

IA 4 – Dam Failure (Bull Run)

THIS PAGE LEFT BLANK INTENTIONALLY

Table of Contents

- 1 Introduction IA 4-1**
 - 1.1 PurposeIA 4-1
 - 1.2 ScopeIA 4-1
 - 1.3 Policies and Agreements.....IA 4-1

- 2 Situation and Assumptions IA 4-2**
 - 2.1 SituationIA 4-2
 - 2.2 Failure ConditionsIA 4-3
 - 2.3 Assumptions.....IA 4-4

- 3 Roles and Responsibilities of Tasked Agencies IA 4-4**
 - 3.1 On-Scene Incident Command/Command CenterIA 4-5
 - 3.2 Clackamas County Sheriff’s OfficeIA 4-5
 - 3.3 Sandy Fire DistrictIA 4-5
 - 3.4 Disaster Management (CCDM)IA 4-5
 - 3.5 American Medical Response.....IA 4-6
 - 3.6 Clackamas County 9-1-1 CommunicationsIA 4-6
 - 3.7 Fire Defense Board.....IA 4-6
 - 3.8 City of SandyIA 4-7
 - 3.9 Health, Housing and Human Services (H3S)IA 4-7
 - 3.10 Transportation and Development/Public Works.....IA 4-7
 - 3.11 Utility Providers.....IA 4-7

- 4 Concept of Operations..... IA 4-7**
 - 4.1 General.....IA 4-7
 - 4.2 Alert and Warning.....IA 4-8
 - 4.2.1 Public Alert and Warning.....IA 4-8
 - 4.2.2 Stakeholder Alert and WarningIA 4-8
 - 4.2.3 Message Responsibility.....IA 4-8
 - 4.2.4 Notification Methods.....IA 4-9
 - 4.2.5 Alert and Warning Content (if needed beyond initial CCENS notification).....IA 4-9
 - 4.3 Initial Response ActionsIA 4-9
 - 4.4 Evacuation.....IA 4-9
 - 4.4.1 Evacuation Levels.....IA 4-9
 - 4.4.2 Inundation AreaIA 4-10
 - 4.4.3 Evacuation ResponseIA 4-11
 - 4.4.4 Evacuation Re-Entry.....IA 4-12
 - 4.5 Shelter and Mass CareIA 4-12

- 5 Emergency Coordination IA 4-13**
 - 5.1 General.....IA 4-13

IA 4. Dam Failure (Bull Run)

5.2 Cities.....IA 4-13

5.3 Special DistrictsIA 4-14

5.4 CountyIA 4-14

5.5 Regional.....IA 4-14

5.6 State and Federal AssistanceIA 4-14

6 Support Annex Development and MaintenanceIA 4-14

7 AppendicesIA 4-14

Appendix A IA 4 Resources.....IA 4-16

Tasked Agencies	
Primary Agencies	Clackamas County Sheriff’s Office (CCSO) Sandy Fire District
Supporting Agencies	American Medical Response Clackamas County Communications (CCOM) Clackamas County Disaster Management (CCDM) Fire Defense Board City of Sandy Health Housing & Human Services (H3S) Department of Transportation and Development (DTD)
Community Partners	Portland Water Bureau (PWB)

1 Introduction

1.1 Purpose

The purpose of this annex is to establish procedures for warning, evacuation and sheltering of the affected population¹ who would be endangered in the event of the failure of one or both of the City of Portland’s Bull Run Dams (No. 1 and/or No.2) in Clackamas County, resulting in flooding along the Bull Run and Sandy Rivers. This annex provides guidance for all stakeholders in the affected area. It also addresses similar emergency response actions which might be required in the event of flooding caused by emergency releases from the Bull Run Dam(s).

1.2 Scope

The Bull Run Dams located on the Bull Run River in Clackamas County are owned and operated by the City of Portland Water Bureau (PWB). The PWB maintains an Emergency Action Plan for the dams. Emergency Action Plans are provided to all major stakeholders with jurisdiction in or around the potential dam failure hazard zone. Failure of the dams can occur in different manners and impact time for the first wave to reach populated areas is very short; water waves could arrive in as few as 20 minutes from the time of dam failure.

