scenario for this plan is a 9.0 – magnitude earthquake along the length of the fault, as specified by the Cascadia Region Earthquake Workgroup (CREW). The Juan de Fuca plate begins its decent beneath the North American plate. The buried interface between these two plates, which extends from off shore to the coastline or farther inland in some places, comprises the fault zone, which is capable of breaking in one great earthquake or possibly in sections as smaller earthquakes (HITRAC, September 12, 2011, p.5).

The 9.0 magnitude earthquake scenario examined for this study has an epicenter approximately 95 miles west of Eugene, Oregon. Intense shaking for up to five minutes is assumed. The earthquake generates a tsunami that impacts most of the Pacific Ocean, in particular the Oregon Coast within 15 to 30 minutes of the earthquake.

The direct damage caused by the earthquake was estimated using the FEMA Multi-hazard Loss Estimation Methodology (HAZUS) tool. The HAZUS calculation factored in ground shaking, liquefaction, and potential landslide to estimate damage to buildings, roadways, and physical infrastructure (HITRAC, September 12, 2011, p.6).

3.2.1 Earthquake and Liquefaction Metrics Terminology

The maps used for this study [and which form the basis of the scenario of this plan] geospatially depict the intensity or degree of ground shaking and liquefaction. The following definitions for ground shaking and liquefaction quantities are intended to enable understanding of the modeled damage extent to various infrastructure and building types (HITRAC, September 12, 2011, pgs. 8-14):

- Peak Ground Acceleration (PGA): The maximum acceleration that any point on the ground would experience. The units are in G-force (gravity). PGA can be thought of as the force that something on the ground experiences. For example, if a rock that weighs 100 pounds receives a 50-lb. shaking force, it is said to have a PGA of 0.5, or half of G-force (half of its weight).
- Peak Ground Velocity (PGV): The maximum speed that a point on the ground will achieve due to ground shaking in an earthquake. Units are in centimeters per second.
- Spectral Acceleration (SA): The maximum acceleration that a point on the ground would experience at a particular frequency. In the audio world, this would be the equivalent to how much of the bass, mid-range, or treble are in a particular sound. This is of interest in relation to

3. Scenario

- harmonic resonance with structures. Larger and taller structures in particular are more susceptible to danger from lower frequency motion.
- Lateral Spread: The relative distance that a point on the ground may move (measured in inches) due to spreading and ground settlement. Lateral spread is a measure of liquefaction and can represent the degree of foundation instability for structures.

3.3 The Earthquake and Resulting Tsunami

The key starting point of the scenario is a ShakeMap generated by the U.S. Geological Survey (USGS) specifically for a 9.0 magnitude Cascadia event. This is an authoritative model of the ground shaking expected for a geologically plausible 9.0 magnitude earthquake.

A tsunami source term (wave height, direction, and velocity) was developed from the Pacifex 11 Exercise model runs combined with NISAC modeling of this project. This source term was used in inundation modeling to obtain the direct impacts of the scenario tsunami. Although the outputs of the ShakeMap were not used directly as input to the Pacifex results, both were constructed to be consistent with the 2005 Cascadia Region Earthquake workgroup (CREW) scenario.

3.3.1 Geographic Scope-Tsunami Susceptibility

The entire Oregon coast is at risk of tsunami inundation in this scenario. Tsunami fatalities in Oregon in the HITRAC study were estimated at 674 persons. It should be noted that coastal population numbers fluctuate wildly due to tourism and time of year. This number is only from a specific snapshot in time (6 February at 0900 local time).

Offshore tsunami models show that a considerable tsunami wave would result and produce significant impact inundation risk to the coastal areas. Although there are no large cities immediately on the Oregon coast, there are several medium-sized to small communities that would see inundation and significant localized damage.

Due to the proximity of the quake, coastal communities may have as little as 15 minutes warning before the tsunami strikes. This will result in significant loss of life for those who are not able to evacuate to nearby higher ground. Some areas lack nearby high ground for shelter from a tsunami, while other areas of the Oregon Coast do not have shelter areas for survivors to be out of the elements.

Infrastructure assets in the tsunami inundation area may be subject to damage based on either construction type or flooding. The force of the incoming wave may in some cases be strong enough to destroy concrete structures. Because

3. Scenario

there is not a heavy concentration of people or infrastructure along the coast and because of the relatively steep rise in terrain immediately inland of much of the coastal region, little infrastructure damage would occur that would have a national or regional impact.

3.3.1 Geographic Scope-Shaking Susceptibility

Damage to man-made structures will result both from the energy of shaking as well as possible amplified shaking and ground displacement due to liquefaction.

Different building structures and construction materials have a substantial effect on a structure's resistance to being damaged. Shaking, liquefaction, and building structure types combine to create what can appear to be a non-uniform distribution of resulting damage states. Some higher liquefaction susceptibilities, particularly in the Willamette Valley, tend to increase the potential for structural damages.

- Structural and non-structural damage to buildings and infrastructure, including widespread collapse of buildings.
- Widespread ignition of fires
- Subsidence and loss of soil-bearing capacity, particularly in areas of liquefaction
- Displacement along faults
- Widespread occurrence of landslides
- Hazardous materials spills and incidents
- Dam/levee damage and or failure resulting in flooding



Note: Threats and hazards resulting from the main shock will be aggravated or recur during aftershocks, which will continue for months after the main shock. The HITRAC study did not take into account aftershocks and the possibility of

3. Scenario

additional tsunami, which could drastically increase the amount of casualties from the event.

For planning purposes, the major impacts of the earthquake and corresponding tsunami are cited from the crest of the Cascade Range and West. However the disruption of critical lifelines and corresponding economic impacts will likely affect all counties in Oregon.

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Assumptions

The following assumptions are made with respect to the 9.0 – magnitude earthquake in the HITRAC modeling:

1. Epicenter 95 miles west of Eugene, OR (45.73 N, 125.12 W)
2. Length: 850 km, width: 100 km, depth 2 km
3. Strike: 345, dip: 13, slip 90
4. Movement: 3.55X10 dyne-cm
5. Fault ruptures to the north at 2.5 km / second
6. Event occurs February 6, 2012, at 0941 am PST (outside of tourist season)
7. No aftershocks

It was assumed that ground shaking would last four to six minutes, and the possibilities of liquefaction and landslides were included in the analysis.

Planning by Oregon Office of Emergency Management was done with the assumption that the state would suffer many additional aftershocks and the possibility of additional tsunami inundation.

Table 4-1 Estimated Oregon deaths and injuries from Cascadia event

Estimated Oregon deaths and injuries from Cascadia event		
Ground Shaking	Injuries	14,109
	Deaths	671
Tsunami	Injuries	897
	Deaths	643
Totals	Injuries	15,006
	Deaths	1,314

4. Assumptions

Table 4-2 Estimated Oregon tsunami casualties and deaths from Cascadia event

Estimated Oregon Tsunami Casualties and Deaths				
Location	Nighttime Population at Risk (PAR)	Daytime PAR	Injuries	Deaths
Cannon Beach	370	990	110	240
Coos Bay	210	150	30	30
East Astoria	820	960	20	10
Newport	250	420	50	20
Port Orford	40	40	10	10
Gearhart/Seaside	720	730	50	10
Warrenton	2720	3840	550	280
Rockaway Beach	75	70	4	1
Lincoln City	370	420	70	40
Waldport/Yachats	80	90	3	2

4.1 General Assumptions

- An earthquake of this scale would quickly exceed state and local resources. It is anticipated that a significant amount of external resources will be required for a disaster response. Oregon will immediately request support from FEMA and the Governor immediately proclaims a State of Emergency and requests that the President declares a disaster;
- The President immediately declares a Major Disaster, making Federal assistance available under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the Stafford Act);
- DHS and FEMA immediately implement the Catastrophic Incident Supplement (CIS) to the NRF and begin mobilizing Federal resources;
- The State of Oregon Military Department, Office of Emergency Management, Emergency Operations Center (EOC) is fully activated;
- All local (county and city) Emergency Operations Centers (EOC's) in impacted areas experience varying levels of damage and are understaffed, but are at least partially operational. County and State agency EOC's within tsunami inundation or liquefaction areas may not be functional;
- FEMA Region X Regional Response Coordination Center (RRCC) in Bothell, WA, is activated to its highest level;
- OEM and state agency ESF partners will coordinate Statewide Mutual Aid Agreements and activate the Emergency Management Assistance Compact (EMAC). Established local and regional mutual aid agreements will be honored to the extent possible;
- On a statewide basis, all elements of the State Emergency Operations Plan have been activated;
- Oregon is not recovering from a previous disaster that could hamper response to this event;
- Due to the time of the year, tourist populations will be significantly lower, but will be a significant population that will need assistance;

4. Assumptions

- Significant aid from state and federal governments to local governments may not be available for at least 72 hours.

4.2 Severity of the Earthquake and Resultant Tsunami

The earthquake and resultant tsunami is so severe that:

- The response capabilities and resources of the local jurisdictions and the State are immediately rendered insufficient, overwhelmed, and exhausted;
- The incident escalates to the point at which the Federal Government implements the Catastrophic Incident Annex and Catastrophic Incident Supplement to the NRF.
- Alternate Emergency Operations Centers (EOC) and the State Emergency Coordination Center (ECC) may need to enact continuity of operations/government planning protocols due to damaged facilities;
- The hardest hit areas are initially isolated from re-supply by fixed wing air, ground, and sea transportation;
- The number of casualties and or displaced persons is large, possibly in the tens of thousands;
- Massive disruption of the area's critical infrastructure and lifelines (such as roadways, ports, airports, energy, telecommunications, and public health and medical systems);
- Damage to transportation, communication, and other infrastructure systems will isolate communities, creating pockets of inaccessible survivors within impacted areas.
- Shelters identified for use during other natural disasters may not be available in the impacted area.
- Significant shortage of emergency response and casualty / evacuee reception capabilities, equipment, and medical care occurs;
- Resources under the control of the State of Oregon are used where possible to assist affected local communities and augmented by Federal resources when they begin to arrive in-state;
- Upon receipt of the Presidential Declaration or Presidential Order, the Federal government will commit federal resources.

4.3 Local and State Capabilities and Unmet Needs Assumptions

As part of the development of this Cascadia Subduction Zone Catastrophic Annex, the State has identified local and regional capabilities that are likely to be needed after a catastrophic earthquake and corresponding tsunami. Projected major unmet needs are also identified.

4. Assumptions

The capabilities of State and local government are summarized below and in more detail in the ESF annexes and the Cascadia Subduction Zone County Response Information Annex.

Planning:

The State and all counties have comprehensive Emergency Operations Plans in compliance with requirements under Oregon Revised Statute 401.

Communications:

Local emergency communications systems will be compromised, but redundancies within the State systems could provide some capability for continued communication on a regional basis, such as HAM radio. Basic commercial communication systems will suffer the most damage and will get worse in the days to weeks after the event as backup generators fail.

Onsite Incident Management:

Local capabilities for onsite incident management are robust and generally well-organized during localized “normal” scale events, but will be insufficient by the scope and magnitude of this event, compounded by isolation due to damage to transportation infrastructure, and communications difficulties. Mutual aid and State resources to supplement local resources will be adversely affected and unable to render assistance because of damage to transportation infrastructure.

EOC Management:

Coastal EOC's may suffer degradation of functionality due to the initial earthquake and from secondary impacts. In addition, response personnel will be delayed in response due to commitments to personal and family safety and security. Due to transportation damage, essential personnel may not be able to get to their worksites. It's possible that Continuation of Operations Plans (COOP) may be required to establish alternate facilities for State and local EOC's/ECC's.

Critical Resource Logistics and Distribution:

Thousands of people will require feeding and other commodities due to lack of services, loss of residence, or that they are visitors or commuters who are stranded. Existing stockpiles of critical commodities are extremely limited. Supply by contractors and distribution will be severely compromised by overwhelming need and damage to transportation infrastructure. Oregon has pre-identified Incident Support Bases and State Staging Areas to receive resources and some County and local governments have identified staging areas, community points of distribution and other support locations. However it is likely that a number of these facilities will have been damaged by the event.

Volunteer Management and Donations:

Some jurisdictions have developed plans for integrating volunteer resources and managing donations. These plans can be adapted by individual jurisdictions to manage volunteer resources. It is anticipated that management and credentialing of volunteers will be an immediate and long standing need after the event.

Responder Safety and Health:

Damaged equipment, low force numbers and environmental concerns are likely to occur, resulting in significant physical hazards, and civil unrest may occur. Both will make responder health and safety a concern and will delay or disrupt response operations.

Public Safety and Security Response:

Local and State law enforcement mutual aid resources will not be sufficient to meet immediate needs. Statewide mutual aid that is available will have difficulty reaching the hardest hit areas initially due to damage to transportation infrastructure. The scale of this event will require public safety and security requirements for an unknown amount of time (several months or more). All of these situations will necessitate reinforcement and replacement of responders from other jurisdictions.

Animal Health Emergency Support:

Local nongovernmental resources for animal care will be overwhelmed by requirements for sheltering thousands of animals, including companion animals that accompany evacuees who are seeking shelter, as well as animals that are abandoned and require rescue. The evacuation of livestock may become necessary as disruptions to power, water, and transportation systems may adversely affect livestock operations.

4. Assumptions

Environmental Health:

Hazardous materials incidents will be numerous, particularly in heavy industrial areas near ports, waterways and along major transportation thoroughfares. Additionally, the lack of water and sanitation due to system damage will result in emerging public health crises in impacted areas. Most of the locally stored water supplies in tanks and small reservoirs will be depleted within 48 to 72 hours for fire, medical, and other critical services.

Firefighting Operations and Support:

Hundreds of fires are likely to be ignited in the aftermath of the earthquake. Ruptured natural gas lines will increase the probability of fire occurring in damaged areas. Local mutual aid fire and rescue resources will not be sufficient to meet immediate needs due to the number of ignitions, medical resources, rescue, and damage to infrastructure. Statewide mutual aid will provide resources but will have difficulty reaching hardest hit areas initially due to damaged transportation infrastructure. Fires may burn for extended periods, and many fires not immediately threatening human life may be left to burn.

Citizen Protection, Evacuation, In-place Protection:

Local evacuations will be required due to fires, lack of shelter, hazardous materials incidents, and emerging public health emergencies due to lack of water and sanitation. It is possible that the earthquake may cause one or more dams to lose structural integrity or to fail, resulting in the need to evacuate those below the dam. Local authorities, supplemented by State law enforcement will have resources for command and control, but competing requirements for traffic control, viable roadways, vehicles, transportation infrastructure repairs, and security issues related to bridges, airports, and port facilities may hinder evacuation support.

Urban Search and Rescue (USAR):

Hundreds of people are expected to be trapped in collapsed buildings and require rescue. Thousands more may be stranded in damaged buildings (such as high rises) and also require rescue. USAR resources in Oregon will not be sufficient to meet the required number of rescue missions, nor will Federal USAR resources within FEMA Region X be adequate. Resources from other regions will have a difficulty reaching the hardest hit areas due to transportation infrastructure damage.

Emergency Public Information and Warning:

Many jurisdictions have countywide or citywide public warning systems; these systems may be disrupted by the earthquake. Extensive use of the NOAA Weather Radio and EAS systems will be necessary to support the State's need to coordinate a network of public information dissemination. Highway reader

4. Assumptions

boards, airborne messaging and other non-traditional methods may be necessary to communicate within impacted areas.

Triage and Pre-hospital Treatment:

Thousands of people will require medical treatment; of those, many will require hospitalization or treatment for chronic conditions unavailable post-event. Emergency Medical Services (ALS and BLS) resources within fire departments will be devoted to firefighting and rescue missions. Damage to transportation infrastructure will limit the influx of resources and movement of victims. On-hand medical supplies will be exhausted within 48 hours. Many individuals will not have access to medical treatment during the first 72 hours after the earthquake. The lack of clean water, lack of sanitation, and lack of medical supplies exacerbates the problem.

Medical Surge:

Hospitals and other healthcare facilities in the hardest hit area will suffer structural damage, severely limiting treatment capabilities. Healthcare facility operations will be further affected by limited (24 hour) supply of generator fuel and lack of water. Damage to transportation infrastructure will limit influx of medical personnel and resources as well as the evacuation of patients. Hospitals in less severely impacted areas and outlying counties will be able to take patients. Many hospital beds in the impacted counties may not be available due to damage to buildings and support infrastructure.

Medical Supplies Management and Distribution:

Local hospitals and other healthcare facilities will immediately experience shortages of supplies due to demand and relatively limited onsite inventories. Re-supply will be limited by damage to transportation infrastructure. Many rural locations have a limited supply of pharmaceuticals and will be unable to supply those in need. Many chronically ill people will lose supplies of medicine and/or supplies immediately, or run out of them within weeks of the event.

Mass Care:

It is estimated that many shelters will be unavailable initially due to structural damage and cleanup requirements. Given that thousands of individuals will be requiring shelter across Western Oregon, there will be significant shortfall in actual shelter capacity. Transportation issues will hamper resupply of operational shelters, and limit evacuation of survivors to non-local shelters.

Fatality Management:

HAZUS estimates the number of fatalities in the thousands, and many more fatalities could occur as a result of aftershocks and additional tsunamis after the initial event. Local and state coroner / medical examiner resources and resources available through mutual aid in Region X will be overwhelmed by the number of fatalities and the requirements for transportation, storage, identification, and coordination with families, both immediately and over the long term. Resources from other regions will need to be requested, but will have difficulty reaching the affected area due to damage to infrastructure. Challenges with managing the number of and respectfully handling fatalities could have negative effects on an already stressed public.

Structural Damage and Assessment:

Local public works departments and contractor resources will not be sufficient to meet immediate demand for emergency debris removal or for establishing sites for staging equipment and assisting with public works and infrastructure repair. Demolition of damaged structures will continue to create high demand for contractor resources as recovery proceeds. Identification of hazardous waste within the debris field will also be an issue. Simultaneously, public and private contractor assessment / inspection resources will be overwhelmed and dependent on pre-qualified engineers and inspectors from outside the region for rapid assessments of structural damage to critical facilities, infrastructure, housing, and commercial structures. The occurrence of earthquake aftershocks will require re-inspection, as many critical infrastructure components may require re-inspection on a regular basis for months or years.

Restoration of Transportation and Infrastructure Lifelines:

Lifelines for this purpose are defined as water, wastewater, power, natural gas, telecommunication, fuel distribution, and transportation systems. Power restoration, communications, major water and sewer facilities will require significant repairs. Coastal communities may have a total loss to all infrastructure located within the inundation area and beyond due to the intensity of shaking. Damage to water distribution and sewer collection systems may take months, requiring temporary above ground systems. Numerous water pumping stations as well as sewer collection lift stations will be impacted. Shutdown of and damage to petroleum refining, pipeline, storage, and distribution systems will create an immediate shortage of fuel, including fuel for ground transportation, air transportation, and generators. Local governments do not have extensive supplies of fuel for sustained operations. Coastal ports will be severely if not totally destroyed. Rapidly repairing these to a usable condition (priority of Coos Bay, Newport and Astoria due to their ability to handle larger vessels) is critical to bring relief supplies and responders into the coastal areas.

