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Purpose

The purpose of this EAP is to reduce the risk of human life loss and injury and minimize property damage during an unusual or emergency event at (DAM NAME).

Potential Impacted Area

See Residents, Business, and Roadways at Risk (Appendix B-1) for the locations and contact information of the residents and businesses that may be flooded if the dam should fail.

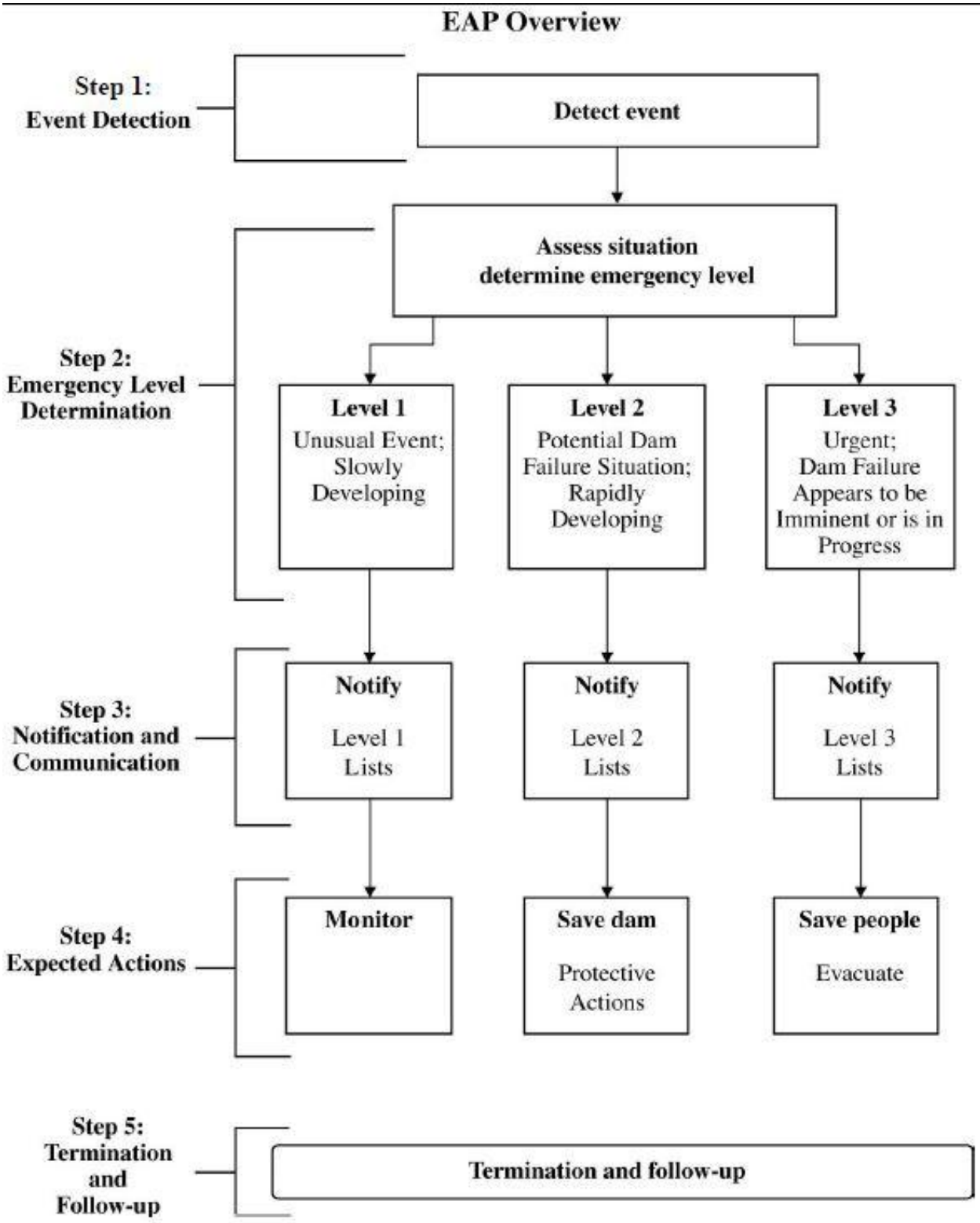
Dam Description

Height: _____
Built: _____
Legal Description:_____
Latitude:_____ Longitude: _____
National Inventory of Dams AR No.: _____