1.3 Policies and Agreements

The designated On-Scene Incident Command/Command Center (Leading Fire and/or Law Agency) or Emergency Operations Center (EOC) Command both have authority to order evacuation for the affected population should one or both of the Bull Run Dams fail and create flooding along the Bull Run and Sandy Rivers.

- Oregon Revised Statutes (ORS) 401.309 gives counties and cities the authority to evacuate persons from a designated emergency area.

¹ For the purpose of this annex, the “affected population” is “Any resident and/or business in need of evacuation that is located within or adjacent to the inundation zone, including anyone who could be at a park or public access point below the impacted dam.”

IA 4. Dam Failure (Bull Run)

- ORS 401.309 authorizes a county or city to order mandatory evacuation only after an Emergency Declaration has been declared and only when necessary for public safety
- Clackamas County Code, Emergency Regulations, 6.03.060 authorizes the Board of County Commissioners (BCC) to order and enforce evacuation as an emergency measure.
- H.R. 3858 [109th]: Pets Evacuation and Transportation Standards Act of 2006 requires state and local to include evacuation, transport, and care of household pets and service animals in their disaster or emergency plan.
- 2007 HB 2371 requires operators of care facilities to develop plans and train employees to evacuate clients/residents to a place of safety when conditions of imminent danger require relocation.
- ORS 411.054 establishes standards for assisted living and residential care facilities to enhance the dignity, independence, individuality, and decision making ability of the resident in a safe and secure environment.

2 Situation and Assumptions

2.1 Situation

The Bull Run Watershed is the primary drinking water supply for the City of Portland and its 20 wholesale customers. Water from the Bull Run serves more than 950,000 residents in the Portland metropolitan region.

The protected Bull Run Watershed is located 26 miles from downtown Portland in the Sandy River basin on the Mt. Hood National Forest.

The 102 square-mile protected Bull Run Watershed collects water from rain and snowmelt that then flows to the Bull Run River and its tributaries. The river drains into two reservoirs, where more than 17 billion gallons are stored. The PWB treats the water before it enters into the three conduits that transport it to Portland. The water moves through the system by gravity, requiring no fossil fuel consumption to move water from its intake to the main storage reservoir at Powell Butte.

The Bull Run Dams (No. 1 and No. 2), owned and operated by the PWB and located within the Bull Run Watershed, are part of the Portland Hydroelectric Project which includes two powerhouses and two major water storage dams with the various inlet and outlet works. The furthest upstream of the Portland Hydroelectric Project facilities is Bull Run Dam and Reservoir No. 1. Water flows from this reservoir, past Dam No. 1, and then back into the Bull Run River channel where it is once again impounded by Bull Run Dam No. 2, which is located approximately four miles downstream. Each dam and reservoir serves as the forebay for their respective powerhouse, both located directly at their downstream toe.

Downstream of Bull Run Dam No. 2, the Bull Run River flows through a narrow, steep-walled canyon which is heavily timbered. The “community” of Bull Run, located about 5 miles downstream of Dan No. 2, is the site of a highway bridge across the river. Dodge Park (and PWB-owned picnicking and camping park), the headquarters for the PWB’s Bull Run maintenance crews, and several residences are located another one and a half miles downstream from Bull Run at the confluence of the Bull Run and Sandy Rivers. A highway bridge crosses the Sandy River just above that confluence. Below this confluence, the Sandy River flows in a deep steep-walled canyon, for another 15.5 miles before it flows through the town of Troutdale in

Multnomah County. Once past Troutdale, the Sandy River flows another three miles to its confluence with the Columbia River.

The Portland Water Bureau Emergency Action Plan for the Bull Run dams contains inundation maps which show the projected limits of inundation along the Bull Run and Sandy Rivers that could be caused by a hypothetical worst case dam break scenario at the City's Bull Run Water Supply dams. The limits of flooding shown in the maps are approximate and should only be used as a guideline for establishing evacuation areas. Actual areas inundated will depend on actual failure conditions and may differ from areas shown on the maps.