4. Assumptions

Major transportation links may take two or more years to repair. The following estimated damage is expected:

- Failures of key highways are anticipated throughout the CSZ impact zone. I-5 is anticipated to be severely impacted throughout the state and it is likely that all east/west routes to the coast will be unusable. Highway 101 on the coast is expected to be unusable at best and completely destroyed in some areas. Repair of Oregon roadways will take years, many roadways will simply be abandoned.
- Bridges will be destroyed throughout the state and many severely damaged.
- Surviving bridges may be temporarily inaccessible due to failure of approaches.
- Most airports in Western Oregon will be impacted.

Table 4-3 Western Oregon Airport Damages from Cascadia event

Airport Name	City	Latitude	Longitude	50% damage model	90% damage model
INDEPENDENCE STATE	INDEPENDENCE	44.8669529	-123.1982329	Slight	Complete
SILETZ BAY STATE	GLENEDEN BEACH	44.87691688	-124.0285049	Complete	Complete
SOUTHWEST OREGON REGIONAL	NORTH BEND	43.41709754	-124.2460052	Complete	Complete
BANDON STATE	BANDON	43.08645591	-124.4078497	Complete	Complete
MCNARY FIELD	SALEM	44.90952233	-123.0024857	Slight	Moderate
PORLAND-HILLSBORO	PORLAND	45.54060562	-122.95018	Slight	Moderate
ALBANY MUNICIPAL	ALBANY	44.63780013	-123.0594301	Slight	Severe
MAHLON SWEET FIELD	EUGENE	44.12457795	-123.211958	Slight	Moderate
HOBBY FIELD	CRESWELL	43.93076128	-123.0072641	Slight	Moderate
COTTAGE GROVE STATE	COTTAGE GROVE	43.7998399	-123.0289536	Slight	Moderate
GRANTS PASS	GRANTS PASS	42.51011196	-123.3879755	Slight	Severe
ILLINOIS VALLEY	CAVE JUNCTION	42.10359479	-123.6824027	Moderate	Complete
ROGUE VALLEY INT. - MEDFORD	MEDFORD	42.37421692	-122.8734861	Slight	Moderate
ROSEBURG REGIONAL	ROSEBURG	43.23877774	-123.3558476	Slight	Moderate

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SCAPPOOSE INDUSTRIAL AIRPARK	SCAPPOOSE	45.77102226	-122.8618188	Slight	Moderate
MC MINNVILLE MUNICIPAL	MC MINNVILLE	45.19443899	-123.13593	Slight	Complete
TILLAMOOK	TILLAMOOK	45.41823655	-123.8143693	Complete	Complete
CORVALLIS MUNICIPAL	CORVALLIS	44.49718821	-123.2898154	Slight	Severe
FLORENCE MUNICIPAL	FLORENCE	43.98281138	-124.1113551	Complete	Complete
NEWPORT MUNICIPAL	NEWPORT	44.58035578	-124.0579022	Severe	Complete
ASHLAND MUNICIPAL- SUMNER PARKER FIELD	ASHLAND	42.1902783	-122.6606145	Slight	Slight
PORTLAND- MULINO	PORTLAND- MULINO	45.21631949	-122.5900695	Slight	Severe
LENHARDT AIRPARK	HUBBARD	45.18039284	-122.7434106	Slight	Complete
AURORA STATE	AURORA	45.24713339	-122.7700412	Slight	Complete
PORTLAND INT.	PORTLAND	45.58871669	-122.5974856	Slight	Severe
PEARSON FIELD	VANCOUVER	45.62044697	-122.6564739	Slight	Severe
PORTLAND- TROUTDALE	PORTLAND	45.54935556	-122.4012356	Slight	Severe

- Highway, airport, seaport and damage to the rail system will halt movement of supplies and responders. Fuel supplies will be interrupted until inspections and repairs are made to the refineries and rail system. Some segments of the rail system, such as rail bridges in some areas will sustain extensive damage that could take years to repair or replace.

Economic and Community Recovery:

Widespread damage to housing will create urgent requirements for temporary housing and other solutions to encourage residents to return. Timelines for recovery of transportation and utility infrastructure will affect the pace of economic recovery.

4.4 County Impact Assumptions

See pages 2-1 to 2-7 of this plan, and Component 3- *the Cascadia Subduction Zone Plan - County Response Information Annex* for County specific impacts and shortfall assumptions.

4.5 Non-governmental and Volunteer Organizations

OEM may provide input into planning efforts of non-governmental and volunteer organizations. This participation is intended to enhance the capabilities of these organizations in the response and recovery phases of an emergency or disaster.

- Unless the response role is inherently governmental, non-governmental and private-sector organizations are encouraged to develop and maintain capabilities to respond to and manage a complete spectrum of incidents and emergencies. Coordination generally occurs at a local level in the State of Oregon.
- Local government coordinates most volunteer organization participation in the response and recovery phases of any emergency or disaster.
- U.S. Citizen Corps and local Citizen Corps Councils implement and maintain those volunteer organizations, e.g. CERT, Medical Reserve Corps, Volunteers in Police Service, etc., that may be utilized during the response and recovery phases of an emergency or disaster.
- Volunteer Organizations Active in Disaster (VOADs) may be utilized during the response and recovery phases of an emergency or disaster and are coordinated and utilized at a local government level.

4.6 Private-Sector Coordination

Private-sector organizations may be affected by direct or indirect consequences of the incident, including privately owned critical infrastructure, key resources, and those main private-sector organizations that are significant to local, regional, and national economic recovery from the incident.

4.7 Tribal

During and after emergencies, the Office of Emergency Management (OEM) will communicate and coordinate with Tribal Nations to ensure that responses are coordinated and that any potential damage assessment information is captured. Oregon Tribes often rely on pre-established relationships with local governments for assistance in emergency situations.

4. Assumptions

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Mission

5.1 Introduction

In a catastrophic event affecting our citizens, the State of Oregon mission is to provide lifesaving and life-sustaining assistance and resources necessary to supplement local, regional, tribal, and private-sector efforts immediately following a catastrophic Cascadia Subduction Zone Earthquake and resultant tsunami in the State of Oregon in order to alleviate the dire impacts of the incident and encourage the recovery of the affected areas.

5.2 General County Priorities *(See Component 3- the Cascadia Subduction Zone Plan - County Response Information Annex for further detailed information)*

In the impacted areas the following activities will be required; however the priority of action will vary considerably based on proximity to the coast. The order of these actions is difficult to establish as multiple activities will have to occur almost simultaneously by different groups.

- Establish physical communications for situational awareness to coordinate response activities locally. Implement alternate communications procedures to establish communications pathways and maintain functional and interoperable communications for responders.
- Rescue survivors and establish safe areas with resources to support population.
- Establish logistical support for critical supplies of food, water, shelters (i.e., tarps and blankets), medical, baby formula, diapers, etc.
- Fire suppression and utility stabilization.
- Provide support for health facilities, personnel and supplies.
- Fatality management assistance – Establish center and staff for this function.
- Road-clearing, debris removal and disposal, and road repair.
- Environmental response and protection of public from hazardous materials.
- Public information and warning – validate and provide internal and external public messaging.

5. Mission

- Conduct situational assessment in coordination with local responders including emergency management.
- Provide support for emergency operations.
- Adopt an emergency management structure that manages resource shortages.
- Supply emergency water, shelter, and sanitation needs for response operations personnel.
- Conduct debris clearance and disposal.
- Stabilize and provide critical utilities for priority infrastructure: water, wastewater, power, and natural gas.
- Establish lines of supply (air, sea, rail, and roads) and re-establish operations in damaged sea and air port areas.
- Provide acute care (hospitals and EMS) – establish alternate standards of care when necessary.
- Provide safety, security, and support to emergency response operations.
- Coordinate air operations for emergency response and damage assessment.
- Conduct safety assessments including residences, bridges, governmental and industrial facilities.
- Implement evacuation / movement of victims for short term sheltering or voluntary evacuation from the impacted area.
- Execute patient transport.
- Establish public health guidelines and messaging (food, water, vector control, food and water quality inspection and surveillance).
- Conduct mass fatality operations.

5.3 State of Oregon Priorities

Within the first 24 hours: Situational awareness will be immediately impacted and progressively reduced as communication systems fail. The State EOC would immediately be activated and all available staff assigned duties to support the state-level response.

A Gubernatorial Proclamation must be promptly drafted, though the Governor may initiate this process by making an emergency assessment and verbal proclamation and then request a Presidential Declaration.

Prescribed messaging must be modified for the circumstance as much as possible and released on all available communications media. For example tsunami evacuation notices, airspace restrictions, general guidance to populations regarding safe and unsafe actions, precautions for natural gas, etc.

Cascadia Subduction Zone Catastrophic Response Plan

5. Mission

Amateur radio contact must be established throughout the state as quickly as possible. The statewide situational picture must be developed by any available means. Self-assessment by every state agency must be conducted and reported. A total agency assessment will take days; but an initial assessment of personnel, major operational nodes and initial actions should be reported in the first 24 hours.

The State EOC will submit pre-scripted mission assignments requesting pre-identified response resource shortfalls from the Federal Government, EMAC, NGO organizations and other assistance options. The State EOC staff must begin preparing to expand quickly and also to host a large contingent of federal resources.

The Adjutant General will name an Oregon National Guard Joint Task Force Commander who will begin assembly operations. An Aircraft Control Center must be established immediately and planning for flights to the coastal counties initiated. Coordination with media outlets likely to request flight authorization into the impacted areas must commence within the first hours. Rotary air flights must expect to push selected resources (medical, communications, and logistical liaison) to establish logistical support & refueling sites and will conduct rescue, relocation, patient transfer, supply, roadway reconnaissance and search missions. The first flights must occur within 24 hours of the incident, based on flight conditions. Coordination with the FAA, FCC and USCG must begin strong and get stronger over time.

Priorities for key agencies need to be established early and implemented aggressively. For example Transportation will want to establish the status of key lifeline roadways and identify priority sites where refueling from outside sources will be required. In addition, they will want to develop initial guidance for US DOT operations if all communications are lost for a period of time. It is extremely likely that all state agencies will be called upon to provide assistance.

Due to the likelihood communications will be extraordinarily limited after the first 24 hours; state agencies must set the initial operational priorities for their federal partners within the first 24 hours. These federal partners will then be able to continue a 'coordinated' response operation absent direct communications with state agencies.

FEMA Headquarters will likely establish initial operations based on their contingency planning. For additional, detailed responses and courses of action, see section 6.2.2.

Following a major Cascadia Subduction Zone earthquake and resultant tsunami the following State response priorities will be (but not limited to):

5. Mission

- Public information and warning – validate and provide internal and external public messaging.
- Operational coordination across multiple jurisdictions and emergency management operations, from local jurisdictions through federal responders.
- Situational assessments – establish a common operating picture and get necessary situational data to enable priority decision making.
- Establish alternate communication pathways with State agencies, counties, and FEMA.
- Establish geographical response and recovery areas within the State for response and recovery operations.
- Coordinate mass search and rescue operations in multiple geographic areas.
- Establish and maintain interoperable (operational) communications.
- Establish logistical bases and staging areas to provide basic sustenance and shelter capacity.
- Facilitate debris clearance and disposal and provide expert consultation to local jurisdictions.
- Prioritize emergency power and generator re-fueling and establish fuel lines of supply jointly with fuel vendors.
- Restore and sustain essential services (public and private).
- Supply emergency transportation, water, sanitation, and medical supplies / needs for response organizations.
- Establish air operations for emergency response and damage assessment.
- Establish lines of supply: air, sea, rail, and roads.
- Coordinate statewide requirements for public utility repair materials such as poly sewer pipe, temporary pump stations, road culvert, etc.
- Conduct safety assessment (threats and hazard identification).
- Provide safety and security to support emergency response organizations.
- Execute patient evacuation and movement.
- Facilitate implementation of health and medical services in unusual circumstances, provide pharmacological support, assist with medical security and implement patient transport plans.
- Determine requirements for and coordinate delivery of engineers and similar experts to conduct structural evaluations, including the academic community.
- Conduct and support mass fatality operations in coordination with the State Medical Examiner.

Cascadia Subduction Zone Catastrophic Response Plan

5. Mission

- Support mandatory and self-evacuations, including sustenance, nominal shelter materials, childcare needs and set up evacuation business operations to control traffic during response and initial recovery operations over roads with reduced capacity.

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Plan Execution

This section describes the execution of the coordinated local, State and Federal response.

6.1 Senior Leaders Intent

The Governor of Oregon expects all available state personnel to function jointly in an effort coordinated through the State EOC to promptly and effectively establish response and recovery activities in support of the impacted jurisdictions. This includes direct response, coordinating activities, requesting augmentation and assistance, and directing the activities of federal responders.

To ensure that the State and Federal incident objectives, priorities, and operations align for the effective allocation, integration, and use of resources at the field level, it is the senior leaders' intent to rapidly establish a Unified Coordination Group (UCG), using Incident Command System concepts and principles consistent with NIMS, to achieve the following:

- Ensure / protect responder and public health and safety, and to save and sustain life;
- Stabilize the situation;
- Provide for basic human needs to include: food, water, shelter, and emergency medical care and services;
- Minimize damage to and protect property;
- Restore and stabilize critical infrastructure and key resources;
- Support reentry, repopulation, long-term recovery, and future hazard mitigation.

Senior Leadership intends for the successful end state of response operations following a catastrophic Cascadia Subduction Zone earthquake and resultant tsunami to have achieved the following:

- Complete all lifesaving operations;
- Stabilize essential infrastructure;
- Re-establish life support functions, and;
- Complete the transition to long term recovery.

6.2 Concept of Operations

The concept of Operations described in this section is applicable from the period immediately after the earthquake and 60 days after the earthquake (E to E+60 days). Although some activities included in the operation may extend beyond this timeframe, (particularly recovery related activities which are only touched briefly upon in ESF-14). The plan also does not include preparedness activities that take place prior to the earthquake and tsunami. The need for enhanced and funded community preparedness and caching of supplies is described in the Cascadia Subduction Zone Plan - County Response Information Annex.

6.2.1 General Sequence of Response

The operational time-frame reflects three phases during the first 60 days after the earthquake:

Immediate impact: E to E+72 hours.

Sustained response: E+72 hours to E+14 days.

Relief: E+14 days to E+60 days.

For purposes of the operational time-frame, activities occurring after the 60-day period (E+60) are described as long-term recovery. Due to the immense scale of this event, this time period will be identified when the following conditions occur:

- Response missions, such as life-safety and property protection, diminish and conclude.
- Stabilization and reconstruction activities increase and become the focus of operations.
- The transition of activities back to local government accelerates.

However, the transition from response to recovery is gradual and cannot be defined by specific timeframes.

6.2.2 Activation

The activation of the joint local/ State/ Federal response is summarized in this section.

Local, State and Federal Operations Centers

The earthquake and resulting tsunami will result in the immediate activation of local and State command coordinating facilities including:

- The State Emergency Coordination Center located In Salem, Oregon.

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- EOC's in counties, tribal nations and cities affected by the earthquake and tsunami and by unaffected areas of Oregon from which resources may be needed.
- Other local, NGO, and private sector EOC's.
- Agency Operation Centers (AOCs) of all State agencies and departments with the response roles as stated in the Oregon EOP and corresponding ESF's. It is recognized that many State facilities within the impacted area may be unavailable due to structural damage and damage to transportation infrastructure.

This catastrophic earthquake / tsunami also results in the immediate activation, or elevated levels of activation of all DHS command coordinating facilities, including:

- FEMA Region X – RRCC
- FEMA National Response Coordination Center (NRCC)
- FEMA RRCC's in unaffected area
- DHS National Operations Center
- The regional and national operating centers of:
 - Other DHS components, including those of the U.S. Coast Guard (USCG);
 - Other Federal Agencies, including entities with coordinating, primary, and support roles within Emergency Support Functions (ESF's) defined under the NRF;
 - DoD, including U.S. Northern Command, Joint Director of Military Support, and the National Guard Bureau;

FEMA Region X will deploy a liaison to the Oregon ECC in Salem upon request, but in an event of this scale, likely immediately upon the State ECC activation. If possible based on conditions, within 24 hours, FEMA will deploy an Incident Management Assistance Team (IMAT) to the State ECC to initiate coordination of Federal support.

Unified Coordination Group (UCG)

Joint State / Federal operations will be conducted under the leadership of a Unified Command Coordination Group in accordance with Unified Command principles. The Unified Coordination Group (UCG) will facilitate effective utilization and integration of State and Federal resources through unity of effort and will set priorities and objectives through use of a joint Incident Action Plan (IAP). The Unified Coordination Group will be established within 24 hours of the earthquake, and located at the Oregon ECC in Salem, and then transferred to the Joint Field Office (JFO) when FEMA and Oregon Emergency Management establish that facility.

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6.2.3 Response Strategy

The overarching strategy to complete the mission is to execute an integrated approach in which response capabilities are increased as access into the most severely impacted areas is obtained. The means of access to impacted areas will include the use of available land routes, air transport, maritime transport or a combination thereof.

As access is gained, resources will be moved into affected communities to support life-saving activities, including local efforts for firefighting, public safety, sheltering, commodity distribution, and medical treatment. The Unified Coordination Group will lead a joint State and Federal operation that will provide support for field level incident response through integration of State and Federal resources. The effective staging, movement, and support of resources are critical aspects of this structure. Major components are as follows:

JFO (Joint Field Office): Joint State / Federal operations will be initiated at the State ECC. FEMA and Oregon Emergency Management will establish a JFO (Joint Field Office) as close as practical to impacted areas within days of the earthquake and corresponding tsunami.

Area Field Offices (AFO's): FEMA and the State will also establish AFO's (Area Field Offices) in each of the affected counties (depending on the availability of suitable and sustainable undamaged space), to provide forward support for State / Federal coordination. FEMA and the State will establish AFO's as available facilities can be accessed and safety inspections can be conducted.

Response Organization: The response strategy will be implemented using a combined geographic and functional organization, one allowing for decision making at the lowest level possible and to facilitate integration of resources at the field level. The actual organization will be determined by the Unified Coordination Group based on the specifics of the incident(s).

Federal Logistics: The Federal logistics support system includes a combination of mobilization centers and staging areas to receive and distribute response resources. It is understood the National Response Framework Catastrophic Incident Supplement will be implemented immediately and provide an initial "push" of resources throughout Oregon. Specific resources for State agencies and individual counties are located in the Individual ESF Annexes and the Cascadia Subduction Zone County Response Information Annex of this plan.

Other Staging Areas and Logistics Support Facilities: It will become necessary for OEM along with responding State agencies to establish staging areas for different mission tasks e.g., firefighting, search and rescue, medical response, and DMORT teams. Staging areas in the vicinity of the impacted areas are

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identified in the Mass Commodities Distribution annex of the Oregon EOP. It is recognized that due to the severity of this incident that alternate staging areas and logistics support facilities may need to be determined rapidly to meet the needs of response. Location of these alternate staging areas and logistics support facilities will be determined in coordination with local government officials.

Transportation Infrastructure, Utilities, Housing, Lodging, and Retail Services:

Damage will greatly reduce the capabilities to support the influx of response teams, assessment teams, repair crews, shelter workers, and others deployed to severely impacted areas. This will necessitate the establishment of base camps to provide logistical support for the deployment of responders into the impacted areas. Location of these base camps will be determined and in coordination with local government officials.