Drainage Area: _____
Hazard Classification: _____
Dam Operator:_____
Major Property Owner: _____
Dam Designer: _____

Pre-existing conditions on this dam: Note Last inspection and results

Directions to dam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Roles and Responsibilities

Dam Operator's Representative (Owner)

- As soon as an emergency event is observed or reported, immediately determine the emergency level (see Emergency Levels).
  - Level 1: unusual event, slowly developing
  - Level 2: potential dam failure situation, rapidly developing
  - Level 3: dam failure appears imminent or is in progress
- Immediately notify the personnel in the order shown on the notification chart for the appropriate level (see Notification Charts).
- Provide updates of the situation to the sheriff dispatcher to assist them in making timely and accurate decisions regarding warnings and evacuations.
- Provide leadership to assure the EAP is reviewed and updated annually and copies of the revised EAP are distributed to all who received copies of the original EAP.

Incident Commander (County Sheriff)

- Serve as the primary contact person responsible for coordination of all emergency actions.
- When a Level 2 situation occurs: Prepare emergency management personnel for possible evacuations that may be needed if a Level 3 situation occurs. Call both the County Office of Emergency Management and National Weather Service Media Line at (501) 834-3955, identify yourself, and confirm that they have activated the flash flood warning broadcast for (DAM NAME) .
- When a Level 3 situation occurs:
  - Initiate warnings and order evacuation of people at risk downstream of the dam.
  - Notify local emergency management services to carry out the evacuation of people and close the roads within the evacuation area.
- Decide when to terminate the emergency.
- Participate in an annual review and update of the EAP.

Emergency Management Services (County)

- Maintain communication with media.
- Maintains a GIS shapefile of the inundation area downstream of the dam for use when a Level 2 or Level 3 situation occurs. This is used to create a geo-fenced area within the CodeRED™ system where the Flash Flood Warning Script for (DAM NAME) will be broadcast to all cell phones and registered land lines within that area.
- When a Level 2 situation occurs:
  - Broadcasts the Flash Flood Warning Script for (DAM NAME) using the CodeRED™ system.
  - Prepare emergency management personnel for possible evacuations that may be needed if a Level 3 situation occurs.
- When a Level 3 situation occurs:
  - Broadcasts the Flash Flood Warning Script for (DAM NAME) using the CodeRED™ system.
  - Immediately close roads and evacuate people within the evacuation area
- Participate in an annual review and update of the EAP.

Dam Operator's Technical Representatives (Owner)

- Advise the dam operator of the emergency level determination if time permits.
- Advise the dam operator of remedial actions to take if a Level 2 event occurs if time permits.

National Weather Service

- Maintains a GIS shapefile of the inundation area downstream of the dam for use when a Level 2 or Level 3 situation occurs. This is used to create a geo-fenced area where the Flash Flood Warning Script for (DAM NAME) will be broadcast to all cell phones within the area.
- Broadcasts the Flash Flood Warning Script for (DAM NAME) when a Level 2 or Level 3 situation occurs.

The Five-step EAP Process

Step 1 Event Detection

This step describes the detection of an unusual or emergency event and provides information to assist the dam operator in determining the appropriate emergency level for the event.

Unusual or emergency events may be detected by:

- Observations at or near the dam by government personnel (local, state, or Federal), landowners, visitors to the dam, or the public
- Evaluation of instrumentation data
- Earthquakes felt or reported in the vicinity of the dam
- Forewarning of conditions that may cause an unusual event or emergency event at the dam (for example, a severe weather or flash flood forecast)

See Guidance for Determining the Emergency Level table for assistance in evaluating specific events to determine if they are unusual or potential emergency situations.

Step 2 Emergency Level Determination

After an unusual or emergency event is detected or reported, the owner or secondary contact is responsible for classifying the event into one of the following three emergency levels:

Emergency Level 1—Nonemergency, unusual event, slowly developing:
This situation is not normal but has not yet threatened the operation or structural integrity of the dam but possibly could if it continues to develop. The condition of the dam should be closely monitored, especially during storm events, to detect any development of a potential or imminent dam failure situation. The County Sheriff and County Emergency Manager should be informed if it is determined that the conditions may possibly develop into a worse condition that may require emergency actions.