Table 1 Approximate Number of People Needing Shelter Following Failure of Both Bull Run Dams		
	West Side of River on Lusted or Serban Roads	East Side of River on March Road
Approximate # of residences (houses, trailers, or apartments)	9	22
Approximate # of people needing shelter (residences X 4)	36	88
Approximate # of people requesting shelter (assume 20% people needing shelter choose to use public shelter)	8	18

2.2 Failure Conditions

The PWB Bull Run Dams No. 1 and No. 2 Emergency Action Plan defines four dam safety emergency conditions:

- HIGH FLOW – FLOODING IS OCCURRING, BUT NO THREAT TO DAM
 - No widespread EAP notifications are required.
 - Examples:
 - Used to inform some contacts about project status during major floods with Dam 1 reservoir level above elevation 1050 feet or Dam 2 reservoir level above elevation 866 feet, with no confirmed damage to dams.
 - Generally used when there is NO DANGER of dam failure.
 - No widespread EAP notifications are required.
 - Examples:
 - Used to inform some contacts of project status after major earthquakes.
 - Dams should be inspected as soon as possible following any earthquake large enough to be felt by people near the dams.
 - Used to communicate information about bomb threats, accidents, small landslides, or increased seepage.
- POTENTIAL FAILURE – CONDITIONS ARE DEVELOPING THAT COULD LEAD TO DAM FAILURE
 - Examples:
 - Flood with Dam 1 reservoir level above elevation 1053.75 feet (overtops parapet).
 - Dam 2 reservoir level above elevation 870 feet (above impervious core).

- Dam 2 crest settlement greater than 12 inches.
 - Significant increase in TURBID/CLOUDY water flowing from EMBANKMENT, ABUTMENT, OR TOE of Dam 1 or 2.
- IMMINENT FAILURE – DAM HAS FAILED, IS FAILING, OR IS ABOUT TO FAIL
 - Example:
 - Material continuously sluicing away from abutments or face of Dam 1 or 2.

2.3 Assumptions

Certain conditions might develop at one or both of the Bull Run Dams that would require the warning and evacuation of the “affected population”—specifically, those people located within the dam failure inundation area downstream from the dam.

- Numerous circumstances can impact the ability to provide adequate notification of an emergency or failure.
 - Not all dam failure scenarios allow ample warning, e.g., a Cascadia Subduction Zone earthquake, or a human caused/adversarial attack may cause the dam to fail rapidly, before authorities have time to issue a warning.
 - The “affected population” is in close proximity to the dam making notification prior to wave arrival quite difficult.
 - If a dam failure is caused by a major earthquake, damage to the public telephone system, both landline and cellular, and the Internet may hinder efforts to warn those in the path of the flood.
 - Damage to bridges and roads, as well as other issues created by a major earthquake could also complicate efforts to notify and/or evacuate the public.
 - A significant earthquake may cause such damage to the entire county that local response resources will be overwhelmed leaving very little response capability to deal with a potential dam failure.
- Sufficient local resources will be available to conduct the basic operations outlined in this annex. This assumption may not be valid if a dam emergency is associated with a significant earthquake.
- If given advance warning, residents will frequently leave the at-risk area (self-evacuate) before told to do so; other residents may refuse to evacuate when instructed to do so. Once an evacuation order is given, many evacuees will seek shelter with relatives or friends, or arrange other accommodations. Others will need emergency shelter provided for them.
- Most evacuees will be able to self-evacuate out of the inundation area, while others will need evacuation assistance; additional/specialized resources may be needed for safe evacuation, transport and sheltering people with access and functional needs (e.g. children; the elderly; individuals with physical impairments, disabilities or other medical conditions; homeless or transient populations; and individuals with limited English proficiency).
- Evacuation assistance will be required by some pet and livestock owners; residents may refuse or delay evacuation unless they can take their animals with them.

3 Roles and Responsibilities of Tasked Agencies

All agencies tasked under this annex will develop and maintain written internal operating plans and implementing procedures, and will train employees in their use. All participating agencies will need to closely coordinate and cooperate during an evacuation that crosses jurisdictional boundaries to ensure evacuee safety and welfare are not compromised.

3.1 On-Scene Incident Command/Command Center

Incident Command may be fire or law enforcement, or unified command, with jurisdiction over the impacted area

- Coordinate evacuation planning with County EOC and/or city.
- Designate boundaries of evacuation area and implement evacuation plan.
- Request County/city authority if evacuation is mandatory.
- Designate evacuee destination(s).
- Establish and operate evacuation routes.
- Develop evacuation instructions for residents.
- Develop and implement evacuation notification plan.
- Ensure evacuation plans include people with disabilities, and access and functional needs (DAFN), pets and service animals.
- Ensure evacuee safety and welfare (unless responsibility has been transferred).
- Secure the evacuated area and establish criteria/procedures for re-entry.
- Get Oregon Emergency Response System (OERS) number.