Community Points of Distribution (C-PODs): FEMA and OEM will coordinate with local government officials to establish sites for CPODs. Some C-POD locations have been pre-established by Oregon counties. C-PODs will be utilized for the distribution of critical supplies, such as water, food, tents, blankets, hygiene, sanitation, and medical supplies, to the affected populations. Local government officials will make the determination regarding location of C-PODs.

Access to Impacted Areas: The joint State and Federal operation will emphasize the reestablishment of the transportation system to facilitate the movement of resources into impacted areas from Federal and State staging areas. Lines of supply and transportation will include:

- **Priority land routes** will be dependent on damage and or closure of key bridges, freeways, and local arterial routes.
- **Air routes**, utilizing rotary wing aircraft, and established helispots, helibases, heliports, regional airports, and temporary sites for landings. Upon repair and assessment of airports and airfields in impacted areas, it is anticipated fixed wing aircraft could augment supply and transportation.
- **Water routes**, utilizing surviving State of Oregon agency marine and riverine assets, USCG vessels, U.S. Maritime Administration (MAEAD) vessels and vessels from the Department of Defense (DoD).

6.2.4 Objectives for Response

For the response to this earthquake / tsunami, the objectives for the three phases of response (immediate impact, sustained response, and relief) are summarized below:

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Immediate Impact: E to E+72 Hours

Establish Interoperability Emergency Communications: Deployment of emergency communications assets will be necessary to support the incident response organizations as well as the reestablishment of regional and State communications systems.

Save Lives and Protect Public Safety: Fires, structural damage, and search and rescue will require extensive resources. Law enforcement resources will be necessary to conduct life-safety, secure critical infrastructure and supplies, and maintain public order.

Gaining state-wide situational awareness of response needs is critical to achieving this objective. County Emergency Managers and responders will provide as soon as possible (via the best operable communications system) the extent of damage according to priority. The report should include but not be limited to the following information:

Priority I (within the first 6 hours):

- Locations of collapsed structures with trapped persons.
- Status of communications systems to include broadcast media.

Priority II (as soon as information is available):

- Status of transportation infrastructures, i.e., bridges, roads, etc.
- Locations of major firefighting efforts and out-of-control fires.
- Locations to provide critical medical assistance.
- Known hazardous material releases and its impact on the public.
- Operational capability of critical facilities, i.e., hospitals, sewage and waste stations, electrical substations, etc.
- Public safety needs, i.e., security, traffic control, and law enforcement.
- Public information needs.

Provide Medical Care: Injuries will far exceed the available resources for medical treatment. It will be necessary to move medical personnel and supplies into impacted areas in order to supplement local medical response resources and to evacuate patients who cannot be treated appropriately at the local level. Medical supplies and pharmaceuticals will be used up quickly and will need resupply.

Establish Lines of Supply and Transportation: The movement of people and resources into the impacted areas will be significantly affected by the damage to the transportation infrastructure. It will be necessary to establish and maintain land, sea, and air routes in order to move first responders, engineers, shelter-

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workers, and other resources in to the impacted areas and to move the injured and evacuees out of the impacted areas.

Sustained Response: E+72 Hours to E+14 Days

Coordinate the flow of out of state materials, supplies and personnel. The scale of this event will require enormous out of state assistance. It will be necessary to coordinate the requests, the arrival and distribution of materials, supplies and personnel to various State staging areas. Strategic airlift resources arrive at staging areas and are offloaded to air transport, including USCG, CBP, and DoD rotary wing aircraft. Maritime ship-based staging and operations may be established to deliver temporary fuel, water, and ship based care. The USCG leads port reconstitution efforts to re-establish port continuity.

Reestablish the Medical and Public Health Systems: Damage to hospitals and smaller health care facilities, infrastructure providing power, water and sanitation to facilities, assisted living facilities, laboratories, medical suppliers, and injuries and dislocation of trained personnel will limit in-State capabilities to treat the injured, medically fragile, sheltered populations, and those located in long-term facilities. It will be necessary to establish authorized alternate care sites and other mechanisms for treatment and care. Improving the condition of hospitals and the ability of public health systems to operate within the impacted areas will be a priority.

Provide Care and Shelter for the Displaced Population: Requirements for sheltering will exceed potential shelter capabilities. Structural damage to pre-identified shelters will increase demand. Additional shelters, feeding operations, and the continual distribution of water and other resources will need to be implemented to sustain the population. It will also be necessary to care for thousands of displaced and abandoned animals.

Reduce Hazards to the Population: Resources will be deployed to assess, respond to, mitigate, and eliminate threats to public safety, including hazardous materials spills and releases, debris, damaged structures, crime and civil unrest and potential public health threats.

Conduct Mass Fatality Operations: Fatalities will greatly exceed local mass fatality response capabilities. Additional resources and personnel will be needed to recover, transport, store and process the remains of the deceased.

Relief E+14 to E+60 Days

Provide Interim Housing for the Displaced Population: Damage to housing will prevent residents from returning to their homes. This will necessitate the development of interim solutions that can meet the needs of the displaced

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population until permanent housing can be reestablished. Solutions may involve transportation and temporary resettlement out of the impacted areas.

Restore Infrastructure and Public Services: Prioritization of services, including repairs and the identification of services to temporary facilities will be necessary. Coordination between roadway repair and other infrastructure services will need to occur to maximize restoration.

Establish Temporary Transportation Capabilities: Temporary transportation mechanisms will be necessary to overcome damage to transportation infrastructure, particularly for temporary bridges and the rail system that will be critical to the economic recovery of the area.

6.3 Courses of Action (COA)

For the purposes of this document, a “Course of Action” is defined as the sequence of activities that an entity may take to accomplish a mission. Multiple COA may be available to accomplish a mission. COA are in general State and Federal alternative actions that will be taken to support local response operations. Considerations are presented for each COA. Given incident-specific circumstances and the necessity for coordination with State and local governments to identify required resources, it is likely that multiple COA will be implemented simultaneously to carry out the mission.

Detailed Agency and County specific priority, assets, capabilities, operational challenges and support shortfalls and needs information are described in the ESF annexes and the Cascadia Subduction Zone County Response Information Annex.

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6.3.1 COA for the Objectives in the Immediate Impact Phase

E to E+72 Hours

Objective: Establish interoperable emergency communications

Course of Action: Establish State and Federal coordination

Task: Activate Joint Federal and State Communications Unit.

- Federal and State communications managers are generally responsible for maintaining respective channel plans.

Task: Activate Joint Federal and State frequency plan and designate on-scene frequency managers.

- Refer to Oregon Statewide Communications Interoperability Plan and the FEMA Region X 2011 Emergency Communications Plan-State of Oregon Annex for frequency and channel plan information.

Course of Action: Deploy land-based communications resources

Task: Coordinate the deployment of land-based Federal mobile communications resources to provide support for emergency communications capabilities. Initial deployment to State ECC, Federal ISB(s), national logistics staging areas, and operational area EOC's (County EOC's).

- MERS are mobile, specifically trained, land based FEMA communications assets.
- Self-sustaining, modular, and can be tailored to incident-specific conditions.
- Potential sources include: MERS units from all six detachments, DoD communication teams, and other Federal agencies.

Limitations/Challenges:

- Best-case timeframe for MERS transportation and setup is 72 hours, movement to field locations constrained by damage to infrastructure.

Task: Coordinate the co-use and deployment of surviving State agency communications equipment with local governments as an interim solution to get situational awareness, establish communication, and begin processing requests for assistance within impacted areas.

<p>Course of Action: Support temporary restoration of public sector communications networks and public warning / alert systems.</p> <p>Task: Deploy resources to support reestablishment of Public Safety Answering Points (PSAP's), use of mobile 9-1-1 systems.</p> <ul style="list-style-type: none">▪ State systems have significant redundancy and backup capability. <p>Task: Deploy assets to support backup to the following systems, including towers and transmitters: State ECC, OSP, etc.</p> <p>Limitations/Challenges:</p> <ul style="list-style-type: none">▪ Will require close coordination between MERS / State ECC, most systems are line of site, and towers require power to operate.
<p>Course of Action: Develop restoration prioritization for critical private communications systems and support reconstitution.</p> <p>Task: Prioritize restoration of private-sector communications systems upon which critical functions are dependent, such as emergency functions, health and sheltering, and private sector financial systems.</p> <ul style="list-style-type: none">▪ Improve ability to reach public with information regarding incident.▪ Increase coverage of public information messages. <p>Limitations/Challenges:</p> <ul style="list-style-type: none">▪ Full system repair and restoration requires weeks to months.▪ Rapid restoration of the financial transaction system is critical to expediting recovery.
<p>Course of Action: Deploy communications resources to support State and local system restoration efforts.</p> <p>Task: Prioritize communications systems restoration in areas critical for emergency communications and continuity of government operations.</p> <ul style="list-style-type: none">▪ State ECC and local governments prioritize and implement repair and restoration operations.▪ Mutual aid and other in-State resources may be available to assist in this task. <p>Limitations/Challenges:</p> <ul style="list-style-type: none">▪ Radio transmitter/repeater sites will be non-functional.▪ Limited operational State and local microwave-based communications will be overloaded with very high volumes of emergency responder traffic. <p>Task: Deploy mobile / deployable assets (e.g., mobile towers, satellite telephone systems) and repair / installation teams.</p>

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Limitations/Challenges:

- Damage to infrastructure may delay delivery of equipment teams. Teams will require logistical support.
- Amateur Radio Emergency Service (ARES)/Radio Amateur Civil Emergency Service (RACES) will be operational but may be delayed in deployment due to hazards and roadway/bridge damage.
- Limited mass battery charging capability will restrict responder communications.

Course of Action: Coordinate delivery of private-sector communications capabilities to residents.

Tasks: Facilitate private sector repair efforts to enable communications between residents and responders / local governments. Provide temporary means to reestablish phone service for residents.

- Private-sector communications and power company repair efforts are coordinated through Oregon PUC liaison in the State ECC.

Objective: Save lives and ensure public safety

Course of Action: Gain situational awareness on conditions and safety of impacted areas and needs of impacted communities.

Task: Establish air operations for emergency response and damage assessment.

Limitations/Challenges:

- Landslides and earthquake damage will make all roads over the coast range and many in the I-5 corridor to be impassable. Railroads will be severely damaged and seaports will either be destroyed or severely damaged. Because of these impacts, air operations will be critical to:
 - Aerial assessment of damages
 - Use aerial repeaters to enhance communications in damaged areas.
 - Provide aerial messaging to isolated areas.
 - Receive and deliver commodities into the affected area.
 - Insertion of teams of responders and personnel to provide life-saving assistance to impacted areas.
- Primary airport in Oregon surviving the event will be Robert's Field in Redmond. It is designated as the Federal incident Support Base (ISB).
- Major airports in the I-5 Corridor sustain some structural damage, but could be made operational fairly quickly.
- Coastal airports are all heavily damaged; Newport and Port Orford airports have some resiliency and may be suitable for smaller aircraft after an assessment of their ability.
- Damaged roads that are impassable for weeks or longer will impede the typical ground damage assessments.

Task: Utilize information acquired from communications with impacted areas, on-the-ground responders, geospatial data and modeling, aerial observation and other means to gather necessary information to ensure safety and efficient response.

Limitations/Challenges:

- Information from all sources needs to be shared, analyzed and coordinated.

Task: Conduct damage and safety assessments.

Limitations/Challenges:

- Impacts over a large area of Western Oregon cause an immense amount of buildings, roadways, bridges and hazardous material storage areas that are significantly damaged and require inspection.
- Limited number of in-State, trained building inspectors certified in Safety Assessment would be quickly overwhelmed.
- Prioritization of these limited assets would be paramount.
- Safety and damage inspectors will be hampered by transportation challenges in their ability to conduct assessments, or will simply be unable to report to work.

Course of Action: Deploy State teams and assets to assist County response.

Task: Receive requests for assistance from impacted areas and quickly but safely deploy available State and mutual aid teams and assets to assist.

Limitations/Challenges:

- Deployment before support systems are in place will strain limited resources.
- Communications need to be established to get correct resources and personnel to where they are most needed.
- Prioritization of limited State teams and assets needs to be clear.
- Ensure available transportation and safe, accessible routes to deploy responders.

Task: Reduce hazards: Suppress fire, contain Hazardous Materials

Limitations/Challenges:

- This event will have an enormous impact on the firefighting and rescue operations of the State. Of the 419 fire stations in Western Oregon the earthquake and resultant tsunami will have the following impact based on the analysis (50th & 90th percentile case):
 - 200-253 completely destroyed
 - 0-5 severely damaged
 - 6-8 moderately damaged
 - 27-102 slightly damaged
 - 51-186 with no damage
- Countless fires statewide ignite after the event; in urban areas, dozens of large

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- fires could merge into conflagrations destroying hundreds of blocks.
- Use of significant forest fighting capacity in the state will be needed but may be limited by jurisdictional authority.
- Alternate fire suppression water sources and pumps will be needed to suppress fires.
- There are approximately 721 HAZMAT sites identified west of the Cascades. It will be assumed that there will be a large number of hazardous material incidents occurring after disaster event.
- Responders dealing with HAZMAT incidents will reduce the response force for fire and USAR missions.

Task: Conduct search and rescue operations.

Limitations/Challenges:

- Based on the HITRAC CSZ study, an estimated 25,000 people are injured as a result of collapsed structures, with a large portion of those people needing SAR.
- USAR needs after the disaster will exceed the local resources. USAR resources are concentrated in the Willamette Valley and will likely be unable to reach other impacted areas of the State.
- USAR resources will simultaneously be used for firefighting, hazardous materials, and emergency medical services (EMS) response and may not be available.
- Coordination of search and rescue aircraft from CAP, DHS and DoD to augment State resources will be needed.

Task: Provide safety, security and support to emergency response operations.

Limitations/Challenges:

- Security (public safety and law enforcement) within the affected areas is critical to the safety of first-responders to conduct firefighting, urban search and rescue, and other emergency response operations.
- Emergency responders will need access to resources (e.g., fuel, transportation, food, shelter) to perform operations.
- Supporting emergency responders includes monitoring their health and mental status and collecting injury and/or exposure information.
- To ensure the safety and security of responders, deploy available law enforcement to secure critical infrastructure, provide security at base camps, logistics staging areas, shelters and feeding areas, pharmaceutical stockpiles, JFO, EOCs and other mission critical sites.
- Deploy Federal, EMAC and Oregon National Guard teams to support local law enforcement operations.
- Use FEMA Individual Assistance Technical Assistance Contractors and private security to support shelter security operations.
- Use volunteer organizations such as Citizen Corps and ORVOAD to provide resources and assistance to responders (e.g., feeding and other tasks that would free up responders to focus on primary missions).
- Requires clear direction and leadership over a large force of responders from

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different jurisdictions, agencies and states.
Course of Action: Coordinate resources to support local directed evacuation operations.
Task: <u>Adopt an emergency management structure that manages resource shortages.</u>
Limitations/Challenges: <ul style="list-style-type: none">▪ Need to prioritize and manage competition for limited resources region wide.▪ Unified Coordination Group (UCG) will be implemented to coordinate the State and Federal support to the impacted jurisdictions.▪ Need to establish priorities and unity of effort among all levels of the emergency response community.
Task: <u>Provide State Resources and coordinate deployment of Federal resources to conduct waterborne / airborne evacuation including: rotary and fixed wing aircraft, mass transportation assets such as busses, and ocean going and riverine watercraft.</u>
Limitations/Challenges: <ul style="list-style-type: none">▪ Situational assessment of roadway, aerial, and water conditions to ensure safety of responders and evacuees.▪ Evacuation methods selection will require consideration of vehicle ability, population accessibility, and urgency.▪ Coordinate support of commercial vehicle evacuation including: busses, charter boats, and commercial aircraft.
Task: <u>Support mandatory and self-evacuations, including meeting logistical needs of evacuees.</u>
<ul style="list-style-type: none">▪ Evacuation may be limited due to non-passable roadways and evacuees with stranded vehicles.▪ Fire conflagrations in urban areas force the evacuation of thousands within the first 72 hours.▪ Damages across Oregon are widespread; areas they are fleeing to may not have adequate support for influx of evacuees.▪ Evacuees will not have supplies or shelter to be self-sufficient, ESF-6 coordination is paramount.
Course of Action: Validate and provide internal and external public messaging.
Task: <u>Deliver coordinated and effective messaging about the disaster to the public and responders in impacted areas.</u>
Limitations/Challenges: <ul style="list-style-type: none">▪ Warning systems will be seriously impaired by power and phone outages.▪ Established Joint Information Centers (JIC) may not be accessible.▪ Limited external public messaging systems.▪ Many warning systems and methods used locally are not interconnected between neighboring jurisdictions.

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- Mobile or Satellite JICs may need to be established.
- State Public Information Officers (PIOs) will be overwhelmed and unable to handle the massive ESF 15 traffic.

Course of Action: Establish system to support and sustain incident response personnel within the affected area for potential staging and base camp locations.

Task: Confirm locations of base camp sites. Activate base camp support contracts. Activate base camps to support thousands of State, Federal, and other responders (i.e., USAR, firefighters, law enforcement officers, DoD and National Guard, and incident management staff).

Limitations/Challenges:

- Consider combining base camp support for similar State / Federal functions.
- Hotel / motel rooms will be limited due to displaced population.
- Establish alternatives to temporary base camps including: cruise ships, DoD and MARAD vessels, and college dormitories.
- Accessible, flat space will be in high demand as will fresh water and sanitation.
- Safety and security of these locations needs to be addressed to protect responders and survivors.

Objective: Provide Medical Care

Course of Action: Provide Acute Care – Hospital/EMS

Task: Assess safety of surviving hospitals and deliver immediate care to survivors with staff and supplies on hand.

Limitations/Challenges:

- **Hospital functionality** – Based on the scenario, Oregon is expected to have 1-9 hospitals with complete damage, 2-10 with extensive damage, and 10-25 with moderate damage. Every coastal hospital will either be completely or extensively damaged in this scenario. Most facilities in the Willamette Valley and Southern Oregon will suffer complete to moderate damage (HITRAC, September 12, 2011, p.161-168).
- Demand will exceed capabilities; the system is currently taxed under normal conditions.
- Shortages will exist in hospital equipment, including beds and prescription medications affecting patient care.
- For the remaining hospitals to continue operation, they will immediately need water, fuel, pharmaceuticals and personnel.

Task: Deploy available Disaster Medical Assistance Teams / National Disaster Medical System (NDMS) resources, including Incident Response Team and associated equipment caches.

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Limitations/Challenges:

- Standards of care may require modification due to the number of injured and the lack of care providers and supplies. Many of the injured may not receive treatment for more than 72 hours due to isolation.
- On-hand medical supplies, including blood within Oregon, will be exhausted within 48 hours. Re-supply will be constrained by limited roadway access. Immediate rotary wing air replenishment of medical supplies will be required to isolated care locations.

Task: Coordinate with local emergency managers and hospitals to identify location assignments for Oregon Disaster Medical Teams (ODMT), National Disaster Medical Teams (NDMS), Federal Medical Station (FMS), and Medical Reserve Corps (MRC) deployment of volunteers.