Emergency Level 2—Potential dam failure situation, rapidly developing:
This situation may eventually lead to dam failure and flash flooding downstream, but there is not an immediate threat of dam failure. The County Sheriff and County Emergency Manager should be notified of this emergency and placed on alert. The dam operator should closely monitor the condition of the dam and periodically report the status of the situation to the County Sheriff. If the dam condition worsens and failure becomes imminent, the County Sheriff must be notified immediately of the change in the emergency level to evacuate the people at risk downstream.

If time permits, State dam safety officials should be contacted to be apprised of the situation. The dam operator should initiate remedial repairs. Time available to employ remedial actions may be hours or days.

This emergency level is also applicable when flow through the earth spillway has or is expected to result in flooding of downstream areas and people near the channel could be endangered. Emergency services should be on alert to initiate evacuations or road closures if the flooding increases.

Emergency Level 3—Urgent; dam failure appears imminent or is in progress:
This is an extremely urgent situation when a dam failure is occurring or obviously is about to occur and cannot be prevented. Flash flooding will occur downstream of the dam. This situation is also applicable when flow through the earthen spillway is causing downstream flooding of people and roads. The County Sheriff and County Emergency Manager should be contacted immediately so emergency services can begin evacuations of all at-risk people and close roads as needed.

See the following pages for guidance in determining the proper emergency level for various situations.

Guidance for Determining the Emergency Level (tailor to your dam)

Event	Situation	Emergency level*
Earthen Auxiliary spillway flow	Reservoir water surface elevation at auxiliary spillway crest or spillway is flowing with no active erosion	1
	Spillway flowing with active gully erosion	2
	Spillway flow that could result in flooding of people downstream if the reservoir level continues to rise	2
	Spillway flowing with an advancing head cut that is threatening the control section	3
	Spillway flow that is flooding people downstream	3
Embankment overtopping	Reservoir level is 1 foot below the top of the dam	2
	Water from the reservoir is flowing over the top of the dam	3
Seepage	New seepage areas in or near the dam	1
	New seepage areas with cloudy discharge or increasing flow rate	2
	Seepage with discharge greater than 10 gallons per minute	3
Sinkholes	Observation of new sinkhole in reservoir area or on embankment	2
	Rapidly enlarging sinkhole	3
Embankment cracking	New cracks in the embankment greater than ¼-inch wide without seepage	1
	Cracks in the embankment with seepage	2
Embankment movement	Visual movement/slippage of the embankment slope	1
	Sudden or rapidly proceeding slides of the embankment slopes	3
Instruments	Instrumentation readings beyond predetermined values	1
Earthquake	Measurable earthquake felt or reported on or within 50 miles of the dam	1
	Earthquake resulting in visible damage to the dam or appurtenances	2
	Earthquake resulting in uncontrolled release of water from the dam	3
Security threat	Verified bomb threat that, if carried out, could result in damage to the dam	2
	Detonated bomb that has resulted in damage to the dam or appurtenances	3
Sabotage/ vandalism	Damage to dam or appurtenance with no impacts to the functioning of the dam	1
	Modification to the dam or appurtenances that could adversely impact the functioning of the dam	1
	Damage to dam or appurtenances that has resulted in seepage flow	2
	Damage to dam or appurtenances that has resulted in uncontrolled water release	3

* Emergency Level 1: Nonemergency unusual event, slowly developing
* Emergency Level 2: Potential dam failure situation, rapidly developing
* Emergency Level 3: Urgent; dam failure appears imminent or is in progress

Examples of Emergency Situations

The following are examples of conditions that usually constitute an emergency that may occur at a dam. Adverse or unusual conditions that can cause the failure of a dam are typically related to aging or design and construction oversights. Extreme weather events that exceed the original designed conditions can cause significant flow through the auxiliary spillway or overtopping of the embankment. However, accidental or intentional damage to the dam may also result in emergency conditions. The conditions have been grouped to identify the most likely emergency-level condition. The groups are provided as guidance only. Not all emergency conditions may be listed, and the dam operator is urged to use conservative judgment in determining whether a specific condition should be defined as an emergency at the dam.