3.2 Clackamas County Sheriff's Office

- Primary responsibility for planning, coordinating and conducting evacuations.
- Coordinate evacuation route planning and related logistical and operational support.
- Provide traffic and crowd control.
- Secure evacuated area and key facilities.
- Stage and brief incoming personnel who have been assigned to conduct evacuation including mutual aid resources.
- Assist, as needed and if time and resources allow evacuation of DAFN populations (see 4.4.1 for more information).
- Provide security for shelter and mass care operations as resources allow.
- Conduct water rescue operations if required.

3.3 Sandy Fire District

- Primary responsibility for coordinating and conducting rescue operations in a hazardous environment.
- Assist law enforcement in planning and conducting evacuation.
- Assist with evacuations of DAFN populations requiring transportation.
- Conduct decontamination operations if required.

3.4 Disaster Management (CCDM)

- Receive notifications from CCOM.
- Notify stakeholders of situation and establish and sustain information pathway.
- Assist On-Scene Incident Command/Command Center.
- Activate the **Clackamas County Emergency Operations Center**:
 - Identify On-Scene Incident Command/Command Center for the evacuation.
 - Coordinate planning and support for evacuations that occur in unincorporated areas.
 - Provide planning support and coordinate activities for evacuations affecting multiple jurisdictions within the County or with neighboring jurisdictions.
 - Respond to requests for evacuation assistance from cities or On-Scene Incident Command/Command Center.

IA 4. Dam Failure (Bull Run)

- Ensure the BCC and the Oregon Office of Emergency Management (OEM) are notified of the emergency, so they can make proper notifications and keep officials apprised of the situation.
- Get OERS number if not already not already obtained by On-Scene Incident Command/Command Center.
- Coordinate resource requests and Emergency Public Information activities.
- Public Information Officer is responsible for coordinating with stakeholders on a Joint Information System (JIS) by activating the EOC Joint Information Center (JIC).
- Coordinate with Health, Housing, and Human Services (H3S) and the Red Cross to provide and manage shelter and mass care operations
- Coordinate with Dog Services and EOC Operations to ensure that pet shelter is established
- Answer questions pertaining to evacuation and other subjects through activation of the County Public Inquiry Center
- Activate hazard evacuation pre-planning team if time permits
- Initiate re-entry into evacuated areas
- After the emergency has ended, coordinate the following activities:
 - Advise the public and the media of the termination of the evacuation directive and the lifting of the security perimeter (as appropriate)
 - Provide the information necessary to facilitate an orderly return to the evacuated area including any special constraints, conditions, or health and safety concerns for return
- In coordination with CCOM, make Clackamas Emergency Notification System (CCENS) notifications as needed.
- Declare an emergency.
- Consult with the BCC or County Counsel on other emergency actions.
- Request support from the State.

3.5 American Medical Response

- Coordinate planning and evacuation operations with law enforcement and fire.
- Primary responsibility for providing emergency medical services (EMS) and transportation for medically fragile and DAFN evacuees.
- Provide EMS at evacuation staging areas and along evacuation routes.

3.6 Clackamas County 9-1-1 Communications

- Receive initial notification from the City of Portland Bureau of Communications.
- Make emergency notifications as pre-identified in the “INFO DAM” procedure in Computer Aided Dispatch (CAD).
- Activate any other alert and warning method in coordination with Clackamas County Disaster Management (CCDM) and the On-Scene Incident Command/Command Center.

3.7 Fire Defense Board

- Staff the EOC.
- Coordinate countywide fire and rescue response.
- Request mutual aid.
- Potentially invoke Mobilization Act.

3.8 City of Sandy

The inundation area from the Bull Run Dam(s) is in unincorporated Clackamas County, outside the City of Sandy boundary; however, an evacuation of this area would impact the City of Sandy and its residents. The City will coordinate with the County and other stakeholders to the extent possible for the good of all area residents.

- Coordinate evacuation activities that will impact residents of City of Sandy.
- Coordinate activities and assistance requests with the County EOC.
- If capacity exists, conduct direct public alert and warning to its citizens in coordination with County EOC.