Limitations/Challenges:

- Volunteer trained medical responders will be scattered and isolated due to the event.
- Many local EMS personnel will be diverted to fire / rescue.

Task: Provide Healthcare System Liaison communications to and from Regional Coordinators for clarification of issues/status of hospitals, EMS and other components of the regional healthcare system.

Limitations/Challenges:

- Obtain regional SITREPs to include specific information (e.g., employee absentee rates in hospitals);

Course of Action: Establish field treatment sites for triage, care, holding and evacuation.

Task: State deploys disaster medical system resources, including: EMS Field Treatment sites, Oregon Medical Teams, Mobile Field Hospitals, Oregon Medical Reserve Corps, Federal Medical Stations, and DoD field hospitals.

Limitations/Challenges:

- Triage of the injured will be required.
- Standards of care may require modification due to the number of injured and the lack of care providers and supplies.
- Location of field sites must consider trade-off between proximity to casualties and support available such as utilities and transportation access for staff and evacuees. Utility services must be available. Collocation of field sites near functional medical treatment site to augment capability is desirable.
- Many of the injured will require air evacuation to more capable or less crowded facilities.

Course of Action: Execute Patient Evacuation/Movement

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Task: Support deployment of Ambulance Strike Teams and Disaster Medical Support Units. Use contracted ambulance services where available to move patients to field treatment and air evacuation sites.

Limitations/Challenges:

- Effectiveness will be constrained by limited roadway access.
- Ambulances and busses will likely require security escorts to move safely through heavily impacted areas.
- Establishment of ambulance fuel distribution system support is critical.
- Receiving points for evacuated patients must be identified prior to movement.
- Patient tracking systems among health care system components are currently not integrated and could complicate movement between facilities.
- Limited ability to coordinate and control the flow of patients requiring movement.
- Many roads, highways, and bridges will be impassable in the first few days after the earthquake due to damage and debris on the roads, hampering patient movement.

Task: Conduct air evacuation of patients via fixed and rotary wing aircraft.

- Request NDMS patient movement support system be activated to support moving patients to non-impacted medical facilities in unaffected areas and out of State.
- Will allow for a greater quality of care outside of the impacted areas.

Limitations/Challenges:

- Requires specially configured aircraft.
- Rotary wing aircraft will be low-density, high demand resource.

Task: Conduct waterborne evacuation.

- Coordinate use of specialized DoD vessels to conduct waterborne evacuation.
- Can move large numbers of patients from impacted areas. Vessels can provide access to isolated areas that are not open to ground traffic.
- Contract commercial craft to evacuate non critical care patients.

Limitations/Challenges:

- Most commercial vessels such as ferries and harbor cruise ships are not configured for patient movement. Piers and landings may not be accessible.
- Much of the Oregon Coast lacks deep harbors capable of handling large vessels.

Course of Action: Provide Chronic Care – Medical Special Needs, Mental Health
<p>Task: Provide for large numbers of chronically ill survivors without access to pharmaceuticals or facilities that keep them healthy.</p>
<p>Limitations/Challenges:</p> <ul style="list-style-type: none">▪ Initially, 40% of Medical Special Needs (MSN) patients will require assistance immediately with an additional 40% requiring care within 72 hours and the remaining 20% of the population requiring care within the first week.▪ Increased burdens on an already taxed medical system would result as “healthy” chronically ill survivor health deteriorates due to lack of treatment.▪ Local jurisdictions will require significant amount of State and Federal resources to care for the large numbers of survivors with special medical needs.▪ Requests for Strategic National Stockpile (SNS) assistance will be needed quickly post-event.▪ Coordination with locations/facilities out of the impacted areas or out of the State will be necessary for supplies or evacuation of chronically ill.
Course of Action: Maintain safety of water, vector control, food and water quality inspection, and sanitation to protect public health.
<p>Limitations/Challenges:</p> <ul style="list-style-type: none">▪ Due to the extent and scale of the disaster, including isolation of communities, it is unclear if local health departments, supported by mutual aid and the Oregon Health Authority (OHA) and the Oregon Department of Agriculture (ODA) have sufficient resources to initiate evaluation and response.▪ Veterinary care capacity is inadequate; vector monitoring and public health support staff will exist but may be tasked with other missions.▪ Dead livestock will need disposed of and surviving livestock unable to be cared for onsite will need to be moved or euthanized.▪ State will coordinate provision of assistance to potable water/wastewater temporary measures and system repair with private companies and city/regional government public works.
Course of Action: Provide medical treatment at shelters
<p>Task: State deploys Medical Reserve Corps and available medical assistance staff to established shelters.</p> <ul style="list-style-type: none">▪ Will require resource coordination with ESF-6 and ESF-7 to determine location of shelters and allocation of resources.

Objective: Establish lines of supply and transportation

Course of Action: Establish regional priority land routes for responder transportation.

Task: Coordinate with locals and State ESF-1 agencies on designation of priority road and rail routes based on: initial assessments of roads, bridges, and railways, location of National Logistic Staging Areas and routes for incoming resources.

Limitations/Challenges:

- Establish most efficient means of moving resources into the affected area. Establish control over routes to ensure priorities are addressed. Oregon Department of Transportation's initial assessments may take 72 hours or more.
- Critical routes may require temporary modification of roadbed alignments onto adjacent land in order to navigate around debris and obstacles.
- Equipment, personnel and material necessary to re-establish roadways are in isolated areas throughout the State.

Task: Deploy ODOT and other roadway/bridge assessment teams.

Limitations/Challenges:

- Challenges for supporting teams with lodging, fuel, and maintenance of equipment.
- Insufficient aircraft available to do aerial assessments or insert teams into affected areas.

Task: Establish transportation priorities for open routes.

Limitations/Challenges:

- Clearance of existing traffic may delay use for responders.
- Structural damage may limit use of major routes into most heavily impacted areas.
- Multiple critical operations will all require the use of limited roadways.
- Stability of roadways may limit the type of vehicles able to respond.

Course of Action: Clear debris from priority routes.

Task: Oregon Department of Transportation initiates highway debris removal operations using in-region maintenance resources, onsite contractors, and other available contractors.

Limitations/Challenges:

- An unknown but assumed immense amount of debris will be generated from damaged buildings and landslides.
- FHWA, USACE, and DoD can access out of region resources and contractors. Out of region resources may take up to a week to arrive.
- Many landfills will not be able to handle the amount of debris, and debris removal efforts will require an additional amount of capacity from other

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locations.

- Multiple programs and personnel are available at various local, State and Federal agencies, as well as from volunteer organizations, for the removal of debris from roadway facilities following earthquake event. Coordination of this effort will require increased coordination.

Task: Coordinate Federal assistance to ensure State priorities are met. Federal assistance could come from U.S. Army corps of Engineers (USACE) Planning and Response Teams (PRT's), USACE contractors to conduct removal, staging, reduction, and transport to disposal sites, DoD heavy equipment assets e.g., U.S. Naval Construction Force Units.

Limitations/Challenges:

- Team deployment limited by damage to infrastructure.
- Density in urban areas may limit staging / reduction sites.
- Removal / disposal of automobiles will require special handling.

Course of Action: Establish air transport system.

Task: Establish priorities for use of aerial assets such as: movement of first responders, critical supplies, extraction of injured and situational awareness.

Limitations/Challenges:

- Airports, working with the Federal Aviation Administration (FAA), initially divert incoming air traffic and hold planes on ground until damage to critical operational equipment can be assessed. Crews immediately attempt to assess damage. Most experience power disruptions and have to shift to emergency power generators for critical equipment and operations.
- Rotary and fixed wing aircraft currently in State can be put to work immediately if airfields can safely meet the need.
- Aircraft, particularly rotary, will be a low density/high need asset in the early hours of this event. Priority of use will initially support immediate lifesaving operations.
- Fueling, maintenance, lodging for crews can be done outside heavily impacted areas.
- Coordination with private aircraft will need to be established.

Task: Establish control of airspace through: coordination with Federal Aviation Administration (FAA). Implementation of U.S. Air Force / Oregon Air National Guard Air Space Control Plan for control of military aircraft.

Limitations/Challenges:

- Transport into and out of heavily impacted areas is initially limited to rotary aircraft.
- Limited capacity of rotary wing aircraft limits their utility for movement of fire, rescue, and medical teams and equipment.
- Use of alternative sites for landing in damaged areas creates safety issues.
- Limiting non-mission essential aircraft in operational areas (news helicopters).

Task: Establish loading / unloading, refueling, and maintenance points for inbound rotary wing aircraft at Oregon Air National Guard bases and municipal, regional airports in the State.

Limitations/Challenges:

- Damage to navigation systems and runways at airports in Western Oregon may limit use until inspection and temporary repairs are made.
- Smaller airfields lack capability for offloading aircraft and have limited fueling and repair capacity.
- Many smaller airfields don't have control towers.

Task: Designate heliports; in heavily impacted areas to include pickup points for aerial transport of injured, sites capable of offloading supplies, and locations capable of safe landings/take off.

Limitations/Challenges:

- Will require coordination with local jurisdictions and all ESFs to ensure needs are met.
- Sites capable of being a helispot may be located away from established need (hospital, shelters, etc.). Assessment of viable heliports in impacted areas needs to take into account transportation to/from helispot.

Task: Coordinate with DoD rotary wing assets and U.S. Navy multi-helispot vessels to provide additional capacity for landing, fueling, and maintenance.

Limitations/Challenges:

- DoD assets unlikely to arrive until at least 72 hours into the event.

Task: Coordinate with FAA to establish assessment and use of Portland International Airport.

Limitations/Challenges:

- Identify priorities (e.g., movement of supplies in, movement of visitors and evacuees out).
- Coordinate and assist if possible FAA assessment of condition and capabilities of airports, and FAA determination of traffic flow at each airport.
- Air traffic control staff likely to be limited in number initially.

Course of Action: Establish water transport system

Task: Port owners will conduct initial assessment of their facilities. Priority establishment of ports on coast will be (from south to north, no priority) Coos Bay, Newport and Astoria due to their ability to handle larger vessels.

Limitations/Challenges:

- The ports are not in a heavy shake area and sustain limited damage. USCG conducts inspections of the ports and channel surveys while ODOT and

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contractors conduct inspections of port bridges and roadways. The ports can resume operations once they verify shipping safety. However, port operations have a heavy reliance on the power infrastructure, roads and railroads to transport offloaded goods to their destinations.

- Water transportation provides alternative of bringing significant quantities of supplies and evacuation of coastal areas if bridges and major routes are damaged.
- Tsunami damages to ports likely to be significant. Debris, damaged channels and “sloshing” generated by tsunami will slow re-establishment of ports.
- Condition of piers and wharves may limit use of facilities.
- Shallow depths limit use of large vessels in certain impacted areas.

Task: Coordinate response of DoD and other responding vessels facilitate evacuations, and transport first responders and supplies into impacted areas.

Limitations/Challenges:

- Puget Sound MARAD vessels can be deployed within 72 hours, but will likely be used in Washington State. U.S. Navy Vessels from San Diego can be deployed within 72 hours. MARAD and US Navy vessels can be used for power generation, production of potable water, medical treatment, transfer of fuel and housing for responders and or shelters for affected populations.
- Depending on global deployment, required vessels may be delayed.
- Coordinate local and state resources to utilize support from U.S. Navy assets such as amphibious assault vessels from San Diego if port facilities are too badly damaged.

Course of Action: Establish bulk fuel supply system.

Task: Implement Oregon Petroleum Contingency Plan to redirect in-state fuel supplies to first response activities.

Task: Assess condition of regional bulk fuel storage and distribution infrastructure.

Task: Coordinate with Private sector suppliers to activate national contracts with bulk fuel suppliers.

Task: Obtain waivers: environmental regulations (e.g., fuel production and use), transportation regulations (e.g., driver hours and weight limits) to allow for fuel deliveries to be expedited.

Course of Action: Establish fuel distribution network for response operations.

Task: In coordination with local governments and FEMA, establish priorities for fuel distribution such as: police, fire, and other first responders, hospitals, emergency care, emergency transport, ambulances, emergency operations centers, shelters, and generators for other critical facilities.

Limitations/Challenges:

- Hospitals have limited (24 hours) supply of generator fuel onsite. Fuel supply needs for emergency vehicles, EOC's, shelters, hospitals, and air/fuel requirements will all make demands on limited fuel stocks.
- Inability to deliver fuel to many areas of the state due to damaged infrastructure.

Task: Establish temporary sites for points of fuel distribution.

Limitations/Challenges:

- Transportation and State storage limited by damage to infrastructure. Distribution at retail outlets, local government facilities limited by power outages (pumps) and damage to facilities.

Tasks: Route delivery trucks directly where infrastructure conditions permit to essential sites with generators (e.g., hospitals, water and wastewater treatment facilities and pumping stations, fire and police stations, public works facilities, utility companies (e.g., power, natural gas), EOC's, and shelters. Many hospitals and local government agencies have in-ground and above ground fuel storage capacity.

Limitations/Challenges:

- Supply estimates of generated facilities will need to be known.
- Some locations have propane powered generators.

Task: Given damage to aviation fuel distribution network, direct aircraft to refuel outside the impacted areas.

Limitations/Challenges:

- Refueling outside the impacted areas will affect the re-routing of flight patterns.
- While unlikely, there could potentially be zero fueling locations west of the Cascades, with all aircraft refuel heading to Roberts Field in Redmond, or Kingsley Field in Klamath Falls. Air control and capacity to support that amount of aircraft is questionable.

Task: Secure fuel distribution sites.

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6.3.2 COA for the Objectives during the Sustained Response Phase

E+72 hours to E+14 days

Objective: Coordinate the flow of out of State materials, supplies and personnel.

Course of Action: Establish Lines of Supply and Transport.

Task: Identify surviving airfields west of the Cascades to serve as State Staging Areas

The FEMA Operations Sections in coordination with the State establishes Staging Areas to support local incident response at federal installations, airports and other mission capable facilities within the incident area for onward integration of teams and resources to support local response.

Limitations/Challenges:

- Using pre-established recommended State staging areas, quickly assess and make usable staging areas to receive Personnel and materials from Incident Support Base (see Mass Commodities Annex of the State of Oregon EOP for further mass commodities distribution information).
 - Incident Support Base (ISB) likely to be at the USFS Redmond Air Center due to:
 - Located outside of impacted area
 - Federally owned facility
 - Warehousing areas and unloading/loading equipment
 - Ability to house responders
 - State Staging Areas would be set up at operational Western Oregon airports as described in the Mass Commodities Annex of the State of Oregon EOP.
 - Rapid assessment of Western Oregon airports and airfields' ability to handle relief supplies is paramount.
 - Likely that air traffic control capacity would need to be brought from outside the State.

Task: Coordinate and prioritize Federal relief supplies and personnel being brought into the State.

Limitations/Challenges:

- Provide State Liaison(s) to ISB to coordinate State needs.
- Communication difficulties with impacted areas will limit effectiveness of delivery of relief.

Task: Coordination/communication with impacted areas on locations for distribution of supplies to survivors.

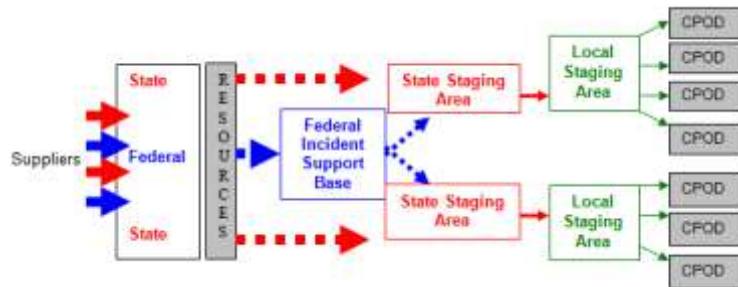
Oregon Counties are in the process of identifying Community Points of Distribution (C-POD) in their communities.

Limitations/Challenges:

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- The State ECC will be aware of some of these locations; the severity of this incident will likely impact identified C-PODs, and others will need to be identified rapidly to support pockets of isolated survivors.

Fig 7.2.5-1 Resource Distribution Operations:



Task: Begin flow of external resources and personnel into impacted areas.

Strategic airlift resources arrive at ISB and/or staging areas and are off-loaded to local and federalized ground and air transport, including USCG, CBP, and DoD rotary aircraft. The State and Federal Branch Directors coordinate with local EOCs to provide additional ground transportation for resources, commodities and teams to sustain operations.

Survivors are supported by establishing a network distribution (Figure 7.2.5-1). Staging Areas support hospitals, shelters, survivor gathering points, open spaces, and C-PODs as determined by the State and local emergency managers and facilitated by State and Federal Branches.

Limitations/Challenges:

- USACE C-POD guidance is written with the assumption that C-PODs would serve survivors in vehicles able to drive to the C-POD. It is likely that a much greater number of C-PODs than currently identified would be needed to serve survivors who are isolated and immobile due to damaged roads and bridges.

Course of Action: Coordinate receiving and distribution of relief supplies and water/food distribution done by NGOs, volunteer groups and the private sector.

Task: Coordination with ESF-6 organizations in the State ECC (Red Cross, ORVOAD) to maximize the amount and targeted help available to survivors.

Coordination will also be occurring on the Federal level with representatives of these groups at the NRCC.

Task: Coordinate and enable local communities and the State to manage private donations of materials, food and personnel from private companies.

Limitations/Challenges:

- To manage the influx of donations and volunteers, State and local staff will need

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- to be directed to coordinate the location and distribution of these items.
- Volunteers will need managed to direct their work and screened for ability and security.
- ESF-15 needs to deliver concise public messaging on what donations are most needed.
- ESF -6 will coordinate donations and prioritize the efforts of volunteer agencies. The efforts of volunteer agencies are coordinated through ECC cooperation with Oregon Volunteer Organizations Active in Disaster (ORVOAD).

Objective: Provide care and shelter for displaced population.

Course of Action: Support opening of identified local American Red Cross and Non-Governmental (NGO) operated shelters.

Task: Coordinate and Mobilize shelter supplies and mobilize trained shelter staff.

Limitations/Challenges:

- Local sheltering may be limited due to damage to facilities and lack of available personnel.
- Local sheltering effort will vary. Most may not be sustainable for more than 3 days.
- Large numbers of people will stay in tents or other make-shift shelters on their own property or in open space and will need to be supported by food, water, and sanitation.
- Spontaneous shelters will begin to open hours after the incident and will likely not be properly supported for several days following the incident.
- Survivors may be unwilling to leave unsafe homes/spontaneous shelters.
- There will be a need to resource or consolidate ad-hoc shelters post-incident.
- Special needs supplies will be in short supply and the ability to care for these individuals will put a burden on shelters in the initial response.
- Security concerns may necessitate a gradual closing of mega-shelters.
- Transitional Sheltering Assistance may be required in or near impacted communities.
 - Mass care operations will also require:
 - Potable Water
 - Sanitation Disposal
 - Security
 - Mental Health care and psychological first aid
 - Functional Needs access considerations

Task: Deploy State inspection teams to assess structural integrity of shelters, also utilize available FEMA, FEMA contractors, and USACE personnel.

Task: Coordinate with ESF-1 and ESF-7 to begin movement of supplies, generators, fuel, and communication equipment to identified and safe shelters.