Earth Spillway Flows

Emergency Level 2—Potential dam failure situation; rapidly developing:

1. Noticeable movement of the spillway slab has occurred such as uplift of a portion of the slab or a depression is noted, but the flow rate does not appear to threaten an imminent breach of the spillway crest that would result in an uncontrolled release of the reservoir.
2. Flow through the earth auxiliary spillway is or is expected to cause flooding that could threaten people, homes, and/or roads downstream from the dam.

Emergency Level 3—Urgent; dam failure appears imminent or is in progress:

1. Significant damage to the auxiliary spillway has occurred and a failure of the auxiliary spillway appears imminent.
2. Flow through the earth auxiliary spillway is causing flooding that is threatening people, homes, and/or roads downstream from the dam.

Embankment Overtopping

Emergency Level 2—Potential dam failure situation; rapidly developing:

1. The reservoir level is within 1 foot of the top of the dam.

Emergency Level 3—Urgent; dam failure appears imminent or is in progress:

1. The reservoir level has exceeded the top of the dam, and flow is occurring over the embankment.

Seepage and Sinkholes

Emergency Level 2—Potential dam failure situation; rapidly developing:

1. Cloudy seepage or soil deposits are observed at seepage exit points or from internal drain outlet pipes.
2. New or increased areas of wet or muddy soils are present on the downstream slope, abutment, and/or foundation of the dam, and there is an easily detectable and unusual increase in volume of downstream seepage.
3. Significant new or enlarging sinkhole(s) near the dam or settlement of the dam are observed.
4. Reservoir level is falling without apparent cause.
5. The following known dam defects are or will soon be inundated by a rise in the reservoir:
   - Sinkhole(s) located on the upstream slope, crest, abutment, and/or foundation of the dam; or
   - Transverse cracks extending through the dam, abutments, or foundation.

Emergency Level 3—Urgent; dam failure appears imminent or is in progress:

1. Rapidly increasing cloudy seepage or soil deposits at seepage exit points to the extent that failure appears imminent or is in progress.
2. Rapid increase in volume of downstream seepage to the extent that failure appears imminent or is in progress.
3. Water flowing out of holes in the downstream slope, abutment, and/or foundation of the dam to the extent that failure appears imminent or is in progress.
4. Whirlpools or other evidence exists indicating that the reservoir is draining rapidly through the dam or foundation.
5. Rapidly enlarging sinkhole(s) are forming on the dam or abutments to the extent that failure appears imminent or is in progress.
6. Rapidly increasing flow through crack(s) eroding materials to the extent that failure appears imminent or is in progress.

Embankment Movement and Cracking

Emergency Level 2—Potential dam failure situation; rapidly developing:

1. Settlement of the crest, slopes, abutments and/or foundation of the dam that may eventually result in breaching of the dam.
2. Significant increase in length, width, or offset of cracks in the crest, slopes, abutments, and/or foundation of the dam that may eventually result in breaching of the dam.

Emergency Level 3—Urgent; dam failure appears imminent or is in progress:

1. Sudden or rapidly proceeding slides, settlement, or cracking of the embankment crest, slopes, abutments, and/or foundation, and breaching of the dam appears imminent or is in progress.

Step 3 Notification and Communication

Notification

After the emergency level has been determined, the people on the following notification charts for the appropriate emergency level shall be notified immediately.

Communication

Emergency Level 1—Nonemergency, unusual event; slowly developing:
The Owner should contact the County Sheriff and County emergency management personnel. Describe the situation and request assistance on next steps to take.

Emergency Level 2—Emergency event, potential dam failure situation; rapidly developing:
The following message may be used to help describe the emergency to the County Sheriff and County Emergency Management Personnel:

> *"This is <insert name>, Representative for Owner.*
>
> *We have an emergency condition at the dam impounding (LAKE NAME), (Give location details).*
>
> *We have activated the Emergency Action Plan for this dam and are currently under Emergency Level 2.*
>
> *We are implementing predetermined actions to respond to a rapidly developing situation that could result in dam failure.*
>
> *Please prepare to evacuate the area along low-lying portions downstream of (DAM NAME).*
>
> *Reference the Residents at Risk map in your copy of the Emergency Action Plan. We will advise*
>
> *you when the situation is resolved or if the situation gets worse.*
>
> *I can be contacted at the following number <insert primary phone number>. If you cannot reach me, please call the following alternative number <insert secondary phone number> to speak to secondary Owner contact <insert secondary contact name>."*

