EMERGENCY ACTION PLANS and EMERGENCY PREPAREDNESS PLANS (3/2014)

Introduction

Although most dam owners are certain their dams will not fail, history has shown that on occasion dams do fail and that often these failures cause extensive property damage—and sometimes death. A dam owner is responsible for keeping these threats to a minimum. A carefully conceived and implemented emergency action plan (EAP) or Emergency Preparedness plan (EPP) is one positive step you, the dam owner, can take to accomplish dam safety objectives, protect your investment, and reduce potential liability.

An Emergency Action Plan or an Emergency Preparedness Plan are not substitutes for proper maintenance or remedial construction, but it facilitates recognition of dam safety problems as they develop and establishes nonstructural means to minimize risk of loss of life and reduce property damage. These guidelines define the requirements of an acceptable EAP/EPP and facilitate their preparation, distribution, annual testing, and updating.

The Emergency Action Plan (EAP) for High and Significant hazard dams and the Emergency Preparedness Plan (EPP) for Low hazard dams are formal documents that:

- Identify potential emergency conditions.
- Identify key personnel to be notified.
- Specify preplanned actions to be followed to minimize property damage and loss of life.
- Contain inundation mapping which identifies critical areas of action in case of emergency, and identifies potential impacted structures with specific contact information, for aid in evacuation.

It is important that the development of the EAP and EPP be coordinated with all entities, jurisdictions, and agencies that would be affected by a dam failure. The final product should be user friendly and adequately describe each group's capabilities and responsibilities.

The Virginia Dam Safety Regulations requires all High and Significant Hazard Dams to have an up to date Emergency Action Plan (EAP) in place and readily accessible for all parties responsible for maintenance and operation of the dam. Low hazard Dams are required to have an Emergency Preparedness Plan (EPP) accessible to all parties of responsibility.

EAP

Prior to September 26, 2008 the EAP was prepared on a Form provided by the State. After September 26, 2008 the EAP must be prepared in report form following specific guidelines outlined in the Regulations. The following format shall be used as necessary to address the requirements of the EAP:

Title Page/Cover Sheet
Table of Contents
I. Certifications
II. Notification Flowchart
III. Statement of Purpose
IV. Project Description
V. Emergency Detection, Evaluation, and Classification
VI. General Responsibilities under the EAP
A. Impounding Structure Owner Responsibilities
B. Responsibility for Notification
C. Responsibility for Evacuation
D. Responsibility for Termination and Follow-Up

E. EAP Coordinator Responsibility
VII. Preparedness
VIII. Inundation Maps
IX. Appendices
A. Investigation and Analyses of Impounding Structure Failure Floods
B. Plans for Training, Exercising, Updating, and Posting the EAP
C. Site-Specific Concerns

EPP

The Emergency Preparedness Plan applies to Low Hazard Class Dams, only. It is a formal document prepared for Low Hazard impounding structures that provides maps and procedures for notifying owners of downstream property that may be impacted by an emergency situation at an impounding structure. It is prepared on DCR Form DCR199-103, which is included in this Handbook and can be downloaded from the DCR Dam Safety and Floodplain Management website: http://www.dcr.virginia.gov/dam_safety_and_floodplains/index.shtml

Inundation maps for the EPP are not required to be signed and sealed by a licensed professional engineer. However, in order to verify the Hazard Class of impounding structures, inundation maps are required to be prepared, signed, and sealed by a licensed professional engineer.

General information for EAPs and EPPs

Notification requirements

The notification chart (EAP) and the completed form (EPP) shall include contact information providing 24-hour telephone coverage for all responsible parties including, but not limited to, the impounding structure operator or manager, state and local emergency management officials, local police or sheriffs' departments, and the owner's engineer. The notification procedures shall also identify the process by which downstream property owners will be notified, and what party or parties will be responsible for making such notifications. This means that the owner must provide 24 hour coverage of the dam operations in order to activate the EAP as needed on a 24 hour basis.

Emergency Detection, Evaluation, and Classification

The EAP document should include a discussion of procedures for timely and reliable detection, evaluation, and classification of an existing or potential emergency condition.

The conditions, events, or measures for detection of an existing or potential emergency should be listed. Data and information collection systems (early warning system hardware, rule curves, or other information related to abnormal reservoir levels, inspection/monitoring plan, inspection procedures, instrumentation plan) should be discussed. The process that will be used to analyze incoming data should also be described.

Procedures, aids, instruction, and provisions for evaluation of information and data to assess the severity and magnitude of any existing or potential emergency should be discussed.

Emergencies are classified according to their severity and urgency. An emergency classification system is one means to classify emergency events according to the different times at which they occur and to their varying levels of severity. The classification system indicates the urgency of the emergency condition. Emergency classifications should use terms agreed to by the dam owner and emergency management officials during the planning process, in order for the

system to work and to ensure organizations understand terminology and respond appropriately to the event.

Declaration of an emergency can be a very controversial decision. The issue should not be debated too long. An early decision and declaration are critical to maximize available response time.