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Limitations/Challenges:

Base camps are required to support shelter staff. If space permits, ARC staff and other shelter support staff may sleep at shelter sites prior to the establishment of the base camps.

Task: **Provide public information on location and activation of shelters.**

Limitations/Challenges:

Lack of power and communications limiting the spread of information.

Task: **Provide security staff to shelters. Support mega-shelters if available to shelter evacuees and tourists.**

Limitations/Challenges:

- Security staff and the ability to care for special needs will be required at designated shelters and mobile kitchens.

Course of Action: Establish alternative shelter locations.

Task: **Consider use of the following as shelter facilities: hotels / motels outside the impacted area, cruise ships, DoD vessels that can be leased and docked near impacted areas, partially vacant government facilities, college dormitories, sports facilities, arenas, and convention facilities.**

Limitations/Challenges:

- Ships require security and present problems with regard to access for people with disabilities.
- Hotels, motels and dorms may be damaged or occupied. It will be a challenge to identify vacant areas to house survivors.
- Vacant government facilities may not be in good repair or have utilities to support residence.

Tasks: **Locate, identify and support survivors who are isolated or in improvised shelters.**

Limitations/Challenges:

- Survivors may be in isolated pockets requiring various forms of support.
- It will be difficult to locate and assess the needs of small isolated populations.

Course of Action: Transport displaced individuals to counties with excess shelter capacity.

Due to the widespread nature of this event, it may be difficult to support evacuees in other parts of Oregon. Host communities or host state protocols may need to be initiated.

Task: Deploy busses and other mass transit to move displaced individuals.

Limitations/Challenges

- Transportation systems may be damaged or under repair.
- Lack of fuel and capable vehicles.

Task: Support utilization of aircraft or waterborne systems for evacuee movement.

Limitations/Challenges

- Docking facilities/airports must be repaired or temporary landings constructed.
- Arrangements must be made for transportation to and from docking facilities or airports and sheltering sites or eventual destinations.
- Aircraft unable to move mass amounts of people, multiple flights needed.

Task: Support State and local evacuation of detention centers and jails and transfer of detainees and inmates to facilities in unaffected areas / counties.

Limitations/Challenges

- Transportation mechanisms must accommodate special needs populations.
- Additional security will be required for the movement of detainees.
- Undamaged correctional facilities may be located well outside of the impacted areas - in Eastern Oregon.

Course of Action: Coordinate with ARC, ORVOAD and other NGO's to initiate mass feeding operations.

Task:Mobilize resources and supplies to respond in the post-earthquake environment.

Task:Validate resource shortfalls and obtain necessary resources.

Task: Provide continued assistance in obtaining supplies, equipment, food, water and transportation to support the sheltered population.

Limitations/Challenges

- MREs will be the food commodity available in the shelters and most likely will not be available during the first 72 hours after an event. ESF-6 will coordinate with ESF-11 and ESF-7 to provide MREs and other rapidly deployed and easily prepared food items to authorized shelters.
- ESF-6 and ESF-11 will determine the quantity of MREs needed and type best suited for response operations and coordinate with ESF-7 for the procurement

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of the product. ESF-6 will coordinate in the development of plans to transition from MREs to other food commodities.

- The ARC, ORVOAD members, and other supporting organizations will conduct food preparation and serving operations. These volunteer organizations will have mobile feeding units in the disaster areas once safe transportation routes are identified. Coordination and assistance with ESF-1 and ESF-7 will be necessary.

Task: Activate ARC and other NGO's mobile feeding units and establish feeding sites.

Limitations/Challenges

Thousands will need feeding from distribution locations and or shelters until utility service and retail food distribution is restored.

Task: Provide mobile feeding resources (DOC, ODF, etc.)

Task: Conduct special needs assessment to include the elderly, children and those with chronic illness populations in impacted areas.

Task: Engage grocery chains and other retailers to expedite reopening / re-supply of stores in impacted areas.

Limitations/Challenges

- Damage to retail and distribution facilities, transportation infrastructure, and utilities will affect the ability of retailers to reestablish operations.
- The re-establishment of local commerce has proven to be the catalyst of recovery in other large disasters in the United States. Oregon should make sure to streamline the private sector's attempts to provide relief within the parameters of non-disaster related laws and regulations.

Course of Action: Provide transportation, equipment, and services to support special needs populations.

Task: Deploy durable specialized equipment and prescription medications to designated shelters.

Limitations/Challenges

- Damage to transportation infrastructure will limit distribution.
- It's unlikely that survivors will have medicines and necessary supplies they require.
- Initially, 40% of Medical Special Needs (MSN) patients will require assistance immediately with an additional 40% requiring care within 72 hours and the remaining 20% of the population requiring care within the first week.
- Local jurisdictions will require significant amount of State and Federal resources to care for the large numbers of survivors with special medical needs.
- Response operations will be committed to ensuring the needs of all populations, to include individuals with access, functional and other special support needs are met to the degree possible within general population shelters.

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Task: Support State functional assessment of people with disabilities and elderly as they arrive at shelters. Establish transportation fleet of vehicles for special needs population.

- Track status of Special Medical Needs Shelters.

Task: Where possible, evacuate special needs populations out of impacted areas where they can be cared for more effectively.

Task: Prepare and deploy translators with responders and to shelters to assist with non-English speakers.

Course of Action: Provide resources for sheltering and rescue of animals.

Task: Provide support for transportation for animals, animal shelters, and distribution of supplies to residents with animals, and animal search and rescue. Resources include: NGO's, voluntary organizations (Oregon Veterinary Medical Association), Veterinary Assistance Teams, USDA Animal Care Response Teams, PHS, and National Veterinary Response Teams.

Limitations/Challenges

- State and federal ESF- 6, 7, 8, and 11 will support local operations with resources and services at shelters, PODs, and areas where people will congregate, as well as provide support to evacuees.
- Although no estimate exists, a large percentage of the displaced population is expected to have pets.
- Local nongovernmental resources for animal care will be overwhelmed by requirements for sheltering thousands of animals, including companion animals that accompany evacuees who are seeking shelter, as well as animals that are abandoned and require rescue.
- Companion animals will require shelter services, ideally close to their owners.
- Collocated but separate animal shelters and general population shelters are desired.
- Thousands of animals may be abandoned or separated from owners.
- Mustering of animal welfare volunteers will be a challenge with poor infrastructure.
- Overflow veterinary facilities will have to be identified in other counties not impacted and possibly other states.
- Emergency transportation is likely to not transport animals.
- NGO's, the private sector and volunteer organizations have significant local, regional, and national resources for care, shelter, and transportation of animals.

Task: Support provision of supplies and transportation to support livestock and dairy operations.

Limitations/Challenges

- Temporary corrals, pasture and shelters may need established.
- Contact with veterinarians for disease control could be challenging.

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<ul style="list-style-type: none">▪ Damaged feedlot waste storage and locating temporary animal sheltering areas need to take into account runoff to waterways.▪ To restore agricultural commerce, coordination with major producers and farmers needs to occur to identify roadways needing re-established.
Course of Action: Distribute food, water, and other commodities to C-PODs and staging areas.
Task: Coordinate with local emergency managers and FEMA to identify appropriate locations for C-PODs.
Limitations/Challenges <ul style="list-style-type: none">▪ C-POD locations need to accommodate isolated pockets of survivors.▪ Due to roadway damage, C-POD locations need to be accessible by foot for survivors, especially in urban areas. This adds to the burden of distribution from State and local staging areas.▪ Consideration to public sector business re-establishment should be considered when looking to cease or move C-POD operations.
Task: Coordinate with local emergency managers and FEMA to determine staffing and equipment requirements.
Limitations/Challenges <ul style="list-style-type: none">▪ Security of C-POD sites will be a concern.▪ ESF-15 will work with locals to communicate locations of C-PODs to survivors.
Task: Deploy Federal assets as needed to POD locations where State and local resources are not sufficient.
Task: Distribute food, water, personal care, and basic medical supplies to C-PODs.
Limitations/Challenges <ul style="list-style-type: none">▪ Distribution is dependent upon transportation and access to the impacted areas, as well as the assessment of the pre-determined C-POD sites.

<p>Objective: Re-establish medical system</p> <p>Course of Action: Evacuate hospitals and long-term facilities that lack supporting systems.</p> <p>Task: Support State assessments of hospitals and long term care facilities.</p> <p>Limitations/Challenges</p> <ul style="list-style-type: none">Evacuees will require a bed in another hospital prior to movement. With most of western Oregon experiencing damage, high casualties, and supply shortages, it will be difficult to find locations for care. <p>Task: Use busses and other available mass transit to evacuate non-critical care patients from long-term facilities.</p> <ul style="list-style-type: none">To support patient movement and evacuation for the impacted areas, ESF-8 will assign the highest priority to life saving activities; patient movement and evacuation is a lifesaving activity.State and Federal resources will be activated to support patient movement and evacuation.Patients will remain within Oregon if possible, and ESF-8 will deploy resources necessary for patient evaluation and stabilization at identified airports.Emphasis is placed on the movement or evacuation of people with severe medical needs.Look for aeromedical evacuation capability to accomplish mission if available. <p>Task: Provide contract ambulance services for non-ambulatory residents.</p> <p>Limitations/Challenges</p> <ul style="list-style-type: none">Ambulance requirements will exceed resources.Many roads will not be usable for a long time.Travel times would be long due to blocked roadways. Challenging road conditions will make movement of non-ambulatory patients difficult and could cause further deterioration of their condition.Look for aeromedical evacuation capability to accomplish mission if available. <p>Task: Complete support for transfer of patients out of the area.</p> <p>Limitations/Challenges</p> <ul style="list-style-type: none">Damage to transportation system will limit access to facilities.Lack of available hospital beds and resources in Western Oregon.

Course of Action: Reestablish operations at hospitals and clinics.

Task: Deploy NDMS, PHS, DoD medical assets to: Support the transition of EMS field treatment sites to fixed or temporary medical care facilities that are more capable of extended operations. Support the establishment and operation of authorized alternate care sites.

Limitations/Challenges

- 80 percent of medical system is privately owned and will rely primarily on insurance for reconstruction.
- Short term, private/public partnerships and innovative mechanisms to provide Federal assistance will be required to restore privately owned and operated portions of the health care system.
- Standards of care may require continued modification.
- Complex procedures and care systems will take longer to restore.

Task: Supplement assessment of damaged hospitals and long-term care facilities with Federal inspection teams.

Limitations/Challenges

- Utility services will need to be available for restoration of hospitals.
- Out of area medical facilities are likely to experience service overcrowding.
- Facilities will require the replenishment of prescription drugs and other hospital supplies.

Task: Continued Public Health information to survivors.

Limitations/Challenges

- The public will require guidance concerning how best to avoid health hazards created by or arising from conditions existing in the affected area during the recovery phase.

Course of Action: Deploy additional pharmaceutical supplies.

Task: Seek deployment of available U.S. Department of Veterans Affairs pharmaceutical caches.

Limitations/Challenges

- Damaged and impassable roadways limit distribution of pharmaceutical supplies.

Task: Seek deployment of Strategic National Stockpile of pharmaceutical supplies.

Limitations/Challenges

- Damaged and impassable roadways limit distribution of pharmaceutical supplies.

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Task: Support establishment and operations of State Receiving, Staging, and Storage site for pharmaceutical supplies.

Limitations/Challenges

- Damaged and impassable roadways limit distribution of pharmaceutical supplies.
- State resources will need to be supplemented by Federal assets. Resources will begin arriving within 72 hours.
- ESF-8 leads medical logistics activities with support from ESF-7.

Tasks: Acquire and distribute vendor managed medical supplies. Stabilize distribution of medical supplies.

Limitations/Challenges

- Damaged and impassable roadways limit distribution of pharmaceutical supplies.

Objective: Reduce hazards to the population

Course of Action: Deploy hazardous incident response teams

Tasks: Deploy U.S. Environmental Protection Agency (U.S. EPA) hazardous materials teams and Oregon OSFM and DEQ response teams. Detect, identify, contain, decontaminate, resolve, dispose of, or minimize discharges of oil or releases of hazardous materials.

Limitations/Challenges

- Many counties and local governments have limited or no hazardous material response teams within their jurisdictions.
- Evacuating areas may not be possible due to roadway damage.
- Limited ability to identify, assess and contain oil and HAZMAT releases due to loss of communications systems, limited transportation access, and insufficient numbers of trained responders.
- Limited ability to provide health and safety guidance to responders and the public based on the loss of communications systems.
- Ability to provide safety and public information about a dangerous HAZMAT spill will be degraded.
- Fire, USAR, HAZMAT and EMS services have competing requirements during the response and may not be available.
- Exposure, disease vectors, and chemicals in debris will threaten displaced survivors.
- Sewage spills and lack of fresh water will cause immediate health risks to public and first responders.

Task: Prioritize public messaging for survivors who may be in danger from HAZMAT.

Task: Debris removal teams and damage assessment teams will coordinate and relay information to ESF-10 to identify materials that are considered hazardous waste.

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Course of Action: Alleviate public health hazards and respond to public health emergencies.

Task: Support restoration of State health hazard detection capabilities through reestablishing State laboratory capabilities.

Task: Transporting samples to other locations in Oregon and nationally (e.g., DoD CDC), and private services.

Task: Support State assessments of drinking water safety: deploy Federal resources for support, including PHS commissioned Corps, CDC, U.S. EPA teams, and DoD sanitary officers.

Task: Provide public assurance that medical supplies and pharmaceuticals are available:

- Monitor blood supply inventories to assure continued availability.
- Expand medical care capacity throughout the State as needed, if possible.
- Activations and coordination of alternate medical care facilities to replace damaged ones.
- Continued communication and updated health considerations with the public through the Joint Information Center in coordination with other Public Information Officers.
- Participation in EMAC, through the State ECC, for medical and health services as needed.
- Ensure that medical facilities within the damaged areas continue to remain safe from secondary effects of the earthquake (i.e., aftershocks, contaminating materials, hazardous materials, fire, flooding, etc.).

Task: Initiate steps to prevent communicable disease outbreaks amongst the surviving population. Conduct surveillance at field treatment sites, government authorized alternate care sites, hospitals, and other health care facilities. Deploy MRC, Federal epidemiologists (CDC and PHS). Deploy CDC, PHS, DoD and Federal medical teams to assist with immunizations.

Task: Initiate efforts to protect population from airborne hazardous materials and radiological hazards; Deploy available State resources for monitoring air and water quality.

Task: Support State efforts to ensure the safety of the food system: Food safety officers from PHS, and other Federal Agencies, Food Safety Inspection Service and Food and Drug Administration response teams.

Limitations/Challenges

- PHS resources are drawn from a nationwide pool. Tier 1 resources travel within 12 hours; tier 2-3 within 72 hours. Number of shelters with more than 1200 (pre-identified) and spontaneous shelters will require prioritization of the sharing of resources. Challenges for supporting porting teams with lodging,

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transportation, fuel, and supplies will require prioritization. Team movement will be limited by damage to infrastructure.

Task: Continue monitoring and prioritize repairs of facilities to alleviate environmental health conditions within the damaged areas and mass shelters.

- Sewage
- Contaminated food or water
- Infected refuse
- Vector control
- Dead animals (in support of ESF -11)

Course of Action: Assess safety of buildings and other structures.

Task: Conduct inspections for safety purposes. Prioritize State inspections of hospitals, long-term care facilities, shelters and other critical facility inspection efforts. Deploy other Federal Agencies with technical capabilities (e.g., USACE). Deploy FEMA Public Assistance Program Technical Assistance Contractor resources. **Limitations:**

Federal Agency and contractor support will be drawn from a nationwide pool of resources. Resources will begin arriving within 72 hours. Support for SAP may be limited by requirement for in-State certifications. Challenges for supporting teams with lodging, transportation, and fuel will need to be prioritized. Team movement will be limited by damage to infrastructure.

Task: Secure and/or demolish structures that pose threats to public health and safety.

Tasks: Provide direct Federal assistance to severely affected jurisdictions. Secure structures that do not pose an immediate risk of collapse. Demolish structures that may collapse in current condition or due to aftershocks.

Limitations:

Structures that do not pose an immediate risk of collapse can be secured, allowing reallocation of demolition resources. Local governments must determine that a threat exists, provide right of entry hold harmless agreements. Hazardous construction materials must be handled appropriately. FEMA must establish a process to ensure compliance with the National Historic Preservation Act.

Course of Action: Assess, remove, stage, and dispose of debris that poses hazardous conditions.

Task: Coordinate and prioritize Federal assistance and contractors to conduct removal, staging, reduction, and transport to disposal sites.

Task: Deploy heavy equipment assets and fuel to hasten roadway clearance and debris removal.

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Task: Deploy Oregon OSHA, U.S. EPA and Occupational Health and Safety Administration resources to monitor safety and health.

Limitations/Challenges

- USACE, DoD, U.S. EPA, and FEMA Public Assistance Program can access out of State resources and contractors. These resources may take up to a week to arrive. Challenges for supporting teams with lodging, fuel, and maintenance of equipment. Team movement will be limited by damage to infrastructure. Density in urban areas may limit staging, reduction sites, as well as disposal capacity.

Task: Removal of debris that hinders immediate lifesaving actions or poses an immediate threat to public health and safety.

Task: Removal and disposal of debris that hinders the orderly recovery of the community and poses less immediate threats to health and safety.

Objective: Conduct mass fatality operations

Course of Action: Support collection and transportation of remains (fatalities)

*See SA-H of the Oregon Emergency Operations Plan for detailed Mass Fatalities information.

- Stabilization and emergency medical treatment of living victims take precedence over other operations.
- If mass fatalities exceed the abilities and supplies of local jurisdictions, the MEO is the lead agency, with OHA in a support role.
- Private mortuaries are responsible for bodies once a death certificate is signed.
- Requests for resources for aid with mass fatalities will come through the ESF-8 Agency Operations Center (AOC).

Clear channels of communications will be established from county EOC to the State Emergency Coordination Center (ECC) in Salem. The ESF-8 ECC Liaison will operate from the ECC and be the conduit for the flow of information from the County EOC to the MEO and the ESF-8 AOC.

First responders will determine that deaths have occurred, and will contact the county's MEO immediately. The local MEO will contact the local EOC if it is determined that local resources are inadequate for the response. The State MEO will provide resources as available. If the State MEO cannot provide all the needed resources, it will contact the ECC and request additional resources from outside the State.

Task: Local governments initiate mass fatality operations, including scene evaluation, organization, and initial search for recovery of remains.

Limitations/Challenges

- Local Medical Examiner resources will be overwhelmed.

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- The planning for mass fatalities falls under Emergency Support Function (ESF) 8 – Public Health and Medical Services, and thus is the responsibility of Oregon Health Authority (OHA). However, the State Medical Examiner's Office (MEO) is responsible for managing mass fatalities, providing expertise, staff, and resources not available or depleted at the local level, as set forth in Oregon Revised Statue (ORS) 401.
- The state MEO is responsible for investigating unattended (without a medical professional to certify death), sudden and unexplained deaths, and deaths from criminal activity. In a mass fatality incident, deaths due to this scenario would overwhelm the MEO and would probably not require investigations (the cause of death and identification would be known for most cases). Alternatives to the investigation of each of these deaths will need to be undertaken.

Task: State Coroners Mutual Aid System will be activated to mobilize out of State resources to support local operations.