3.9 Health, Housing and Human Services (H3S)

- Provide an H3S liaison to the EOC to coordinate shelter and mass care services.
- Provide interim assistance to evacuees at gathering points and evacuation routes.
- Coordinate transfer of responsibility for evacuee safety and welfare with On-Scene Incident Commander/Command Center, cities, service agencies, shelter operators.
- Work with Red Cross and/or County Liaison for sheltering and mass care needs.
- Coordinate DAFN considerations with other responding agencies.

3.10 Transportation and Development (DTD)

- Coordinate evacuation routes, detour options, and enroute resource requirements with stakeholder transportation agencies.
- Assist law enforcement to establish at-risk area perimeter.
- Provide signs, barricades, personnel and equipment along evacuation routes and at designated replenishment stations.
- During any warning phase, pre-position resources near bridges to monitor and be ready to close them immediately should signs of damage or failure be exhibited.
- Maintain clear evacuation routes by removing debris and other obstructions.
- (Dog Services) Coordinate with EOC Operations to ensure pet sheltering needs are addressed.
- Assist in finding transportation for evacuees with pets or service animals.
- Conduct post-incident road and bridge inspections.
- Assist with evacuating livestock.

3.11 Utility Providers

- Secure own assets and protect staff.
- Establish and maintain communication with EOC.
- Coordinate evacuation routes, detour options, and enroute resource requirements with stakeholder transportation agencies.

4 Concept of Operations

4.1 General

This annex is designed to follow the basic protocols set forth in the Emergency Operations Plan (EOP). The EOP describes general roles and responsibilities in responding to a major emergency or disaster that would include evacuations. It also describes how resources are coordinated within the County.

Dam failure response and evacuation actions include:

- Community-wide warning and public instructions such as notifying all affected populations of the threat and the need to evacuate.
- Safe movement and control of individuals, pets and service animals out of the threatened area, including evacuation routes, traffic control and evacuee instructions.
- Transportation support for people with access and functional needs requiring assistance (e.g., people with disabilities, elderly, persons without vehicles).
- Shelter and mass care for evacuees, pets, livestock and service animals.
- Security of the evacuated area, including access control.
- Safe and orderly re-entry to evacuees when it is safe to do so.
- Activation of the EOC to coordinate resource management, information management and policy coordination.

4.2 Alert and Warning

Communicating risks to the public in a clear, consistent (i.e., non-conflicting) and timely manner is essential for orderly evacuations. The operation of the JIC in the EOC to be activated at the earliest opportunity to coordinate and ensure messaging is effective to support orderly evacuations.

4.2.1 Public Alert and Warning

If one or both of the Bull Run Dams should fail, proper procedures are outlined in the following sections below: message responsibility, notification methods and alert and warning content.

4.2.2 Stakeholder Alert and Warning

Upon receiving notification of a Bull Run Dam failure from CCOM, the CCDM Duty Officer notifies pre-identified stakeholders. Message information includes:

- Type of failure condition and affected dam
- Time notification was received
- Contact information for CCDM and follow on instructions

4.2.3 Message Responsibility

- In the event of a Condition A message, CCOM will issue an immediate Level 3 (Go!) CCENS message to all residential phone numbers in the inundation area
- CCOM notifies CCDM for all levels of dam failure conditions. The EOC is activated to support evacuation planning, coordination and operations
- On-Scene IC/Command Center is responsible for conducting Alert and Warning notification above and beyond automatic CCENS notification
- The EOC JIC has primary responsibility for developing and coordinating the evacuation Alert and Warning message and all other relevant communications in coordination with Washington County through the JIS
- CCDM coordinates with impacted cities and jurisdictions to ensure consistent messaging is conveyed through their individual alert and notification systems

4.2.4 Notification Methods

The CCENS can directly notify households with landline and registered cell phones in the designated evacuation area using a “Reverse 9-1-1 type” capability. Other possible notification methods include:

- Emergency Alert System
- Social media
- County web site
- Mobile public address systems such as police vehicles and fire apparatus
- Radio and television
- Door-to-door notification
- The Public Inquiry Center can be used to disseminate alerts and warnings to citizens who call in requesting evacuation information
- Alert and warning for some populations may require special considerations

4.2.5 Alert and Warning Content (if needed beyond initial CCENS notification)

- Specific instructions about what to do (e.g. take 72 hours of medications with you; lock your home; bring household pets and service animals; take food, water and emergency kits).
- Clear directions and procedures for evacuation routes.
- Public transportation options and locations.
- Specific information about the potential consequences of not evacuating.