Some locations may require only two emergency classifications, while others may require more. For the purpose of these EAP guidelines, two dam failure emergency classifications and one non-failure emergency classification are provided:

- Failure is imminent or has occurred (Stage 3)
- Potential failure situation is developing (Stage 2)
- Non-failure emergency condition (Stage 1)

General Responsibilities

A. Impounding Structure Owner Responsibilities

The duties of the dam owner or owner's designated representatives under the EAP should be clearly described. Specific actions operators are to take after implementing the EAP notification procedures should be described. The chain of command should be described. Officials and alternates of the dam owner who must be notified should be designated and priority of notification determined.

B. Responsibility for Notification

The person(s) authorized to notify state and local officials should be determined and clearly identified in the EAP. If time allows in an emergency situation, onsite personnel should seek advice and assistance. However, under certain circumstances, such as when failure is imminent or has occurred, the responsibility and authority for notification may have to be delegated to the dam operator or a local official. Such situations should be specified in the EAP. Local agencies will usually establish an Emergency Operations Center (EOC), or Incident Command System (ICS), to serve as the main distribution center for warning and evacuation activities. The availability of specific local resources should be determined through discussion and orientation seminars with local agency personnel.

C. Responsibility for Evacuation

Warning and evacuation planning are the responsibilities of local authorities who have the statutory obligation. Under the EAP, the dam owner is responsible for notifying the appropriate emergency management officials when flooding is anticipated, or a failure is imminent or has occurred. It is the emergency management official's responsibility for evacuation of persons downstream of the dam. Dam owners should not assume, or usurp, the responsibility of government entities for evacuation of people. However, there may be situations in which routine notification and evacuation will not suffice, as in the case of a resident located just downstream of the dam. In this case, the dam owner should arrange to notify that person directly.

D. Responsibility for Termination and Follow-Up

A person should also be responsible for declaring that the emergency at the dam is terminated. The applicable state or local emergency management officials are responsible for termination of the disaster response activities.

A follow-up evaluation after an emergency by all participants should be specified. The results of the evaluation should be documented in a written report.

E. EAP Coordinator Responsibility

A person should be designated for on-site monitoring of the situation at the dam and keeping local authorities informed of developing conditions at the dam from the time that an emergency starts until the emergency has been terminated. Provisions for security measures at the dam during the emergency should be specified.

The dam owner should specify in the EAP the designated EAP coordinator who will be responsible for EAP-related activities, including, but not limited to, preparing revisions to the EAP, establishing training seminars, and coordinating EAP exercises. This person should be the EAP contact if any involved parties have questions about the plan.

Preparedness

The dam owner is responsible for regularly monitoring the condition of the dam and correcting any deficiencies. The plan must include a routine inspection schedule and name the person or position responsible for the inspection; it should emphasize indicators of the onset of problems that might cause failure of the dam:

*slumping, sloughing, or slides on the dam or the abutment
*cloudy or dirty seepage or seepage with an increase in flow, boils, piping, or bogs
*seepage around conduits
*cracks, settlement, misalignment, or sinkholes
*erosion or riprap displacement
*animal burrows, especially those associated with beavers or nutria
*growth of trees and brush
*failure of operating equipment
*abnormal instrument readings
*leakage of water into the intake tower or drop inlet
*undermining of spillways
*overtopping of the dam
*sabotage

The plan must address what action to take and what resources will be used when one of these indicators is observed and how quickly you or your responsible agent is to report the problem and address corrections.

Table top exercises and drills (High and Significant Hazard Dams, only)

Drills

A drill shall be conducted annually for each high or significant hazard impounding structure. A drill is a type of emergency action plan exercise that tests, develops, or maintains skills in an emergency response procedure. During a drill, participants perform an in-house exercise to verify telephone numbers and other means of communication along with the owner's response. To the extent practicable, the drill should include a face-to-face meeting with the local emergency management agencies responsible for any necessary evacuations to review the

EAP and ensure the local emergency management agencies understand the actions required during an emergency.

Tabletop Exercise

A tabletop exercise is a type of emergency action plan exercise that involves a meeting of the impounding structure owner and the state and local emergency management officials in a conference room environment. The format is usually informal with minimum stress involved. The exercise begins with the description of a simulated event and proceeds with discussions by the participants to evaluate the EAP and response procedures and to resolve concerns regarding coordination and responsibilities. A table-top exercise shall be conducted once every six years, although more frequent table-top exercises are encouraged. Drills and table-top exercises for multiple impounding structures may be performed in combination if the involved parties are the same.

Owners shall certify to the department annually that a drill, a table-top exercise, or both has been completed and provide any revisions or updates to the EAP or a statement that no revisions or updates are needed. It is important to record and document all drills and tabletop exercises.

Emergency supplies

It recommended that dam owners keep essential emergency supplies on site if possible or immediately available to handle dam emergencies as they may occur.

Where applicable, document the following:

*Materials needed for emergency repair and their location, source, and intended use. Materials should be as close as possible to the dam site.

*Equipment to be used, its location, and who will operate it

*How the operator or contractor is to be contacted.

*Any other people who may be needed, e.g., laborers, engineers, and how they are to be contacted.

*Also include any other special instructions.

*Materials may include: sandbags, rip rap, fill materials, etc.

*Equipment may include: siphon piping and priming pump, construction equipment, emergency cones, short range communication equipment.

The EAP should list the supplies, where they are located and indicate how to access them. It is recommended that this list be presented within the Appendix. (If no materials or equipment are to be stockpiled, this should be stated in the EAP/EPP).