Limitations/Challenges

- Access to remains will be limited by damage to transportation system.

Task: Local governments will establish Fatality Staging Areas as temporary holding points until remains can be transported to morgues.

Limitations/Challenges

- State may assist with identification of properties that can be used as Fatality Staging Areas.

Course of Action: Establish morgue and storage sites.

Tasks: Establish sites for local mortuary operations, including: Morgue sites for processing. Storage facilities to support morgue operations. Deploy refrigerated trucks to support storage operations. Deploy security personnel to morgue facilities and storage facilities.

Limitations/Challenges

- Movement of deceased will compete with patient evacuation.
- County morgue facilities will be damaged or unable to handle the number of fatalities.
- Sites may be limited due to damage to potential facilities.
- Surviving and available refrigerated areas may be being used for food storage and unavailable for remains.
- Utility or power generation services must be available.
- The State and FEMA may assist with evaluation of available State and Federal properties.

Course of Action: Deploy and coordinate Federal teams to support mortuary operations.

Tasks: Federal resources include: Disaster Mortuary Operations Response Teams (DMORT's). DoD Mortuary Assistance Teams, which can support recovery and

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transportation of remains. Disaster Portable Morgue Units.

Limitations/Challenges

- County coroner and sheriff-coroner medical examiner maintains control of operations.
- Operations include storage, decedent identification, accounting for personal effects, notification of next of kin, and coordination of final disposition.
- DMORT's may begin to arrive 24 to 48 hours after the incident.
- Support for food, shelter, transportation, and physical facilities to conduct mortuary operations will be required.

Course of Action: Support establishment of Family Assistance Centers.

Tasks: Local governments identify requirements for, and locations of, Family Assistance Centers. State, Federal (including DMORT Family Assistance Center teams), and NGO's support local government operations.

Limitations/Challenges

- Multiple Family Assistance Centers may be required. Secure locations, staff, and supplies will be required.
- Utility services must be available.
- Coordination with faith-based volunteer groups to provide grief counseling needs to be established.
- Coordinate with jurisdictional and regional partners to provide non-intrusive mental health support services to responders, family members of the deceased, and incident survivors.

Tasks: Joint Information Center implements public information initiative regarding Family Assistance Centers and processes related to missing persons and fatalities.

Course of Action: Deploy resources to implement stress management and crisis intervention strategies.

Task: Deploy personnel qualified in critical incident stress management and crisis intervention strategies to sustain first responders engaged in fatality management operations.

Limitations/Challenges

- Teams will require transportation, shelter, food and water.
- Coordination with faith-based volunteer groups to provide grief counseling needs to be established.

6.3.3 COA for the Objectives during the Relief Phase

E+14 days to E+60 days

Objective: Provide interim housing for displaced population

Course of Action: Develop interim housing alternatives

Task: Convert shelters with appropriate capacity into transitional housing. Establish interim housing on individual sites.

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Task: Establish interim housing through group sites: commercial sites, private sites, sites outside the impacted area. Use readily fabricated dwellings.

Task: Provide temporary accommodations by supporting the leasing of: Hotels and motels, and cruise ships.

Task: Coordinate temporary housing at partially vacant military and government facilities. Provide rental assistance.

Task: Extend income requirements for public housing (U.S. Department of Housing and Urban Development [HUD]), and support tax credits for low-income housing (U.S. Treasury).

Task: Coordinate foreclosed housing use through HUD and U.S. Department of Veteran Affairs.

Limitations/Challenges

- Interim housing solutions must be coordinated with State and local government officials.
- Dense urban areas may not accommodate onsite interim housing.
- Space for group sites is limited, due to lack of relatively suitable land and density of existing development.
- Placement of housing outside of urban areas moves residents away from their homes and places of work and increases demand for transportation and fuel.

Objective: Restore utilities, infrastructure and public services

Course of Action: Conduct initial assessments of public facilities and infrastructure.

Task: Deploy Federal and State teams to evaluate damage and establish priorities: OEM and FEMA Public Assistance Program and Technical Assistance Contractor staff. ODOT and FHWA (roads and bridges), ORWARN, DEQ, U.S. EPA (water and wastewater facilities), and PUC, ODOE, USACE (power, levees, and water control facilities).

Limitations/Challenges

- Federal Agencies and contractor support will be drawn from a nationwide pool of resources.
- Initial assessment for priorities will need to be followed by a more detailed assessment for restoration. Facility owners may not be able to participate in assessments.
- Challenges for supporting teams with lodging, transportation, fuel, food, and water.
- Team movement within the area will be limited by damage to infrastructure.

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Course of Action: Establish emergency repair operations and temporary systems for critical facilities.

Task: Provide generators and fuel for the operation of key systems (e.g., sewage lift stations, treatment plants, water treatment facilities, and pumping stations).

Limitations/Challenges

- 24 hour staffing of facilities and refueling of these generators will need to be accounted for in setting priorities. Many locations won't have the critical personnel to maintain facilities.

Task: Transport large and or specialized repair parts and equipment critical to restoration of utilities.

Task: Provide chemicals to treat water and wastewater.

Task: Provide logistical support for utility repair crews (e.g., base camps, fuel, food, water, and security).

Limitations/Challenges

- Power, gas, and fuel infrastructure is generally privately held.
- Utility repair crews are "Tier 2" in the Oregon Petroleum Contingency Plan, and may not receive fuel needed to sustain infrastructure repairs.
- Challenges in supporting teams with lodging, fuel, maintenance, food, and water.
- Resource movement within the area will be limited by damage to infrastructure.

Task: Provide direct Federal assistance for construction of temporary systems (e.g., use of federal resources to construct above ground water and wastewater lines).

Provide funding for emergency repairs and establishment of temporary systems for public utilities and infrastructure.

Limitations/Challenges

- Environmental requirements must be waived or addressed.

Course of Action: Provide temporary facilities for critical public functions (e.g., public safety, security, medical treatment, administration, and schooling).

Task: Re-establish public functions and capability to govern. Move functions back into the area where they are required.

Task: Provide funding for purchase or lease of temporary facilities and emergency repairs.

Task: Coordinate delivery and setup of modular units to serve as temporary facilities.

Task: Provide services for public safety, other public employees: Base camps, or other

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temporary lodging and transportation services.

Limitations/Challenges

- Utility services must be available for temporary facilities or must be provided with installation.
- Shipment of modular units may be affected due to infrastructure damage.
- Challenges for supporting facilities with fuel, maintenance of equipment and supplies.
- Environmental, access and safety requirements must be waived or addressed.
- Proper location of facilities will be a challenge due to reductions/influx of population in communities due to evacuations.

Objective: Establish temporary transportation facilities

Course of Action: Establish ocean transportation system to serve coastal communities.

Task: Establish ocean going transportation system while bridges, roads, and air travel systems along coast are out of service.

Task: Repair existing docks and ports or construct temporary or permanent landing sites.

Task: Expand maintenance and fueling capacity and related facilities.

Task: Borrow, lease, or purchase additional vessels to meet tasks of ferrying population or transferring supplies.

Limitations/Challenges

- Identify surviving and functional waterfront facilities.
- Damage to waterfront facilities may require repair before use, priority should be given to ports capable of handling deep draft vessels (Astoria, Newport and Coos Bay).
- Must be coordinated with land based transit.
- Service may be limited to passengers only, prioritized supplies, and or availability to off load vehicles and or supplies.
- Depths may limit the type of vessel and associated transport capabilities.
- Environmental requirements must be waived and or addressed.

Course of Action: Re-establish regional transit routes and systems.

Task: Increase mass transit capabilities to account for damage to automobile infrastructure (e.g., roads, bridges, parking, parking garages). Increase routes, schedules, and capacity.

Task: Lease and purchase of additional equipment, additional personnel, and the temporary reduction of user fees during the recovery period.

Task: Prioritize establishment of routes to medical facilities, re-established private

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sector commercial businesses, work sites, and survivor assistance locations.

Limitations/Challenges

- Cost of expanding existing facilities, such as transit stations and maintenance facilities must be addressed.
- Rural locations may be underserved.
- Environmental requirements may be waived and or addressed.

Note: *The Federal Government is authorized to provide transportation resources under Section 419 of the Stafford Act.*

Course of Action: Institute temporary vehicle restrictions on key routes.

Task: Reduce traffic on key routes that are congested as a result of damage, or serve a vital lifeline to impacted communities.

Limitations/Challenges

- Public reaction is likely to be overwhelmingly negative to banning access on some routes.
- Access passes and verification may need issued to residents of rural areas needing to utilize closed roadways.
- Closing roadways will require increased personnel, signage, barriers and law enforcement.

Task: Establish transit service along closed roadways.

Task: Develop and distribute effective public information on road restrictions.

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7

Incident Coordination

This section provides a general discussion of coordination, communication, and oversight with regard to the State of Oregon and Federal response. All activities will be consistent with the Oregon Emergency Operations Plan and corresponding Emergency Support Functions (ESF's), as well as NIMS, and the National Response Framework (NRF).

7.1 Coordination

State and Federal actions in support of field-level response are coordinated through the joint State / Federal organization under the direction of the Unified Coordination Group. The Unified Coordination Group is initially formed at the Oregon Emergency Coordination Center upon arrival of the Federal IMAT and then deploys to the JFO when that facility can function adequately to support response and recovery operations (the move is targeted for E+72 hours). Joint State / Federal operations are organized according to Incident Command principles.

The response to a catastrophic incident within Oregon will require a greater level of interface between the counties / impacted areas and the Unified Coordination Group heading up the joint State / Federal IMAT organization. The Unique coordination and communication requirements will be met by deploying individuals to the impacted areas' emergency operations centers. The IMAT does not replace the existing State-level structure, but rather provides a temporary, specific direct line of communications between the impacted areas / EOC's and the joint State / Federal IMAT Operations Section. The IMAT will serve as the single point of contact for the request and acquisition of supplemental Federal resources for the impacted area.

7.1.1 Coordination with Other State and Federal Agencies

Supporting State agencies, Federal Agencies, NGO's, private-sector organizations, and volunteers may be directly integrated into the joint State / Federal organization or designated as resources through the IAP process for specific assignments. State and Federal mission coordinators, working under the direction of the joint Operations Section Chiefs, provide mission assignments (Federal Agencies) or mission tasks (State Agencies) as required. A liaison officer serves as the Unified Coordination Group's primary point of contact with agencies not directly integrated into the joint State / Federal organization and

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coordinates with agency representatives who have responsibility for monitoring the involvement of these agencies in the operation.

- State and Federal agencies may respond to the earthquake under their own authorities. Once the Unified Coordination Group is established, these activities must be coordinated with the joint State / Federal organization so that they can be accounted for in the IAP process. To the extent possible, sustained operations should be folded into the joint State / Federal response through the mission / tasking assignments process.

7.1.2 Coordination with Local Governments

Oregon's system for managing emergencies and for providing support and resources to local governments is governed by the Oregon EOP and corresponding ESF's, and Annexes. Local governments transmit information and resource requests via the State's OpsCenter software, telephone, ARES, and RACES. Many counties within the State receive information from their cities and special purpose districts within their boundaries.

7.1.3 Coordination with State and Federal Military Resources

The Oregon National Guard may be tasked to provide resources in support of the response. Oregon may also request support from National Guard units in other States via EMAC. Air and Army National Guard personnel from other States will respond in a title 32 duty status and remain under the control of the Governor via the Adjutant General. Their operations in the field will be directed by one or more Task Force Commanders or Joint Force Commanders operating under proper State authority.

Potential missions for the Oregon National Guard and National Guard personnel from other states include:

- Ground, air and water transportation
- Support to law enforcement agencies / security
- Medical Services
- Communications
- Engineering
- Water Purification
- Logistics management / distribution
- Damage assessments / aerial reconnaissance

DoD may be tasked by FEMA (through a mission assignment) to provide resources in a Title 10 duty status for Civil Support operations. Once these assignments have been issued, DoD personnel carrying out missions will remain under the control of the Secretary of Defense via U.S. Northern Command. Their operations in the field will be directed by one or more Task Force Commanders

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or Joint Task Force Commanders operating under proper Federal authority. The defense coordinating officer (DCO) will serve as the link between the Unified Coordination Group and the Task Force Commander.

Potential missions for DoD personnel in a Title 10 status are similar to those of the National Guard except for the limits on domestic law enforcement imposed by the Comitatus Act of 1878. Due to their greater capabilities, DoD organizations may be tasked to deliver extraordinary services in areas such as naval vessel power generation / water purification, enhanced field level medical services and airlift.

Neither State nor Federal military authorities have incident command responsibilities, but as described above, provide command and control for military resources through one or more task forces or joint task forces. State and Federal military resources will be coordinated with civilian resources to achieve unity of effort through the IAP process carried out under the oversight of the Unified Coordination Group.

7.1.4 Coordination with Tribal Governments

Within Oregon, there are 9 federally recognized tribes. Some tribes have their own tribal lands or own property. Tribal governments may coordinate their efforts and requests for resources through the State ECC or directly with the federal government. State coordination with these tribes follows that of coordination with other local governments.

Tribes in Oregon:

Burns Paiute Tribe

Confederated Tribes of Coos, Lower Umpqua and Siuslaw

Coquille Indian Tribe

Cow Creek Band of Umpqua Tribe of Indians

Confederated Tribes of The Grand Ronde Community

Klamath Tribes

Confederated Tribes of Siletz Indians

Confederated Tribes of the Umatilla Indian Reservation

Confederated Tribes of Warm Springs Reservation

7.1.5 Coordination with Other States

The Oregon Emergency Coordination Center is responsible for procuring out-of-State resources through either state to state mutual aid, or EMAC. Initially, this process occurs at the ECC where decisions to request resources from other states through EMAC are made. As the joint State / Federal organization shifts

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to the JFO, the decision to request resources from other states or through EMAC is made by the Operations and or Logistics sections as part of the process for evaluating the availability of resources to carry out, to request resources through EMAC, once the section chiefs make the decision to do so.

7.2 Communications

This section provides a general discussion of incident communications.

7.2.1 Emergency Communications

The earthquake, aftershocks, and resulting tsunami are expected to cause significant damage to public safety and commercial communications systems. The deployment of resources to Oregon will require the establishment of a communication system to support the response. This will require the immediate deployment of communications assets, and the establishment of interoperable within the first 72 hour phase of the event (E+72 hours).

Initial communication restoration targets will focus on the establishment of communication capabilities in support of emergency response operations. Means of communication will include satellite, voice-radio, cellular systems, and microwave. Communications will be established to link components of the joint State / Federal Organization, including the State ECC, JFO, National Logistic Staging Areas, other staging areas, base camps, as well as response teams in the field. Federal mobile communication assets, such as MERS and DoD resources, will be deployed in support of this effort. These assets will also be used to provide support for State and local communications systems as required.

7.2.2 External Communications

At the State level, the ECC is responsible for developing and releasing information about emergency operations to the news media, to personnel involved in the operation, and to other appropriate agencies and organizations. Additional support may be drawn from other State agencies, volunteers, or participants as outlined in the State EOP, ESF -15. The Oregon Joint Information center will be established at the State ECC, and initially activates and directs public information procedures. Coordination with Federal, State, and local entities is necessary to ensure accuracy and consistency in the delivery of emergency public information messages.

The emergency public information effort focuses on developing and delivering lifesaving, life-preserving messages and other disaster and program information to the affected population.

7.3 Oversight

Oversight for the response to this event occurs in accordance with the Oregon Emergency Operations Plan, Local Emergency Operations Plans, NIMS, and the NRF.

7.3.1 Field-Level Response

Emergency response personnel and resources at the field response level come under command of an appropriate authority. Tactical decisions and activities in response to the event come under the authority of the Incident Commander. The Incident Commander is a local government official, although other entities may have specific authority to assume that role (e.g., Oregon State Police or Oregon DOT). A Unified Command or Area Command may be formed, depending on the specific circumstances of the incident.

7.3.2 Local Governments

Local governments include cities, counties, and special purpose districts. Local governments are responsible for the management and coordination of the emergency response and recovery activities within their jurisdictions.

7.3.3 State Government

The State level ECC tasks and coordinates State resources in response to requests from the local government level and coordinates mutual aid among the State agencies and the local level. The governor directs all State agencies to use their resources in response to the incident; and the State Emergency Management Director is responsible for coordination of the activities of all State agencies. These agencies, while operating under their respective authorities, take action in accordance with the objectives identified by the Unified Coordination Group.

7.3.4 Federal Government

The Federal Government provides resources and support in response from the State. In accordance with the NRF, the Federal Coordinating Officer, on behalf of the President, is responsible for coordinating the Federal response. Federal Agencies and Departments, working through ESF's and mission assignments from FEMA, take action in accordance with the objectives identified by the Unified Coordination Group.

7.3.5 Unified Coordination Group

The Unified Coordination Group provides a mechanism for multiple agencies to work objectives. The Unified Coordination Group effectively manages the joint

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State / Federal response to the event and ensures that all decisions will be based on mutually agreed upon objectives. To achieve the common objective of effective incident management, the Unified Coordination Group directs coordinated combined State and Federal operations using Unified Command principles.

The Unified Coordination Group oversees the development of joint operational objectives based on priorities set by the Governor and the President, as well as input from local governments, and others that have identified needs, and situational awareness. Objectives identified by the Unified Coordination Group are incorporated into the joint IAP process and disseminated to the staff through the IAP. Once these objectives have been communicated, joint section chiefs make decisions and take actions necessary to support these objectives.

7.3.6 Military Resources

DoD may be tasked by FEMA (through a mission assignment) and the Oregon National Guard may be tasked by the State ECC (through mission tasks) to provide resources in support of the response. Once these assignments have been issued, DoD and Oregon National Guard elements carry out missions while remaining under the control of the Secretary of Defense and the Governor, respectively. Their operations in the field are directed by one or more task forces or joint task forces operating under proper State and Federal authority. State and Federal military resources will be coordinated with civilian resources to achieve unity of effort through the IAP process carried out under the oversight of the Unified Coordination Group.

8

Intelligence and Situational Awareness

Rapid evaluation of the earthquake and tsunami impact is essential in coordinating and assessment of the extent and intensity of the incident. This is critical to supporting decision making. The flow of information from local jurisdictions to the State ECC, FEMA, and the JFO will require a disciplined approach to facilitate the effective development of a common operating picture within Oregon.

Sources of information include:

- Local, tribal, private-sector, and State agencies (AOCs)
- Federal Agencies' EOCs
- Reports from State and Federal response teams in the field
- Media reports

Earthquake and tsunami data from:

- Loss estimation modeling (HAZUS)
- National Earthquake Information Center (USGS)
- Seismology laboratories at the University of Washington
- The Earthquake Information Clearinghouse (USGS and EERI)
- Pacific Tsunami Warning Center

The most valuable and accurate information is obtained from those in the ground, closest to the potential or actual incident site. Incident Commanders and the planning sections within their incident management teams are often the most reliable sources of information. Planning sections at various levels analyze the information and turn that information into useful intelligence for managers and senior leaders. This step is vital in terms of providing data necessary for decision makers to prioritize activities and the deployment of critical, but often limited resources.