The following message is the flash flood warning for (DAM NAME) to be broadcast by the National Weather Service and the County Office of Emergency Management until notified to stop broadcasting:

> *"A flash flood warning is in effect for low-lying areas south of the dam impounding (LAKE NAME). Listen carefully. Your life may depend on immediate action. A flash flood warning is in effect for low-lying areas downstream (direction) of (DAM NAME) which is located (Give approximate location). The dam impounding (LAKE NAME) failing and low-lying areas should be evacuated. If you are in or near this area, proceed immediately to high ground away from the valley. Do not travel on the following roads: (List affected roads) or any roads over (name of waterway and its tributary). Do not return to your home to recover your possessions. You cannot*

outrun or drive away from the flood wave. Proceed immediately to high ground away from the valley."

Emergency Level 3—Urgent event; dam failure appears imminent or is in progress:
The County Sheriff should be contacted immediately, and the area evacuated. The following actions should be taken:

1. Call the County Sheriff's dispatch center. Be sure to say, "This is an emergency." They will call other authorities and the media and begin the evacuation. The following message may be used to help describe the emergency to the County Sheriff and County emergency management personnel:

   "This is an emergency. This is <insert name>, Representative for Owner.

   The dam at (LAKE NAME)*, (give approximate location) is failing. The downstream area must be evacuated immediately. Repeat, the dam at* (LAKE NAME)*, is failing; evacuate the area along low-lying areas downstream of* (DAM NAME)*.*

   We have activated the Emergency Action Plan for this dam and are currently under Emergency Level 3. Reference the Residents at Risk map in your copy of the Emergency Action Plan.

   I can be contacted at the following number <insert primary phone number>. If you cannot reach me, please call the following alternative number <insert secondary phone number> to speak to secondary Owner contact <insert secondary contact name>."

2. Do whatever is necessary to bring people in immediate danger (anyone on the dam, downstream from the dam, boating on the reservoir, or evacuees) to safety if directed by the County Sheriff, Emergency Management, or other emergency officials.

3. Keep in frequent contact with the Sheriff and emergency services to keep them up to date on the condition of the dam. They will tell you how you can help handle the emergency.

4. If all means of communication are lost: (1) try to find out why, (2) try to get to another radio or telephone that works, or (3) get someone else to try to re-establish communications. If these means fail, handle the immediate problems as well as you can, and periodically try to re-establish contact with the County Sheriff and emergency services.

5. The following message may be used as a guide for the County Sheriff and County emergency services personnel to communicate the status of the emergency with the public:

   Attention: This is an emergency message from the County Sheriff. Listen carefully. Your life may depend on immediate action. The dam at (LAKE NAME) *(give approximate location), is failing. Repeat, the dam at* (LAKE NAME) *(give approximate location) is failing.*

   If you are in or near this area, proceed immediately to high ground away from the valley. Do not travel on the following Roads: (List roads) or any roads near (name waterway) and its tributary. Do not return to your home to recover your possessions. You cannot outrun or drive away from the flood wave. Proceed immediately to high ground away from the valley."

Emergency Level 1 Notifications

Nonemergency
unusual event; slowly developing
(Non-Emergency Calls)

Dam Operator's Representative

Owner Representative

(Cell)
(Home)

Secondary Contact:
(Cell)

(1)

Dam Operator's Technical Representative

Owner Representative

(Cell)
(Home)

(2)

County Sheriff

(Non-Emergency Calls)

State Dam Safety Officials

Arkansas Department of Agriculture Natural Resources Division

Whit Montague, PE, CFM
State Dam Safety Official
501-682-3969 (Office)
501-516-3558 (Cell)

Ben Hunter
State Dam Safety Official
501-682-5219 (Office)

Note: If time permits, State dam safety officials should be contacted to be apprised of the situation.

Note:
1, 2, etc., denotes call sequence

Legend:
Calls by operator _____
Second level calls - - - - -

See Emer. Services Contacts for contact information for back-ups to the persons shown above and other emergency personnel.