Appendices (required for EAP, recommended for EPP)

Following the main body of the EAP (the basic EAP), an appendix section should be included that contains information that supports and supplements the basic EAP.

Listed below are some of the topics that should be covered in the appendix accompanying the EAP.

- Investigation and Analyses of Dambreak Floods

- Plans for Training, Exercising, Updating, and Posting the EAP
- Site-Specific Concerns
- Approval of the EAP

Updating the plans

The EAP/EPP should be updated promptly after each change in involved personnel or their telephone numbers, or after completion of a scheduled exercise. In addition periodic updating should be performed to update names and addresses of residents and property owners within the inundation zones and evacuation zones.

EAP Form: Attached is a suggested form that may be used to complete the EAP and can be used in place of the Formal report.

EPP Form: Please see the Forms Section in this Handbook for the Official EPP Form: "**EMERGENCY PREPAREDNESS PLAN FOR LOW HAZARD VIRGINIA REGULATED IMPOUNDING STRUCTURES"**

EMERGENCY ACTION PLAN

FOR

_____Dam

Inventory Number _____
County/City_____

Date of completion_____

EMERGENCY ACTION PLAN

TABLE OF CONTENTS

Certification by Dam Owner/Operator

I certify that procedures for implementation of this Emergency Action Plan have been coordinated with and a copy given to each local Emergency Services Coordinator serving the areas potentially impacted by the dam. Also, that a copy of this Emergency Action Plan has been filed with the Virginia Department of Emergency Management in Richmond and a copy of the Dam Break Inundation Map has been provided to the local government office with plat and plan approval authority or zoning responsibilities as designated by the locality for each locality in which the dam break inundation zone resides; that this plan shall be adhered to during the life of the project; and that the information contained herein is current and correct to the best of my knowledge.

_____

(Signature of Dam Owner/Operator)

This _____day of _____, 20____

Printed Name

_____

Certification by Preparer

I certify that the information provided in this report has been examined by me and found to be true and correct in my professional judgment.

_____

(Signature of Preparer)

This _____day of _____, 20____

Printed Name _____

Title_____

Address _____ Phone

_____

_____

EMERGENCY ACTION PLAN FOR HIGH AND SIGNIFICANT HAZARD IMPOUNDING STRUCTURES

Reference: Impounding Structure Regulations, 4VAC 50-20-10 et seq., including 4VAC 50-20-175, Virginia Soil and Water Conservation Board

I. BASIC INFORMATION

A. Name of Impounding Structure: _____
Inventory Number:_____Other Name (if any): _____

B. Hazard Potential Classification, Virginia Dam Safety Regulations:

Low Significant High (Circle One)

C. Name of Owner:
Address: _____
Telephone: (Business)(_)_____
(Residential) (_) _____ (Cell) (_) _____

D. Name of Dam Operator: _____
Address: _____
Telephone: (Business)(_)_____
(Residential) (_) _____ (Cell) (_) _____

Name of Alternate Dam Operator: _____
Telephone: (Business)(_)_____
(Residential)(_) _____ (Cell) (_) _____

E. Name of Rain/Staff Gage Observer:
Address: _____
Telephone: (Business)(_)_____
(Residential)(_)_____ (Cell) (_) _____

Name of Alternate Rain/Staff Gage Observer: _____

Address:

_____
Telephone: (Business)(_)_____
(Residential)(_) _____ (Cell) (_) _____

F. Name of 24-Hour Dispatch Center:

_____
Address: _____
Telephone: (Business)(_)_____or local emergency #

_____

G. Name of Local Government Emergency Services Coordinator: _____Address: _____

_____

Telephone: (Business)(__)_____ (Cell)(__) _____

Provide additional information if other communities may be impacted _____

_____

_

II. EMERGENCY ACTION PLAN OVERVIEW

The Dam Owner, Dam Operator or Designee may use the following Table to assess weather conditions and operational conditions at the dam to determine the appropriate actions for notifying emergency personnel during potential and actual emergencies.

Step 1: Emergency Condition Detection	Event Detection: See Section VI		
Step 2: Emergency Level	Assess Situation: Determine Emergency Level Using Section VI		
	Emergency Stage 1 Non-Emergency Incident Slowly developing situation See Definition Below	**Emergency Stage 2** Potential dam failure situation Quickly developing situation See Definition Below	**Emergency Stage 3** Urgent Dam failure is imminent or in progress See Definition Below
Step 3: Notification & Communication	**Stage 1** Notification List See Section A	**Stage 2** Notification List See Section B	**Stage 3** Notification List See Section C
Step 4: Expected Action	Inspect Dam Every 6 hrs: Monitor & Listen to Weather Forecasts	Inspect Dam Every 2 hrs, Notify Emergency Responders	Constant inspection of Dam, Continuous contact with Emergency Responders
Step 5: Termination and Follow Up	Termination of Monitoring Conditions at the Dam and Proceed to evaluate damages and plan for repairs		

Surveillance monitoring and observing instrument readings at the dam will be the normal methods of detecting potential emergency situations. For conditions beyond the normal range of operations contact the Emergency Services Coordinator (ESC) for assistance with evaluation of the conditions. Each event or situation will fall into one of the following Stages:

Emergency Definitions

1. Stage 1 – Non-emergency, failure unlikely, storm development or operational malfunctions are slow in escalation to a potential emergency. This Stage

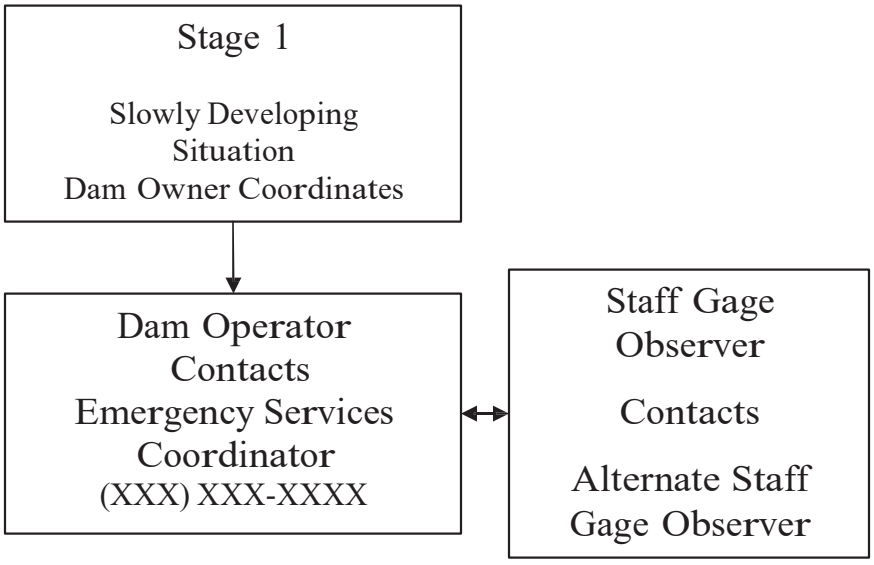
indicates a situation is developing such that the dam is not in danger of failing, but if it continues failure may be possible.

2. Stage 2 – Potential Failure, storm development or operational malfunction are quickly accelerating that could result in failure of the dam. This Stage indicates that a situation is developing that could result in a dam failure.

3. Stage 3 – Imminent Failure, storm or operational malfunction has reached a point that the failure of the dam has started or is imminent. This Stage indicates dam failure is expected or occurring and may result in flooding that will threaten life and/or property downstream of the dam.