4.3 Initial Response Actions

The following describes actions to be considered for all response levels depending on the situation. Since the inundation zone crosses jurisdictional boundaries, between Fire Districts and County and cities, the County may activate the EOC and coordinate the countywide response. Local jurisdictions within the flood inundation zone need to be ready to protect their residents and visitors through emergency notification, establishing command structures, and organizing and conducting evacuations. An Incident Commander at any level has decision-making authority to take action described in this annex as the responsibility of an Incident Commander. When multiple Incident Commanders are operating concurrently, each should coordinate those actions with the other Incident Commanders.

4.4 Evacuation

On-Scene Incident Command/Command Center assesses the need for public and DAFN transportation and request resources through the EOC staff or directly with public transit agencies.

Some of the major roads will be impacted; therefore, emergency egress and ingress routes as well as meeting points have been pre-identified in the associated maps. For a detailed listing of these roads, refer to Appendix A: IA 4 Resources.

4.4.1 Evacuation Levels

- Evacuation response should be designated according to the following levels and based on consultation with OEM.

IA 4. Dam Failure (Bull Run)

- **Evacuation Level 1** – A Level 1 Evacuation means “Be Ready” for potential evacuation. The affected population should be aware of the danger that exists in their area, and monitor local media outlets for information. The affected population with special needs or those with pets or livestock should make preparations and begin making precautionary movement.
 - **Evacuation Level 2** – A Level 2 Evacuation means “Be Set” to evacuate. The affected population must be prepared to leave at a moment’s notice. This level indicates a significant danger to the area, and the affected population should either be told to voluntarily relocate to a shelter or with family/friends outside the affected area, or if choosing to remain, to be ready at a moment’s notice. The affected population may have time to gather necessary items, but doing so at their own risk.
 - **Evacuation Level 3** – A Level 3 Evacuation means “Go” Evacuate NOW. Danger to the area is current or imminent, and people should leave immediately. The affected population should not delay leaving to gather belongings or make efforts to protect their home.
- If a Level 1, 2 or 3 evacuation is implemented resources should be deployed first to areas with the highest and earliest risk.
 - Individual jurisdictions may want to identify assembly areas. When considering sites for assembly areas, the following criteria should be considered: sites that have sufficient parking, access, and/or open space such as schools, churches, the county fairgrounds, or parks
 - The evacuation of some DAFN populations may require special coordination and logistical support
 - DAFN populations within the county which may need assistance during evacuations include:
 - Senior citizens
 - People with functional needs
 - Students in public and private schools
 - People with pets
 - Transient and people experiencing homelessness
 - While most facilities with DAFN populations, including schools, are required to have evacuation plans in place, most do not, or are unable to carry them out without assistance from first responders. Public safety officials may be required to facilitate or initiate the evacuation internal to the facility

4.4.2 Inundation Area

The following is an abbreviated list of populated areas downstream from the dam in the expected inundation area. Additional facilities may also be impacted.

Table 2 Approximate number of people needing shelter following failure of both Bull Run Dams		
	West Side of River on Lusted or Serban Roads	East Side of River on March Road
Approximate # of residences (houses, trailers or apartments)	9	22
Approximate # of people needing shelter (residences X 4)	36	88
Approximate # of people requesting shelter (assume 20% people needing shelter choose to use public shelter)	8	18

4.4.3 Evacuation Response

Evacuation takes time and may be complicated by available resources and the condition of evacuation routes due to time of day, weather, type of event triggering the evacuation (e.g., earthquake), and rising flood waters. Even in a Non-Failure Condition incident, the potential for escalation to a Potential Failure or Imminent Failure Condition requires that planning begin immediately for a possible mandatory evacuation.