8.1 Intelligence Collection and Utilization

Initial efforts to gain situational awareness will occur at Oregon ECC and at separate Federal operations centers. Once the Unified Coordination Group is formed and the integrated State / Federal organization is established at the JFO, responsibility for intelligence collection and utilization is assumed by the joint

8. Intelligence and Situational Awareness

Planning Section. The Situation Unit of the Planning Section will develop an Information Collection Plan for gathering information from the sources in as comprehensive and consistent manner as the circumstances of the event will allow. The Planning Section will compile sources of information and provide validation and analysis to develop a common operating picture that will be shared with local government, State, and Federal agencies operating centers and elected officials. Because the extent of damage will not be uniform throughout the impacted area, situational awareness within different impacted counties will not be consistent and the pace of response operations will vary. During the early stages of response, requirements will far exceed resources, requiring that the Unified Coordination Group prioritize resource allocation consistent with capabilities.

8.2 Essential Elements of Information (EEI)

Essential Elements of Information (EEIs) are the critical items of information required by senior leaders within a particular timeframe. When related to other valuable information and intelligence, it may be used to reach a logical decision.

EEIs revolve around critical data that are focused on the operational objectives established by the Unified Coordination Group (e.g., status of medical facilities, status of transportation systems, and status of infrastructure). A formal reporting methodology must be provided at all levels to assist the Unified Coordinating Group with formulation of appropriate joint objectives based on a common operating picture.

EXAMPLES:

Essential Elements of Information: Hazard Specific, Safety, Geographic, Seismic, Weather, Demographics, Predictive Modeling, Damage, Status of communications, transportation, EOCs, critical infrastructure, energy systems, activated ESFs, personnel, priorities for response, and major issues and shortfalls.

Specific Information: Limits & severity of damage (% pop.), evacuated, access points, shelters, unmet shelter needs, homes destroyed, public health concerns, hazardous materials releases, search & rescue needs, liquefaction sites, tribal impact, language issues, transportation systems, medical facility damage, state and local priorities, fuel, donations, available food, water, medical supplies, wastewater, and major issues and shortfalls.

Methodology / Source: Predictive modeling, remote / overhead sensing, aerial reconnaissance, media, assessment teams, on-scene reports, SOC coordination center reports, existing maps, GIS database, voluntary agencies, ESFs, CDS,

8. Intelligence and Situational Awareness

OSHA, NRC reports, EPA, USGS, USGS, Tsunami Warning Center, census data, HAZUS outputs, internet service, telephone service companies, DOT, USACE, other Federal agencies, regional offices, PHS, utilities, DoD, FEMA declarations, US Government Leadership, preliminary damage assessments, and elected officials.

Responsible Entity: Operations, Logistics, Mitigation, Safety Officer, and ESF #s

Products: GIS impact maps, situation reports, status briefings, displays, FEMA disaster information databases, daily intelligence briefings / summaries, jurisdiction profiles, FEMA Region X analysis and summary, remote sensing imagery / products, and special reports from FCO and senior management.

Timeline: Initial estimate as soon as possible, within six hours, 12 hours, and updated every operational period, updated every six hours, 12 hours, and ongoing as required.

8. Intelligence and Situational Awareness

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9

Plan Maintenance

The Oregon Office of Emergency Management is responsible for maintenance, update, and dissemination of the Cascadia Subduction Zone Earthquake and Tsunami Operations Plan and its annexes and appendices.

Working with FEMA, local governments, tribes, and special purpose districts, to evaluate and test the Appendix on a regular basis. OEM will modify the Plan on the basis of changes in laws, regulations, policies, State or Federal systems, or procedures, after action reports, and lessons learned from major activations and exercises. OEM will distribute the revised document to the appropriate local, State, Federal, and private-sector entities.

As this is the single greatest catastrophic threat to the State of Oregon, the intent is to update and add to this plan on a two-year cycle. This cycle may be interrupted and revisions to the plan made should significant information or agency policy changes occur.

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A

Overview of Stafford Act Support to States

This overview illustrates actions Federal agencies are likely to take to assist State, tribal, and local governments that are affected by a major disaster or emergency. Key operational components that may be activated include the National Response Coordination Center (NRCC), Regional Response Coordination Center (RRCC), Joint Field Office (JFO), and Disaster Recovery Centers (DRC's).

One: The Department of Homeland Security (DHS) National Operations Center continually monitors potential major disasters and emergencies. When advance warning is received, DHS may deploy and may request that other Federal agencies deploy liaison officers and personnel to a State emergency operations center to assess the emerging situation. An RRCC may be fully or partially activated. Facilities, such as mobilization centers, may be established to accommodate Federal personnel, equipment, and supplies.

Two: Immediately after a major incident, tribal and/or local emergency personnel respond and assess the situation. If necessary, those officials seek additional resources through mutual aid and assistance agreements and the State. State officials also review the situation, mobilize State resources, use interstate mutual aid and assistance processes such as the Emergency Management Assistance Compact (EMAC) to augment State resources, and provide situation assessments to the Department of Homeland Security / Federal Emergency Management Agency (DHS/FEMA) regional office. The Governor activates the State emergency operations plan, declares a state of emergency, and may request a State/DHS joint Preliminary Damage Assessment (PDA). The State and Federal officials conduct the PDA in coordination with tribal / local officials as required and determine whether the impact of the event warrants a request for a Presidential Declaration of a major disaster or emergency. Based on the results of the PDA, the Governor may request a Presidential Declaration specifying the kind of Federal assistance needed.

Three: After a major disaster or emergency declaration, an RCCC coordinates initial regional and field activities until a JFO is established. Regional teams assess the impact of the event, gauge immediate State needs, and make preliminary arrangements to set up field facilities. If regional resources are or may be overwhelmed, or if it appears that the event may result in particularly significant consequences, DHS may deploy a national-level Incident Management Assistance Team (IMAT)

Appendix A. Overview of Stafford Act Support to States

Four: Depending on the scope and impact of the event, the NRCC carries out initial activations and mission assignments and supports the RRCC.

Five: The Governor appoints a State Coordinating Officer (SCO) to oversee State response and recovery efforts. A Federal Coordination Officer (FCO), appointed by the President in a Stafford Act declaration, coordinates Federal activities in support of the State.

Six: A JFO may be established locally to provide a central point for Federal, State, tribal, and local executives to coordinate their support to the incident. The Unified Coordination Group leads the JFO. The Unified Coordination Group typically consists of the FCO, SCO, and senior officials from other entities with primary responsibility for an aspect of an incident. This group may meet initially via conference calls to develop a common set of objectives and a coordinated initial JFO action plan.

Seven: The Unified Coordination Group coordinates field operations from a JFO. In coordination with State, tribal and/or local agencies, Emergency Support Functions assess the situation and identify requirements. Federal agencies provide resources under DHS/FEMA mission assignments or their own authorities.

Eight: As immediate response priorities are met, recovery activities begin. Federal and State agencies assisting with recovery and mitigation activities convene to discuss needs.

Nine: The Stafford Act Public Assistance program provides disaster assistance to States, tribes, local government, and certain private nonprofit organizations. FEMA, in conjunction with the State, conducts briefings to inform potential applicants of the assistance that is available and how to apply.

Ten: Throughout response and recovery operations, DHS/FEMA Hazard Mitigation program staff at the JFO look for opportunities to maximize mitigation efforts in accordance with State hazard mitigation plans.

Eleven: As the need for full-time interagency coordination at the JFO decreases, the Unified Coordination Group plans for selective release of Federal resources, demobilization, and closeout. Federal agencies work directly with disaster assistance grantees (i.e., State or tribal governments) from their regional or headquarters offices to administer and monitor individual recovery programs, support, and technical services.

Summary of Stafford Act to Support States:

Federal Resources – may deploy in advance of the incident.

Incident Occurs – local first responders arrive on scene – notify elected / appointed official and activate local EOC; requests mutual aid & State assistance.

Governor Activates State EOC – assesses damage, requests EMAC or other interstate mutual aid, requests Presidential Declaration.

Appendix A. Overview of Stafford Act Support to States

FEMA – evaluates situation and Governor’s request. Recommends FEMA Administrator assess situation and Governor’s request. FEMA Administrator recommends through the DHS Secretary that the President declares emergency or major disaster. Response teams & other resources deploy.

Cascadia Subduction Zone Catastrophic Response Plan

Appendix A. Overview of Stafford Act Support to States

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B

State of Oregon Core Capabilities for Enabling Response and Delivering Essential Needs

Situational Assessment

Provide all decision makers with relevant and accurate information regarding the nature and extend of the hazard and the status of the response. Develop situational awareness to establish an initial Common Operating Picture (COP) with all affected jurisdictions.

- **ESF-5** Deploy primary and support agencies capable of aerial reconnaissance to conduct initial impact assessment that drives leadership decision making. Establish reporting mechanisms between the state, local and tribal jurisdictions:
- **ESF-1, 2, 4, 7** assets and resources.
- **ESF-10** Determine potential chemical, physical, natural and biological hazards resulting from a catastrophic earthquake that may affect the safety and health of Local, State and Federal response and recovery workers.
- **ESF-12** Establish base line energy impacts and sustainable capabilities.

Critical Communications

Coordinate notification and integration of Statewide Communications Plan. Ensure critical communications in support of: security, situational awareness and rapid communications by any and all means available – amongst & between impacted communities and response assets.

- **ESF – 2** Establish operational information channels and connectivity between state, local, and tribal jurisdictions.
- Determine functionality of 9-1-1 call processing and delivery through Public Safety Answering Points (PSAPS) and call dispatch systems.
- Utilize the Emergency Alert system for community notifications.

Public Messaging

Develop an integrated external affairs organization encompassing State, local and tribal jurisdictions for accurate, coordinated and consistent messaging with each other and media outlets. Deliver prompt, understandable by diverse populations and actionable messages to the impacted communities requiring

Appendix B. Core Capabilities

lifesaving protective actions to the populations around the impacted areas who can assist survivors and/or the response organization, and the nation's citizens and international community.

- **ESF – 5** Establish communications between State, local and tribal elected officials and their staffs.
- **ESF – 15** Coordinate public messaging with State, local and tribal ESF – 15 organizations to provide special instructions for evacuation, shelter locations and indicate the status of sheltering.

Critical Transportation

Provide infrastructure access and transportation services for response priority objectives, including evacuation of people in imminent danger, and delivery of vital response services and resources to impacted areas. Determine the most appropriate transportation services and lifeline routes that can facilitate the response and support survivor needs.

- **ESF – 1** Assess what regional aviation portals can facilitate air operations for each impacted jurisdiction including assessment of local landing sites capable of supporting heavy incoming and outgoing flights.
- **ESF – 3** Coordinate debris clearance with jurisdictions to facilitate:
 - Arrival of responders;
 - Provide transportation for evacuation of functional needs populations prioritized by each jurisdiction and medical facilities / health departments;
 - Determine the distance to and availability of shelters to allow for rapid round-trip transportation;
 - Assemble a roads and bridges task force to expedite restoration of ground routes to isolated communities;
 - Coordinate with the Department of Homeland Security (DHS) to initiate emergency waiver requests to facilitate evacuation, including:
 - Driver hour of service waivers from the U.S. Department of Transportation,
 - Truck size and weight-limit waivers from Oregon Department of Transportation,
 - Jones Act waivers from DHS.

Command and Control

Establish unified response actions across impacted areas and coordinate unity of effort across local incident command(s), the impacted / affected jurisdictions, and the Federal response. Deploy State resources to impacted jurisdictions to determine the baseline response needs and establish command and control in conjunction with local and tribal jurisdictions.

Appendix B. Core Capabilities

- **Adjunct Agencies:** Integrate whole community elements including private sector and non-governmental organizations into the command and control structure.
- **ESF – 7** Designate and develop strategic statewide regional response areas to support logistics, responders and evacuations.

Mass Search & Rescue Operations

Deliver Whole Community search and rescue services to survivors in need, in order to save the greatest number of endangered lives in the shortest time possible. Assess air, sea, and structural search and rescue needs and request deployment of assets to meet life-saving needs and sustaining operations in support of local assets and capabilities.

- **ESF – 3** Activate U.S. Army Corps of Engineers (USACE) structural specialist support for urban search and rescue task forces for deployment and employment in the affected areas;
- **ESF -7** Determine staging areas for structural search and rescue task forces in proximity to impacted areas;
- **ESF – 9** Expand USCG operations with jurisdictional priorities for sea based Search and Rescue.
- **ESF – 9** Coordinate with Defense Coordinating Element (DCE) deployment of Department of Defense or National Guard search and rescue assets;
- **ESF-9** Consider requests to the United States Agency for International Development (USAID) for deployment of foreign search and rescue teams through the International Assistance System (IAS).

Public Health & Medical Treatment

Triage requirements from multiple jurisdictions and prioritize emergency – level health and medical treatment resources to meet critical need(s). Deploy countermeasures and prophylaxis to survivors in need within the impacted areas.

- **ESF – 6** Identify immediate feeding, hydration, and bulk distribution (including durable medical equipment (DME) and Consumable Medical Supplies (CMS) requirements for the affected areas and coordinate with logistics to support requirements;
- **ESF – 8** Validate operability of local medical facilities and develop needs assessment for deployment of personnel and supplies.
 - Request deployment of available DMAT teams according to priorities.
 - Make requests to NGO's and private non-profit organizations to provide emergency level health and medical services.
 - Provide pharmacy prescription support for population (based on a national average data from HHS).

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- **ESF – 13** Provide security for the transportation and dissemination of medical supplies and pharmaceuticals.

Mass Care Services

Provide life-sustaining services to impacted population with a focus on hydration, feeding and sheltering. Instruct affected population on sheltering guidance while mass care services are prioritized and deployed.

- **ESF -6, ESF-15** Provide shelter instructions for all jurisdictions and provide sheltering locations to ambulatory populations;
- **ESF - 6** Employ shelter location identification systems to begin identifying available facilities, capacities, and uses.
- Activate family reunification service systems (e.g. National Mass Evacuation Tracking System, National Family Emergency Registry and Locator System, Safe and Well, National Emergency Child Locator Center) and deploy National Center for Missing and Exploited Children Team Adam (missing child rapid response system) to support reunification at the state and local levels.
 - Provide overall coordination of sheltering, feeding, and other activities to support emergency needs of survivors including economic assistance and other services for individuals impacted by an incident.
- **ESF – 7** Establish Community Point of Distribution (C-POD) locations to provide water, food and life sustaining resources for survivors able to shelter in place. Due to damaged infrastructure, these locations will need to be within walkable distances of survivors;

Fatality Management Services

Mass fatalities from this event scenario assume loss of life and human suffering that cannot be met through usual individual, local and State resources.

- **ESF – 1** Infrastructure / roadway access for transportation;
- **ESF – 6** Provide family members with access to areas for identification, collection and making transportation arrangements;
- **ESF – 8** Public Health and Medical Services is responsible for establishing:
 - Mortuary Support Services;
 - Temporary storage ;
 - Recovery and/or collection of deceased;
 - Identification;
 - Provide family members with information respect to the identification and collection of the deceased as well as death certificates.

Environmental Health and Safety

Appendix B. Core Capabilities

Ensure event specific environmental health and safety focused guidance is implemented within both for the affected communities and by response forces and Whole Community partners. Support jurisdictions to mitigate life threatening toxin hazards, inform public on protective measures, and prepare responders for contact with environmental hazards.

- **ESF – 5** ensure that incident specific briefing and personal protective equipment training are accomplished prior to responder deployment or employment in the impacted areas;
- **ESF – 10** To provide technical assistance to local and tribal jurisdictions:
 - Assess hazardous materials locations in impacted areas that may threaten responder and survivor safety;
 - Determine actions to prevent, minimize, or mitigate a release of hazardous materials and oil spills and develop a plan for cleanup or evacuation prioritization;
 - Coordinate with local and tribal partners to identify locations of hazardous materials storage, treatment and disposal sites and other potential areas of releases of oil and hazardous materials;
- **ESF – 15** Provide information and safety measures regarding environmental hazards to populations and responders.

Stabilize & Repair

Identify and stabilize damaged critical infrastructure to minimize cascading threats to the population and environmental resources. Coordinate public works and engineering related missions in support of the State Emergency Operations Plan.

- **ESF – 1, ESF – 5, ESF-7, ESF-10, ESF-12:**
 - Prioritize restoration of energy grid to focus on life saving;
 - Coordinate resources deployed through the Oregon Public Works Cooperative Assistance Agreement, roadway clearance and bridging, providing engineering expertise, hazardous materials response, fuels and power;
 - Provide heavy equipment and engineering resources;
 - Assess power plants, refineries, chemical facilities for damage and vulnerabilities;
 - Coordinate contracting assistance and maintain an emergency contractor registry for public works.

Public Safety and Security

Support local jurisdictions to re-establish public safety operations that ensure saving lives and protecting property. Provide support for responders engaged in lifesaving and sustaining operations.

Appendix B. Core Capabilities

- **ESF-13** Deploy assessment teams to coordinate with local and tribal partners, assess law enforcement capabilities and provide situational awareness for determining operational objects driven by the consequences and severity of the incident(s).
 - Request assistance from the Oregon National Guard to secure critical infrastructure in coordination with local law enforcement agencies;
 - Determine needs of local law enforcement and county jails for transportation and incarceration of inmates as needed.

Public & Private Services & Resources

Re-establish the public and private sector supply chain(s) to restore survivor access to goods and services and to maintain economic activities in Oregon.

- Coordination with private sector suppliers to enable rapid distribution of commodities and medical supplies;
- Provide initial guidance for Public Assistance (PA) related issues and identify critical sewer, water, and transportation needs, post incident.
- **ESF – 3** Assist in establishing safe, accessible areas for points of distribution as well as sheltering.
- **ESF – 6** Coordination with NGOs and the private sector to establish support facilities for feeding, sheltering, staging and distribution.
- Coordinate debris management activities with public and private sector to begin recovery operations;
- Obtain public works and engineering support.

C

Authorities and References

Federal

The Homeland Security Act of 2002, Pub. L. 107-296, Stat. 2135 (2002) (codified predominantly at 6 U.S.C. §§ 101-557) as amended with respect to the organization and mission of the Federal Emergency Agency in the Department of Homeland Security Appropriations Act of 2007, Pub. L. 109-295, 120 Stat. 1355 (2006), established a Department of Homeland Security (DHS) as an executive department of the United States. The Homeland Security Act consolidated component agencies, including the Federal Emergency Management Agency (FEMA), into the Department. The Secretary of Homeland Security is the head of the Department and has direction, authority, and control over it. All functions of all officers, employees, and organizational units of the Department are vested in the Secretary.

The Robert T. Stafford Disaster Relief and Emergency Assistance Act, Pub. L. 93-288, 88 Stat. 143 (1974), codified in 42 U.S.C. §§ 5121-5206 (2007), was also amended in the Department of Homeland Security Appropriations Act of 2007, Pub. L. 109-295, 120 Stat. 1355 (2006), particularly title VI, the Post Katrina Emergency Management Reform Act 2006 (discussed below). The Stafford Act describes the programs and processes by which the Federal government provides disaster and emergency assistance to State and local governments, tribal nations, eligible private nonprofit organizations, and individuals affected by a declared major disaster or emergency. The Stafford Act covers all hazards, including natural disasters and terrorist events.