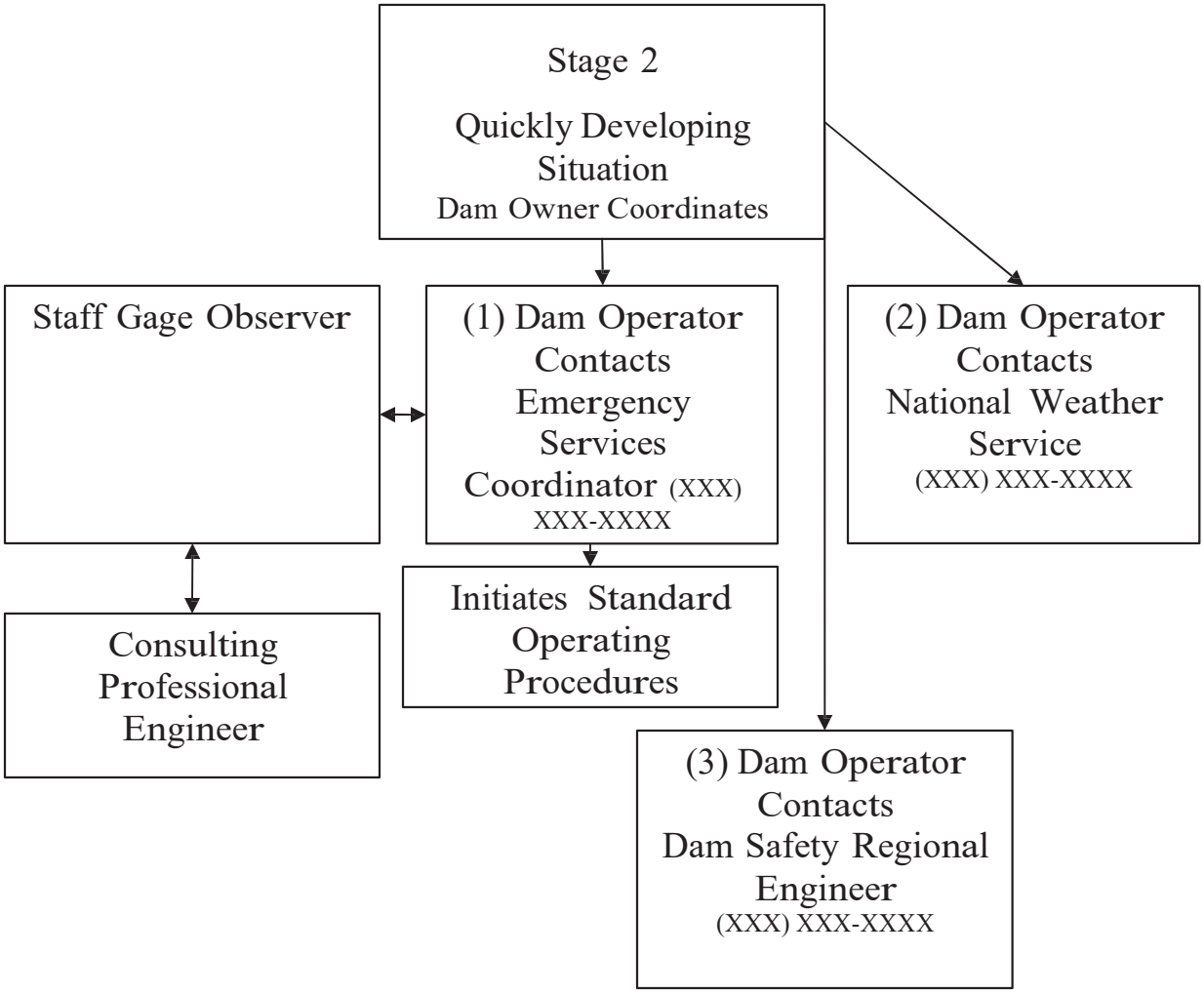
III. NOTIFICATION FLOW CHARTS

A. STAGE 1 NOTIFICATION



Message from dam operator to ESC: I am at **Insert Dam Name** evaluating the general conditions at the dam and coordinating with the staff gage observer as recommended in the emergency action plan. If the impending storm occurs, we may move to stage II and perform more frequent evaluations, otherwise we will visit and make observations every six hours.

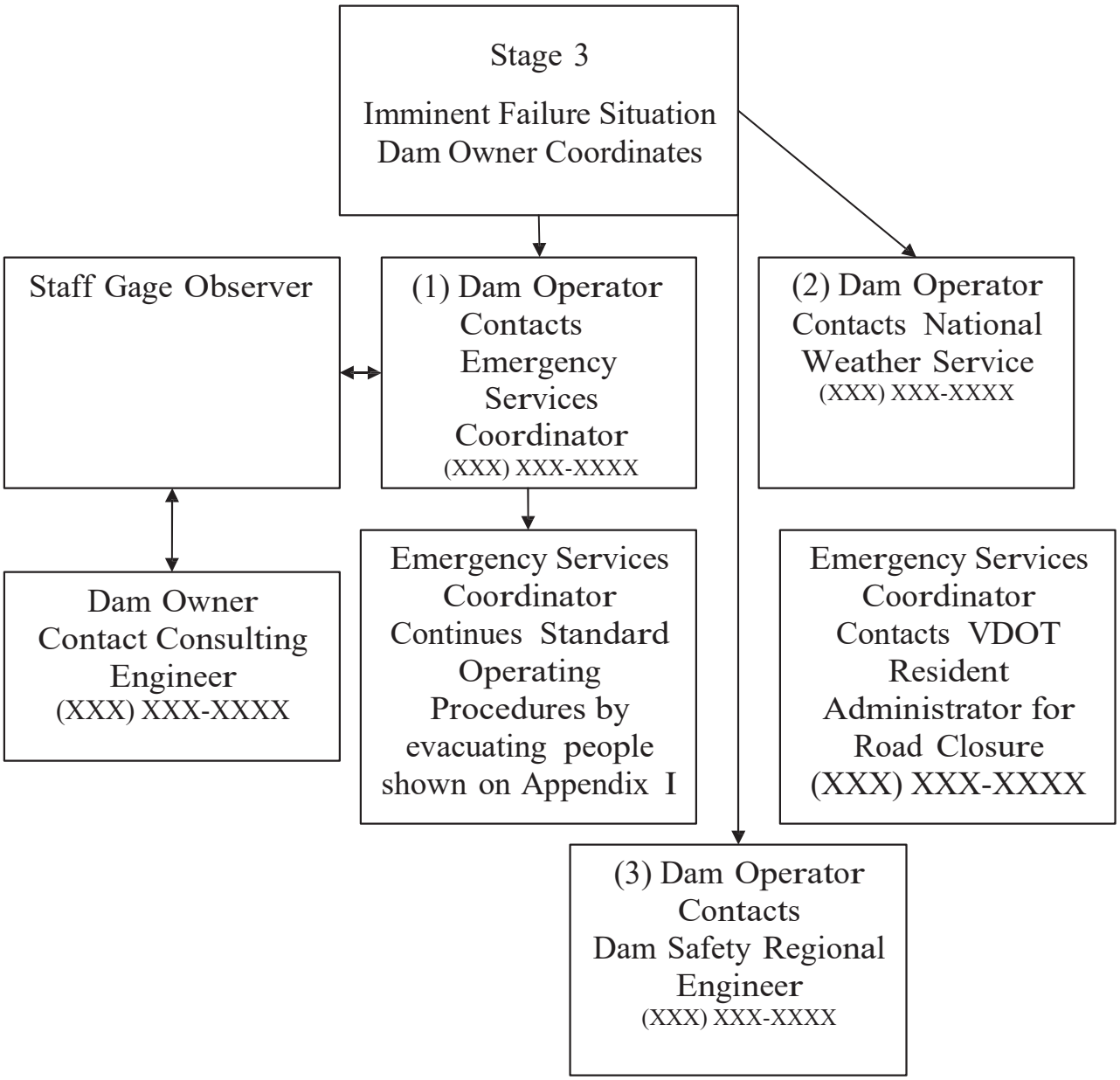
B. STAGE 2 NOTIFICATION



Message from dam operator to ESC: I am at **Insert Dam Name** (or have been to the dam) and the water level has risen into the emergency spillway to the threshold established in the emergency action plan to move to the Stage 2 Emergency Level. Please prepare your personnel in case an evacuation is necessary and continue to initiate your standard operating procedures (SOP). I will be observing the emergency spillway every 2 hours.