An evacuation will require many resources and support from multiple agencies to achieve. Consider that:

- Evacuation may be necessary even if individuals don't live in the inundation zone as ingress/egress from their property may be blocked by flood waters or damaged roads and bridges.
- Transportation resources and other physical assistance may be needed.
- Assembly areas may be needed to direct people to prior to the establishment of shelter sites.
- Shelters may need to be established to house and feed evacuees.
- Animals may need to be evacuated.
- Clear and concise information provided to the public about:
 - Who needs to evacuate
 - Evacuation timeframe
 - What routes to use
 - Location of assembly areas and/or shelters
 - The need to avoid high water
- Potential evacuation routes, their capacities, and vulnerability to the hazards that exist at the time of the dam failure have been pre-identified on maps, but additional (if they exist) may need to be identified during the time of evacuation.
- People who are located in the inundation area at the time of an incident should be directed to go to higher ground.
- Traffic may need to be re-routed to minimize congestion as people evacuate affected portions of Clackamas County.
- Roads may need to be blocked at restricted area control points to keep people from intentionally, or inadvertently, entering the inundation zone.
- Similarly, if resources allow, during any warning phase, resources should be pre-positioned near bridges to be ready to close them immediately should signs of damage or failure be exhibited.
- When determining the "time needed for evacuation" consider these time factors:
 - Time from receipt of initial notification of a dam failure to the decision to evacuate

IA 4. Dam Failure (Bull Run)

- Time needed to alert and instruct the public
- Time needed to mobilize the population once warned
- Time required for evacuees to leave the hazard area using the designated evacuation routes with consideration for overcoming obstacles related to earthquake losses, damage, and debris
- Weather conditions
 - If ambient or forecasted conditions present a hazard (e.g., extreme cold or heat, ice, rain) evacuees may need assistance, including:
 - Shelter from the elements
 - Evacuation routes cleared of obstacles/hazards (e.g., debris, snow, ice)

4.4.4 Evacuation Re-Entry

Inundation from a dam failure will be short term, but impacts can result in prolonged hazards from the flood, damage to infrastructure and hazardous materials releases. The following considerations should be addressed prior to allowing re-entry:

- Conduct hazard/damage assessments to determine if additional or new hazards exist prior to allowing evacuees to return. Isolate, mark, or mitigate the hazards as appropriate. This assessment should include inspection of any water, gas, and sanitation lines.
- Provide traffic control and access control (i.e., returning evacuees only) for the return.
- Initiate return of evacuees when and where possible.
- Re-occupation of a previously flooded area may require the same consideration, coordination, and control undertaken in the original evacuation.
- Unified Command makes the re-entry decision after the flood waters have subsided and the evacuated area has been inspected by fire, public works, law enforcement personnel and/or utility work crews for safety.
- Determine if return will be temporary (i.e., long enough to check on damages and get additional personal items, or just during daylight hours) or full return.
- Conduct inspections of buildings that were flooded and tag according to fitness for occupancy.
- Additional re-entry considerations include:
 - Determine the number of persons in shelters who will have to be transported back to their homes
 - If homes have been damaged, determine the interim and long-term housing requirements
 - Inform the public of proper re-entry actions, particularly cautions they should take with regard to reactivating utilities, use of appliances that came in contact with water, and any other health-related issues

4.5 Shelter and Mass Care

A Bull Run Dam failure along the Bull Run and/or Sandy Rivers will cause temporary flooding. This will impact most residents for several hours to one day for a sunny day scenario. For those residents who are severely impacted resulting in damage or loss of housing, the EOC coordinates temporary sheltering.