The Post-Katrina Emergency Management Reform Act (PKEMRA), which is Title VI of the Department of Homeland Security Appropriations Act, 2007, Pub. L. 109-295, 120 Stat. 1355 (2006), clarified and modified the Homeland Security Act with respect to the organizational structure, authorities, and responsibilities of FEMA and the FEMA Administrator. In addition to these modifications, PKEMRA made changes – some appearing in the Homeland Security Act and some in the Stafford Act – directing FEMA, among other things, to: Establish a Disability Coordinator and develop guidelines to accommodate individuals with disabilities; add disability and English proficiency to the list of provisions requiring nondiscrimination in relief and assistance activities; establish the National Emergency Family Registry and Locator System to reunify separated family members and assist in Establishing the National Emergency child Locator center to locate missing children after a major disaster or emergency; coordinate and support precautionary evacuations and recovery efforts; provide transportation assistance for relocating and returning individuals displaced from their residences in a major disaster; provide rescue, care, shelter, and essential needs assistance to individuals with household pets and service animals as well as to such pets and animals; provide case management assistance to identify and address unmet needs of victims of major

Appendix C. Authorities and References

disasters; and receive input from a National Advisory Council, including State and private-sector member, about the development and revision of the NRF and other related plans or strategies.

State

- Office of the State Fire Marshal. Oregon Fire Services Mobilization Plan. March 2004
- Oregon Administrative Rule 104-010-0005. Participation of Local Governments in the Emergency Management Performance Grant (EMPG) of the FEMA
- Oregon Emergency Management. State of Oregon Emergency Declaration Guidelines for Local Elected and Appointed Officials. March 2005
- Oregon Revised Statutes 401

Local

- County/City Emergency Operations Plans and Supporting Documents
- Memoranda of Agreement / Understanding

Other

- All other Public Laws or Executive Orders enacted or to be enacted which pertain to emergencies/disasters

D

Acronyms

AAR	After Action Report
ACDP	Acute and Communicable Disease Prevention
ACMS	Appellate Court Management System
ACP	Area Contingency Plan
ACRT	Animal Care Response Team
ACS	Auxiliary Communications Service
ADA	American Disabilities Act
AHID	Animal Health Identification Division
AERO	Department of Aviation
AFIS	Animal & Food Industry Services – Office of Veterinary Service
AFO	Area Field Office
AFRCC	Air Force Rescue Coordination Center
ALS	Advanced Life Support
AM	Amplitude Modulation
AMR	American Medical Response
AMSC	American Satellite Communications
AOC	Agency Operations Center
APHIS	Animal Plant Health Inspection Service
APR	Air Purifying Respirators
ARC	American Red Cross
ARES	Auxiliary Radio Emergency Service
ASA	Ambulance Service Area
ASPR	Assistant Secretary for Preparedness and Response
AST	Ambulance Strike Team
ATC	Applied Technology Council
ATC	Air Traffic Control
ATCSCC	Air Traffic Control System Command Center
BATFE	Bureau of Alcohol, Tobacco, Firearms and Explosives
BCD	Building Codes Division
BCP	Business Continuity Plan
BEA	Bureau of Economic Analysis, US
BFSD	Business & Fiscal Services Division
BHERCT	Behavioral Health Emergency Response Coordination Team
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BLS	Basic Life Support
C2	Command and Control
CAF	Children and Families
CAFO	Confined Animal Feeding Operations
CAP	Civil Air Patrol
CAT	Community Action Team
CBP	U.S. Customs and Border Protection
CBRNE	Chemical, Biological, Radiological / Nuclear, and Explosive
CCAP	Chemistry Cooperative Agreement Program
CDC	Central Distribution Center
CDC	Center for Disease Control
CDL	Commercial Driver's License

Appendix D. Acronyms

CEI	Critical Energy Infrastructure
CERT	Community Emergency Response Teams
CIKR	Critical Infrastructure Key Resources
CIS	Critical Infrastructure Sectors
CIS	Catastrophic Incident Supplement
CIS	Court Interpreter Service
CISAR	Catastrophic Incident SAR
CISD	Critical Incident Stress Debriefing
CJIS	Criminal Justice Information System
CLHO	Conference of Local Health Officials
CMHP	Community Mental Health Program
CMS	Centers for Medicare & Medicaid Service
CMS	Consumable Medical Supplies
CSIM	Critical Stress Incident Management
CSZ	Cascadia Subduction Zone
COA	Course of Action
COAD	Community Organizations Active in Disaster
COO	Chief Operating Officer
COOP	Continuity of Operations
COP	Common Operating Picture
COP	Chief Operations Officer
COW	Cellular on Wheels (portable, self-contained)
C-POD	Community Point of Distribution
CREW	Cascadia Region Earthquake Workgroup
CRT	Crisis Response Team
CSIM	Critical Stress Incident Management
CSEPP	Chemical Stockpile Emergency Preparedness Program
CSZ	Cascadia Subduction Zone
DAS	Department of Administrative Services
DCBS	Department of Consumer & Business Services
DCE	Defense Coordination Element
DCO	Defense Coordination Officer
DEA	Drug Enforcement Agency
DEQ	Department of Environmental Quality
DHS	U.S. Department of Homeland Security
DHS	Department of Human Services
DHS	Department of Health Services
DLCD	Department of Land Conservation and Development
DMAT	Disaster Medical Assistance Team
DME	Durable Medical Equipment
DMORT	Disaster Mortuary Operational Response Team
DMSU	Disaster Medical Support Unit
DMV	Department of Motor Vehicles
DOC	Department of Corrections
DOE	Department of Energy
DOGAMI	Department of Geology and Mineral Industries
DRC	Disaster Recovery Center
DPRT	Debris Planning and Response Team
DPSST	Department of Public Safety Standards and Training
DPWG	Domestic Preparedness Working Group
DRC	Disaster Recovery Center
DSCA	Defense Support of Civil Authorities
DSL	Department of State Lands
DSS	Digital Satellite Service
DVET	Disaster Veterinary Assistance

Cascadia Subduction Zone Catastrophic Response Plan

Appendix D. Acronyms

EAS	Emergency Alert System
ECC	Emergency Coordination Center
EEI	Essential Elements of Information
EERI	Earthquake Engineering Research Institute
ELT	Electronic Locator Transmitter
EMAC	Emergency Management Assistance Compact
EMR	Electronic Medical Record
EMS	Emergency Medical Services
EOC	Emergency Operations Center
EOP	Emergency Operations Plans
EPA	Environmental Protection Agency
EPA	Emergency Preparedness Advisor (Governors)
EPR	Emergency Preparedness and Response (US DHS)
ERKV	Emergency Response Kitchen Vehicle
ERT	Emergency Response Team
ERV	Emergency Response Vehicle
ESF	Emergency Support Function
ETSD	Enterprise Technology Services Division
EVMS	Electronic Variable Message Sign
FAA	Federal Aviation Administration
FAC	Family Assistance Center
FAR	Federal Aviation Regulation
FBI	Federal Bureau of Investigation
FBO	Faith Based Organization
FCC	Federal Communications Commission
FCO	Federal Coordinating Officer
FDA	Food and Drug Administration
FECC	Federal Emergency Communications Coordinator
FEMA	Federal Emergency Management Agency
FEMIS	Federal Emergency Management Information System
FERC	Federal Energy Regulatory Commission
FERN	Food Emergency Response Network
FHWA	Federal Highway Administration
FHWA-ER	Federal Highway Administration – Emergency Relief Program
FIAS	Financial Integrated Accounting System
FM	Frequency Modulation
FMCSA	Federal Motor Carrier Safety Administration
FMS	Federal Medical System
FNARS	Federal National Alert Radio System
FNS	Food & Nutrition Services
FOSC	Federal On-Scene Coordinator
FPS	Federal Protective Service
FSOS	U.S. Food Safety and Inspection Service
GETS	Government Emergency Telecommunications Service
GIS	Geographic Information System
GPM	Gallons per Minute
GRC	Governors Recovery Cabinet
GSA	General Services Administration
GW	Gigawatt (Electrical Infrastructure)
HAN	Health Alert Network
HAZMAT	Hazardous Materials
HEAR	Hospital Emergency Administrative Radio
HF	High Frequency
HHS	Health and Human Services
HITRAC	Homeland Infrastructure Threat & Risk Analysis Center

Appendix D. Acronyms

HOSCAP	Hospital Capacity Capability Tracking System
HRSD	Human Resources Service Division
HSPD	Homeland Security Presidential Directive
HSPRP	Health Security Preparedness & Response Program
HUD	U.S. Department of Housing and Urban Development
HVAC	Heating, Ventilation, Air Conditioning
IA	Individual Assistance
IAA	Interagency Agreement
IAB	Information Analysis Brief
IAP	Incident Action Plan
IAO	Individual Assistance Officer
IAS	International Assistance System
ICE	U.S. Immigration and Customs Enforcement
ICP	Incident Command Post
ICS	Incident Command System
IGA	Inter Governmental Agreement
IHP	Individuals & Households Program
IMAT	Incident Management Assistance Team
IMATSuRT	Incident Management Surgical Response Team
IMT	Incident Management Team
IRCT	Incident Response Coordination Team
IRMS	Inventory Management System
IRR	Initial Response Resources
ISAC	Information Sharing and Analysis Center
ISB	Incident Support Base
ISP	Incident Specific Planning
IST	Incident Support Team
ITS	Intelligent Transportation System
IWG	Integrated Working Group
JEOC	Joint Emergency Operations Center
JFC	Joint Force Commander
JFO	Joint Field Office
JHT	Joint Housing Team
JIC	Joint Information Center
JIS	Joint Information System
JOC	Joint Operations Center
JSPU	Joint Strategic Recovery Planning Unit
JTF	Joint Task Force
JUC	Joint Unified Command
LAC	Local Assistance Center
LAN	Local Area Network
LEDS	Law Enforcement Data Systems
LHD	Local Health Department
LIDAR	Light Detection and Ranging
LIMS	Laboratory Information Management System
LMC	Logistics Management Center
LMD	Logistics Management Directorate
LMR	Land Mobile Radio
LNG	Liquid Natural Gas
LNO	Liaison Officer
LPTV	Low Power Television
LRN	Laboratory Response Network
LS	Lateral Spread
LTCR	Long-Term Community Recovery
LZ	Landing Zone

Cascadia Subduction Zone Catastrophic Response Plan

Appendix D. Acronyms

MA	Mission Assignment
MAC	Multi Agency Coordination
MAEAD	U.S. Department of Transportation, Maritime Administration
MCC	Movement Coordination Center
MCI	Multiple Casualty Incident
MCH	Maternal & Child Health
MDRC	Mobile Disaster Recovery Center
MEAD	Maritime Administration
MEDEVAC	Medical Evacuation
MEO	Medical Examiner's Office
MERS	Mobile Emergency Response Support
MFI	Mass Fatalities Incident
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MRE	Meals-Ready-To-Eat
MRC	Medical Reserve Corps
MRV	Multi Radio Van
MSDS	Material Safety Data Sheet
MSL	Mean Sea Level
MSN	Medical Special Needs
MST	Mission Support Team
MTU	Mobile Tower Unit
Mw	Moment Magnitude
NAHERC	National Animal Health Emergency Response Corps
NAS	National Airspace System
NAWAS	National Warning System
NCC	National Coordinating Center for Telecommunications
NCP	National Contingency Plan
NCS	National Communications Plan
NCIC	National Criminal Investigation Center
NDMS	National Disaster Medical System
NDMT	National Disaster Medical Team
NECLC	National Emergency Child Locator Center
NEF	National Essential Functions
NEFRLS	National Emergency Family Registry and Locator System
NFIP	National Flood Insurance Plan
NEIC	National Earthquake Information Center
NERC	North American Electric Reliability Council
NGA	National Geospatial Intelligence Agency
NGB	National Guard Bureau
NGO	Non-Governmental Organization
NHAN	National Health Alert Network
NHTSA	National Highway Transportation Safety Administration
NICC	National Interagency Coordination Center
NICC	National Infrastructure Coordination Center
NIFC	National Interagency Fire Center
NIMS	National Incident Management System
NISAC	National Infrastructure Simulation & Analysis Center
NLC	National Logistics Coordinator
NLETS	National Law Enforcement Telecommunications System
NLS	National Logistics System
NMETS	National Mass Evacuation Tracking System
NOAA	National Oceanic Atmospheric Administration
NOC	National Operations Center
NORAD	North American Aerospace Defense command

Appendix D. Acronyms

NORTHCOM	U.S. Northern Command
NOVA	National Organization of Victims Assistance
NPS	National Park Service
NRC	National Response Corporation Environmental Services
NRCC	National Response Coordination Center
NRF	National Response Framework
NRS	National Radio System (FEMA)
NSP	National Search & Rescue Plan
NSS	National Shelter System
NTIA	National Telecommunications & Information Administration
NTSB	National Transportation Safety Board
NVOAD	National Volunteer Organizations Active in Disaster
NVRT	National Veterinary Response Team
NWCG	North West Coordination Group
NWACP	Northwest Area Committee (DEQ Regional Response Team)
NWCG	National Wildlife Coordination Group
NWS	National Weather Service
OBDD	Oregon Business Development Department
OCS	Oregon Community Services
OCVAS	Oregon Commission for Voluntary Action Service
ODA	Oregon Department of Agriculture
ODOE	Oregon Department of Energy
ODOT	Oregon Department of Transportation
ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish & Wildlife
OEM	Oregon Emergency Management
OEMIT	Oregon Emergency Management Internet Technology
OEPH	Office of Environmental Public Health
OERS	Oregon Emergency Response System
OFB	Oregon Food Bank
OFDA	Oregon Funeral Directors Association
OHA	Oregon Health Authority
OHCS	Oregon Housing & Community Services Department
OIMB	Oregon Institute of Marine Biology
OJD	Oregon Judicial Department
OJIN	Oregon Judicial Information Network
OMD	Oregon Military Department
OMDT	Oregon Medical Disaster Team
OMES	Oregon Medical Examiner System
ONA	Other Needs Assistance
OPA	Oil Pollution Act
OPCON	Operational Control
OPHD	Oregon Public Health Division
OPUC	Oregon Public Utilities Commission
ORM	Operational Risk Assessment
ORNG	Oregon National Guard
ORS	Oregon Revised Statute
ORVOAD	Oregon Volunteer Organizations Active in Disaster
ORWARN	Oregon Water / Waste Water Agency Response Network
OSC	On-Scene Coordinator
OSFM	Oregon State Fire Marshal
OSHA	Occupational Safety and Health Administration
OSHD	Oregon Safety & Health Division
OSP	Oregon State Police
OSPHL	Oregon State Public Health Lab

Appendix D. Acronyms

OSSPAC	Oregon Seismic Safety Policy Advisory Commission
OSWS	Oregon State Warning System
OVMA	Oregon Veterinary Medical Association
PA	Public Assistance
PAR	Population at Risk
PARC	Pesticide Analytical & Response Center
PBX	Phone Branch Exchange
PDA	Preliminary Damage Assessment
PDX	Port of Portland, International Airport
PFM	Portable Maximum Flood
PGA	Peak Ground Acceleration
PGV	Peak Ground Velocity
PHEP	Public Health Emergency Preparedness
PHD	Public Health Department
PHIN	Public Health Information Network
PHMSA	Pipeline & Hazardous Materials Safety Administration
PIM	Public Information Manual
PIO	Public Information Officer
PIT	Public Information Team
PLB	Personal Locator Beacon (Same as ELT Freq.)
POC	Point of Contact
POD's	Points of Distribution
PPE	Personal Protective Equipment
PSA	Public Service Announcement
PSAP	Public Safety Answering Point
PSIC	Public Safety Interoperable Communications
PSMA	Pre-Scripted Mission Assignment
PSTN	Public Switched Telephone Network
PUC	Public Utilities Commission
RA	Regional Administrator
RACES	Radio Amateur Civil Emergency Services
RADS	Regional Advisors to Department
RCIS	Reliability Coordinator Information System
RDC	Regional Data Center
RDC	Regional Dispatch Center
RDF	Rapid Deployment Force
RDMB	Risk Development & Modeling Branch
REMAC	Regional Emergency Management Advisory Committee
REOC	Regional Emergency Operations Center
RETCO	Regional Emergency Transportation Coordinator (US DOT)
RF	Radio Frequency
RIMS	Response Information Management System
RISC	Regional Interagency Steering Committee
RPC	Recovery Planning Cell
RRCC	Regional Response Coordination Center
RRT/NWACP	Regional Response Team/North West Area Committee
RSC	Responder Support Camp
RSP	Regional Support Plan
RST	Responder Support Team
RTK-GPS	Real-time Kinematic Global Positioning System
SA	Spectral Acceleration
SA	Staging Area
SAP	Safety Assessment Program
SAR	Search and Rescue
SARA	Superfund Amendments Reauthorization ACT, Title III

Appendix D. Acronyms

SBA	U.S. Small Business Administration
SCO	State Coordinating Officer
SDA	State Distributing Agencies
SDARS	Satellite Digital Audio Radio Service
SERV-OR	State Emergency Registry of Volunteers in Oregon
SITREP	Situation Report
SME	Subject Matter Expert
SMVP	State Managed Volunteer Pool
SNPS	Strategic National Pharmaceutical Stockpile
SNS	Strategic National Stockpile
SOP	Standard Operating Procedure
SPD	Seniors & Persons with Disabilities
SRSD	Safety, Reliability and Security Division (OPUC)
SSB	Support Services Branch
SSNERR	South Slough National Estuarine Research Reserve
STR	Strategic Technology Reserves
STRAHNET	Strategic Highway Network (Federal)
SWAN	State Wide Area Network
TAG	Adjutant General
TCC	Toketee Control Center
TCL	Target Capabilities List
TDD	Telephone Device for the Deaf
TF	Task Force
TFR	Temporary Flight Restriction
TMOC	Transportation Management Operations Center
TOC	Transportation Operations Center
TRANSCOM	U.S. Transportation Command
TSA	Transportation Security Administration
TTX	Table Top Exercise
U.S. EPA	U.S. Environmental Protection Agency
UACG	Unified Area Coordination Group
UC	Unified Command
UCG	United Coordinated Group (Federal)
UHF	Ultra High Frequency
USAR	Urban Search and Rescue
USAID	U.S. Agency for International Development
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USC	U.S. Code
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture Food and Nutrition Service
USDOD	U.S. Department of Defense
USDOE	U.S. Department of Energy
USDHCD	U.S. Department of Housing & Community Development
USDOI	U.S. Department of the Interior
USDOJ	U.S. Department of Justice
USDOS	U.S. Department of State
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFDA	U.S. Food & Drug Administration
USFS	U.S. Forest Service
USGS	U.S. Geological Service
USMS	U.S. Marshals Service
USN	U.S. Navy
USPHS	U.S. Public Health Service

Appendix D. Acronyms

VAL	Voluntary Agency Liaison
VAT	Veterinary Assistance Teams
VHF	Very High Frequency
VMAT	Veterinary Medical Assistance Team
VMS	Variable Message Sign
VOAD	Voluntary Organizations Active in Disaster
VOIP	Voice over Internet Protocol
VOLAG	Voluntary Agency
WAN	Wide Area Network
WATS	Wide Area Telephone System
WEI	Western Energy Institute
WPS	Wireless Priority Service
WRD	Oregon Water Resource Department