Note: Standard Operating Procedures shall include notification of the evacuation team, contacting the National Weather Service for rainfall projections and contacting the state Department of Emergency Management.

C. STAGE 3 NOTIFICATION



Message from dam operator to ESC: I am at **Insert Dam Name** and the water level has risen in the emergency spillway to the threshold established in the emergency action plan to move to the Stage 3 Emergency level. Please proceed with the Standard Operating Procedures. I will remain at the dam to monitor continuously until the dam breaks or the water level recedes to safe levels and the ESC directs me to terminate my responsibility.

IV. STATEMENT OF PURPOSE

"The purpose of this emergency action plan is to safeguard the lives and reduce damage to the property of citizens of **Insert municipality name here** living and/or working along **Insert water course names here,** in the event of failure of **insert dam name, inventory number .**

Impounded water upstream of a dam when released uncontrollably may threaten lives in the flow path downstream or cause damage to homes, roads, bridges and any other infrastructure(s) in its way. This uncontrolled release occurs when the dam or a part of the dam breaks and stored water is released."

V. PROJECT DESCRIPTION

Insert dam name Insert County or City. The dam is _____miles upstream from State Route _ on **name of watercourse** used for **state the purpose(s)**. **Describe the general characteristics of the dam and surrounding area, with specific details of potential impacted areas downstream of the dam in the case of a dam failure. Provide the normal and flood operations of this dam.**
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VI. EMERGENCY DETECTION, EVALUATION, & CLASSIFICATION

The dam owner is responsible for operation and maintenance of this dam. The dam operator and the staff gage observer are responsible for monitoring conditions at the dam and notifying the ESC when emergency stage conditions are activated.

Generally speaking, the dam owner may initiate this emergency action plan based on the issuance of a flood watch or flood warning in the area or when conditions at the dam indicate that the reservoir will continue to rise which will result in flows through the emergency spillway. Embankment erosion or appurtenant malfunction may dictate initiation of the emergency action plan. Public safety is the primary reason that it is incumbent on all responsible parties having roles in the activation of the emergency action plan to work together as a team. While it is the dam owner's responsibility to initiate this process, the Local Government Emergency Services Coordinator may contact the dam owner to inform the team that a flood watch has been issued locally by the National Weather Service and team members would initiate their duties as required in this EAP.

In this section, the specific milestones that trigger the progression from Stage I (slowly developing condition, dam not in danger of failure but downstream flooding possible), to Stage II (quickly developing conditions that could cause the dam to fail if conditions continue to escalate) to Stage III (impending failure/evacuation) are provided. Depth of flow through the emergency spillway is the best indication of flood conditions and should be used as an indicator of the

potential impacts downstream. In the absence of actual flow depth data through the emergency spillway, measured rainfall depths in inches monitored in the contributing watershed may be used to determine the emergency level. Visual observations should be made by a team member so that accurate and up to date information can be provided to the ESC.

A. The amount of flow in emergency spillway that will initiate a:

Stage II Condition _____feet

This depth of flow in the emergency spillway should give the ESC enough time/warning to prepare for increased flooding downstream of the dam.

Stage III Condition _____feet

This depth of flow in the emergency spillway should identify when failure is likely to occur or that overtopping of the dam's embankment commences

B. Amount of rainfall that will initiate a:

Stage II Emergency ____inches per 6 hrs.
____inches per 12 hrs.
____inches per 24 hrs.

Stage III Emergency ____inches per 6 hrs.
____inches per 12 hrs.
____inches per 24 hrs.

C. Frequency of observations by rainfall/staff gauge observer during:

Stage I 6 hours; Stage II 2 hour; Stage III Continuous. The actual times should be determined by the consulting engineer

The Gage Observer should use access routes to the dam bearing in mind that roads crossing small streams may be flooded.

D. Public Roads Downstream from this Dam:

If state roads are located downstream of this dam, this EAP and coordination with the ESC and the local transportation office responsible for the road/bridge(s) should determine flood levels in which the roads will be closed to all traffic. These roads are shown below.

The resident administrator, Virginia Department of Transportation/County Office of Transportation, responsible for opening and closing these roads are listed with area of coverage responsibility and telephone numbers is shown below.

Name of Transportation Administrator: _____
_____
Telephone: (Business)(__)_____; (Residential) (__) _____
Route # _____, _____Miles; Route # _____, ____Miles;
Route # _____, _____Miles; Route # _____, ____Miles.

Name of Transportation Administrator: _____
_____
Telephone: (Business)(__)_____; (Residential) (__) _____
Route # _____, _____Miles; Route # _____, ____Miles;

Use the Table below for guidance in determining the proper emergency stage for various situations.