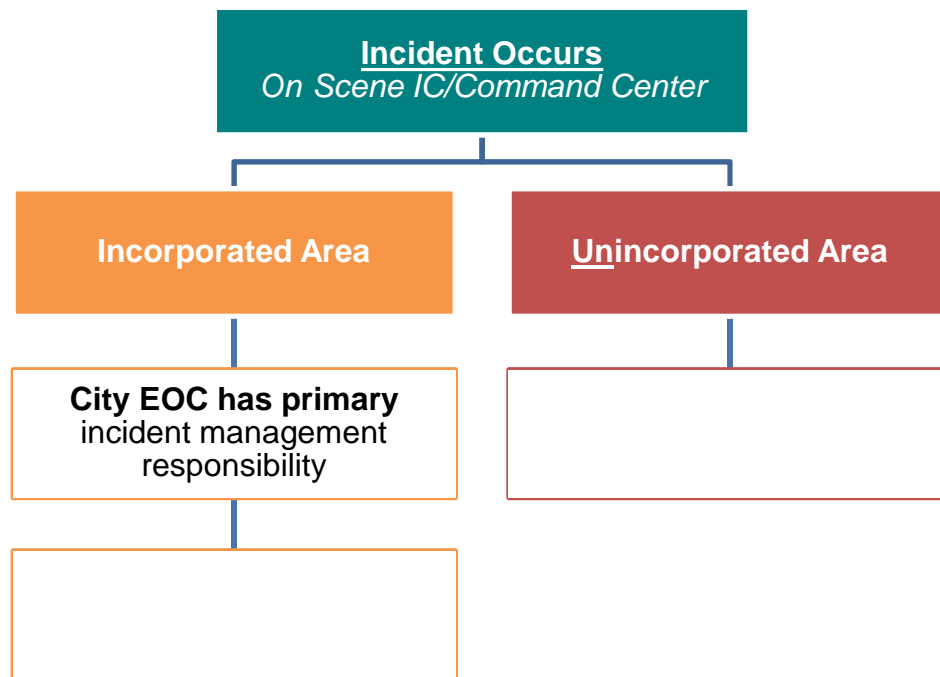
- The Red Cross assigns a liaison to coordinate shelter and mass care requirements along with H3S.
- There is a County list of potential shelter facilities with American Red Cross agreements
- The American Red Cross coordinates with the County EOC to select most appropriate sites and then follows up with their site assessment and shelter operations protocols .

- On-Scene Incident Command/Command Center coordinates transfer of responsibility for evacuee safety and welfare to the American Red Cross or local jurisdiction once evacuees are safely removed from at-risk area.
- Pet shelters are set up and run by the Operations Section of the EOC. Every attempt is made to shelter pets in areas adjacent or in close proximity to their owners.
- H3S is tasked with several functions including mass care and services for the affected population.

5 Emergency Coordination

5.1 General

The County has jurisdictional authority and primary incident management responsibility for incidents that occur in the unincorporated area and for health emergencies countywide. If the incident impacts both the unincorporated and an incorporated area, the county and the impacted city share responsibility. The County responds to city requests for assistance, manage critical resources, and coordinate with outside agencies, adjoining counties, and OEM.



5.2 Cities

If an incident occurs in an incorporated area, the city in which it occurs has jurisdictional authority and primary incident management responsibility. Local jurisdictions activate their own resources and EOCs for an evacuation of their communities based on the failure condition. In most cases, evacuations will require the activation of the County EOC to support the movement of evacuees due to limited local resources.

If two or more cities are impacted, the cities share responsibility for incident management and the safety and well-being of their citizens.

Cities may request county assistance through a mutual aid agreement or by submitting an Emergency Declaration.

5.3 Special Districts

Special districts that are impacted will activate their own resources and EOCs for response, protective actions and evacuation of their facilities based on the failure condition. Special districts may request county assistance through a mutual aid agreement.

5.4 County

EOC Command, along with On-Scene Incident Command/Command Center exercises overall direction and control of the evacuation process.

5.5 Regional

There are many regional agreements that could provide emergency resources that would include equipment, supplies and personnel. The EOC Library has a list agreements with the terms and conditions sited.

5.6 State and Federal Assistance

The Oregon State Police may help in the evacuation of threatened areas, and the Governor may also provide National Guard assistance.

If an evacuation requires resources beyond those available to the county (including mutual aid resources), EOC Command may recommend an Emergency Declaration be enacted to request state assistance.

6 Support Annex Development and Maintenance

In coordination with Stakeholders, CCDM is responsible for maintaining this annex. This annex will be updated according to the schedule outlined in the Basic Plan.

7 Appendices

- Appendix A – IA 4 Resources

THIS PAGE LEFT BLANK INTENTIONALLY

Appendix A IA 4 Resources

The following plans and procedures to support a Bull Run Dam failure are currently in place:

- Emergency Action Plan for The City of Portland, Oregon's Portland Hydroelectric Project FERC Project No. 2821 Including Bull Run Dam No. 1 (NATDAM No, OR 00327 and Bull Run Dam No. 2 (NATDAM No. OR00317)
- Duty Officer Dam Notification Instructions
- CCOM INFO DAM
- List of affected Roads and Infrastructure (dated 2016)
- List of affected addresses and tax lots (dated 2016)

THIS PAGE LEFT BLANK INTENTIONALLY