Event	Situation	Emergency Level
Emergency Spillway Flow	Spillway flowing with active gully erosion	2
	Spillway flowing with advancing head cut that is threatening the control section	3
Embankment Overtopping	Any overtopping flow or within 2 feet of the top of the dam, water level rising	3
Seepage	New seepage areas on or near the dam	1
	New seepage areas with cloudy discharge or increasing flow rate	3
	Rapid flow rate increase with cloudy discharge from existing seepage area(s)	3
Sinkholes	Observation of new sinkhole on embankment	1
	Rapidly enlarging sinkhole	3
Embankment Cracking	New cracks in the embankment greater than 1/4 inch wide without seepage	1
	Cracks in embankment with seepage	1
	Cracks in embankment with rapidly increasing seepage	3
Embankment Movement	Visual movement of the embankment slope	1
	Sudden or rapidly progressing slides of the slopes	3
Vortex in Pond	Whirl pool with discharge downstream	3
Earthquake	Measurable earthquake felt or reported on or within 50 miles of the dam	1
	Earthquake resulting in visible damage to the dam	1
	Earthquake resulting in potential uncontrolled release of water from the dam	3
Security Threat, Sabotage & Vandalism	Verified bomb threat that, if carried out, could result in damage to the dam	1
	Detonated bomb that has resulted in damage to the dam or it appurtenances	1
	Damage to the dam or appurtenances with no impacts to the functioning of the dam	1
	Damage to the dam or appurtenances that has resulted in seepage flow	1

	Damage to the dam or appurtenances that has resulted in a potential uncontrolled water release	3

VII. GENERAL RESPONSIBILITIES UNDER THE EAP

A. Impounding Structure Owner Responsibilities

1. The dam owner/operator **IS RESPONSIBLE** for notifying local ESC of any problem or potential problem at the dam site.

2. The dam owner/operator **WILL INITIATE** dam surveillance under Stage I conditions, **when a flood watch is issued by the National Weather Service.**

3. The dam owner/operator **WILL DETERMINE** when Stage II conditions are met at the dam.

4. The dam owner/operator **WILL DETERMINE** when Stage III conditions are met at the dam.

5. The dam owner/operator **WILL BE RESPONSIBLE** for operating such devices as spillway gates and low level outlets such as to cause the dam to function effectively.

B. Responsibility for Notification

1. The dam owner/operator **WILL NOTIFY** the 24-hour dispatch center and local ESC before beginning dam surveillance under Stage I conditions.

2. The dam owner/operator **WILL NOTIFY** the 24-hour dispatch center and the local ESC when Stage II conditions are met in order to alert them to review actions that may be required for the safety and protection of people and property and to mobilize their evacuation team.

3. The dam owner/operator **WILL NOTIFY** the 24-hour dispatch center and the local ESC to initiate warning/ evacuation of residents when Stage III conditions or imminent dam failure are probable.

C. Responsibility for Evacuation

1. The local ESC **WILL NOTIFY** the people, business owners and land owners, attached to the Dam Break Inundation Zone Map, to notify residents of the potential emergency or evacuation prior to or in the event Stage III conditions are met.

2. The local ESC and 24-hour dispatch center should utilize their Standard Operating Procedures (SOPs) to implement in the event that dam failure is possible or occurring. These SOPs should include evacuation plans.

3. The local ESC **WILL CONTACT** the Virginia Department of Transportation (VDOT) or other authorized personnel to set up barricades to close roads where flood waters will cross on the roads across the dam or within the inundation zone downstream of the dam.

D. Responsibility for Termination & Follow-UP

1. Once the Stage III condition has been met the staff gauge observer will continue to provide the ESC with information concerning water level rise, erosion in the emergency spillway and/or dam overtopping. It is particularly important for the ESC to know when the breach is occurring to evacuate their rescue personnel. The staff gauge observer will remain at the dam until the dam breaks and is released from duty by the ESC.

2. Regional flooding may occur prior to an incident at this dam and could continue for long periods of time. The staff gauge observer needs to have plans for staying or returning to the dam as conditions worsen. The termination responsibility should be handled by the ESC.

3. Post flood event discussions should be used to determine strengths and weaknesses in the emergency action plan while the experience is fresh in the minds of those living through it.

E. EAP Coordinator Responsibility

The dam owner should specify in this EAP the designated EAP coordinator who will be responsible for EAP-related activities, including (but not limited to) preparing revisions to the EAP, establishing training seminars, and coordinating EAP exercises. This person should be the EAP contact if any involved parties have questions about the plan.

G. Methods for Notification and Warning:

Check appropriate method(s) to be used during an emergency:

_____ Telephone/Reverse 911 automated warning systems
_____ Police/fire/sheriff radio dispatch vehicles with loudspeakers, bullhorns, etc.
_____ Personal runners from door-to-door alerting residents
_____ Radio/television broadcasts for area involved
_____ Other methods, as described: _____

G. Evacuation Procedures:

Once the ESC has been notified of any problem at a dam site, the ESC will take appropriate protective measures in accordance with the local Emergency Operations Plan, and accompanying Emergency Action Plan and Standing Operations Procedures.

1. Monitoring the situation and, if time permits, review of evacuation plans.

2. Begin Alert, Notification, and Warning

3. Evacuating the inundation areas, if conditions warrant.

4. Expanding Direction and Control as well as beginning Emergency Public Information and operating shelters.

5. Provide Situation Reports to the State Emergency Operations Center (804-674-2400 or 800-468-8892)

VIII. PREPAREDNESS

A. Surveillance

This dam is unattended under normal operating conditions.

District management and staff should monitor the status of weather fronts through the National Weather Service (NWS). The NWS maintains a hurricane center that reports on hurricanes, tropical storms & tropical depressions as they travel and affect coastal and inland areas. The web site address is: http://www.nhc.noaa.gov/

The expected response time to the dam from the staff gauge observer's home should be less than one (1) hour from the time they receive the information that a flood watch has been declared. The staff gauge observer should never put themselves in harms way. In the event a hurricane or tropical depression occurs with high winds the staff gauge observer shall use extreme caution monitoring conditions.

Preplanned access routes should be utilized given that small streams crossing under state roads may flood preventing safe access. The gauge observers and district staff should never attempt to cross a road that has flood water crossing it at a depth greater than one (1) foot unless the vehicle is specially designed for that purpose.

Alternative routes should be chosen for access by foot in the event that a car is unsafe for use. Other alternative means of transportation may be considered.

B. Response During Periods of Darkness

The staff gauge should be easily read from the location chosen by the staff gauge observer with a flashlight after dark.

The staff gauge observer should check the emergency spillway for erosion once the spillway starts to flow by crossing the top of the dam, if necessary. The staff gauge observer should monitor the water level and go to higher ground when the level rises to within one (1) foot of overtopping the dam.

C. Access to the Site

Access to the site in all weather conditions has been preplanned by the staff gauge observer and alternate observer to avoid areas of flooding.

D. Response During Weekends & Holidays

Staff gauge observers live locally and will respond as needed on a 24 hours per day and a 7 days per week basis.

E. Response During Adverse Weather

The staff gauge observer should never put themselves in harms way. In the event a hurricane or tropical depression occurs with high winds the staff gauge observer should use extreme caution monitoring flood conditions at the dam.

Each staff gauge observer should have protective clothing adequate to ensure their safety at all times during any response to the dam.

F. Alternative Systems of Communications

Communications during a major rainfall event may be problematic. Telephone land lines may be used as the first means of communication. Cellular telephones can be used to supplement the land lines. Unfortunately, telephone lines like electrical lines are subject to being broken by falling trees so radio communication during these events is normally required.

G. Emergency Supplies

Stockpiling of Materials & Equipment: The location of necessary supplies and material, such as barricades, sand, sandbags, etc should be known and available should the need arise.

Emergency access to supplies and equipment should be planned before any emergency is called. The dam owner should list potential supplies and equipment that may be required during an emergency and note address and telephone numbers of the contract sources.

IX. INUNDATION MAPS

NAME, ADDRESS AND TELEPHONE NUMBER OF RESIDENTS AT RISK, COMMERCIAL BUSINESS AT RISK AND PROPERTIES IN THE DAM BREAK INUNDATION ZONE

Name, address and telephone number of all occupied dwellings, businesses, and other constructed facilities that are shown on the Dam Break Inundation Zone Map that may be impacted in the event of a dam failure.

Name	Address	Telephone Number

Name, address and telephone number of owners and or lease holder of lands that are shown on the Dam Break Inundation Zone Map that may be impacted in the event of a dam failure.

Name	**Address**	**Telephone Number**

Additional lines or pages may be added as needed to form comprehensive lists.

APPENDIX A

INVESTIGATION & ANALYSIS OF IMPOUNDING STRUCTURE FAILURE FLOODS

APPENDIX B

PLANS FOR TRAINING, EXERCISING, UPDATING, & POSTING THE EAP

1. Training

Emergency action planning, generally, will be held once a year.

a. Included in this training will be a generic version of a table top exercise that requires the decision to evacuate homes and business in harms way downstream.

b. Time available a second scenario will be presented that does not lead to an evacuation order being given.

2. Exercises

a. Table Top Exercises - Table top exercises will be held, at a minimum, once every 6 years. This exercise will occur in the year that certification is required.

b. Drills - A drills will be conducted each year by the owner except when a table top exercise is required.

3. Updating

This emergency action plan will be checked yearly during the drill exercise to determine if names, addresses and telephone numbers of the people shown in Section II. are accurate. The document will be updated at any time when a major change is determined to have occurred.

4. Posting

This document will be on file with Insert Dam Owner Name, the County Office of the Emergency Services Manager, the DCR Division of Dam Safety, and at the Department of Emergency Management.

APPENDIX C

SITE SPECIFIC CONCERNS

APPENDIX D

ADDITIONAL RESOURCES

DIRECTORY OF ADDITIONAL PERSONNEL WITH DAM SAFETY EXPERTISE

In addition to personnel shown elsewhere in this plan, the following list identifies other individuals with expertise in dam safety, design and construction that may be consulted about taking specific actions at the dam when there is an emergency situation:

Name	Telephone	Responsibility
DCR, Division of Dam Safety		Regional E

SUPPLIES AND RESOURCES

In an emergency situation, equipment, supplies and other resources might be needed on short notice, such as sandbags, rip rap, fill material, and heavy equipment. The table below lists resources that may be helpful and indicates contacts to access them.

Earth Moving Equipment	Rip rap	Sand & Gravel

Sandbags	Pumps	Pipe

Lighting Equipment	Laborers	Other

APPENDIX E

OTHER