Emergency Level 2 Notifications

Emergency event, potential dam failure situation; rapidly developing

Dam Operator's Representative

Owner Representative

(Cell)
(Home)

Secondary Contact:
(Cell)

(1)

National Weather Service
501-834-0308

(2)

Dam Operator's Technical Representative

Owner Representative

(Cell)
(Home)

(3)

Incident Commander

Sheriff County Dispatcher
or
24-Hour 911
911

County Emergency Management

State Dam Safety Officials

Arkansas Department of Agriculture Natural Resources Division

Whit Montague, PE, CFM
State Dam Safety Official
501-682-3969 (Office)
501-516-3558 (Cell)

Ben Hunter
State Dam Safety Official
501-682-5219 (Office)

Note: If time permits, State dam safety officials should be contacted to be apprised of the situation.

Note:
1, 2, etc., denotes call sequence

Legend:
Calls by operator_____
Second level calls - - - - - -

See Communications for pre-scripted messages.

See Emer. Services Contacts for contact information for back-ups to the persons shown above and other emergency personnel.

Emergency Level 3 Notifications

Urgent event, dam failure appears imminent or is in progress

Dam Operator's Representative

Owner Representative

(Cell)
(Home)

Secondary Contact:
(Cell)

(3)

National Weather Service
501-834-0308

(1)

(2)

Incident Commander

Sheriff County
Dispatcher
or
24-Hour 911
911

Dam Operator's Technical Representative

Owner Representative

(Cell)
(Home)

State Dam Safety Officials

Arkansas Department of Agriculture Natural Resources Division

Whit Montague, PE, CFM
State Dam Safety Official
501-682-3969 (Office)
501-516-3558 (Cell)

Ben Hunter
State Dam Safety Official
501-682-5219 (Office)

Note: If time permits, State dam safety officials should be contacted to be apprised of the situation.

County
Emergency
Management

Note:
1, 2, etc., denotes call sequence

Legend:
Calls by operator_____
Second level calls - - - - - -

See Communications for pre-scripted messages.

See Emer. Services Contacts for contact information for back-ups to the persons shown above and other emergency personnel.

Emergency Services Contacts

Agency / Organization	Principal contact	Address	Office Telephone number	Alternate Telephone numbers
Official Observer, Owner				
Owner*				
Arkansas Natural Resources Division**	Whit Montague, PE, CFM State Dam Safety Official	Natural Resources Drive Little Rock, AR 72201-3813	501-682-3969	501-516-3558 (Cell)
	Ben Hunter State Dam Safety Official			
County Sheriff				
County Emergency Management Director				
County Road Department				
National Weather Service	Jim Reynolds Meteorologist-in-Charge (MIC)	8400 Remount Road Little Rock, AR	501-834-0308	N/A
Arkansas Department of Transportation	David Hall Surveys Division Head	10324 Interstate 30, Little Rock, AR	501-569-2341	N/A
Arkansas Highway Police	Jeff Holmes	PO Box 2779 Little Rock, AR	501-569-2421	N/A

* Back-up to primary contact

**If time permits, State dam safety officials should be contacted to be apprised of the situation.

Step 4 Expected Actions

If the County Sheriff receives a 911 call regarding observations of an unusual or emergency event at the dam, they should immediately contact the Owner. After the Owner and/or the County Sheriff determine the emergency level, the following actions should be taken. If time permits.

Emergency Level 1—Nonemergency, unusual event; slowly developing:

A. The Owner should inspect the dam. At a minimum, inspect the full length of the upstream slope, crest, downstream toe, and downstream slope. Also, check the reservoir area, abutments, and downstream channel for signs of changing conditions. **If increased seepage, erosion, cracking, or settlement are observed, immediately report the observed conditions to the County Sheriff; refer to the emergency level table (page 7) for guidance in determining the appropriate event level for the new condition and recommended actions.**

B. Record all contacts that were made on the *Contact Checklist* (Appendix A–1). Record all information, observations, and actions taken on the *Event Log Form* (Appendix A–2). Note the time of changing conditions. Document the situation with photographs and video, if possible.

C. The Owner should contact County Sheriff and investigate the situation.

Emergency Level 2—Potential dam failure situation; rapidly developing:

A. The Owner should contact the County Sheriff to inform him/her that the EAP has been activated and if current conditions get worse, an emergency may require evacuation. Preparations should be made for possible road closures and evacuations.

B. The Owner should contact the National Weather Service and request they broadcast the flash flood warning for (DAM NAME). If time permits, State dam safety officials should be contacted to be apprised of the situation.

C. Provide updates to the Sheriff and emergency services personnel to assist them in making timely decisions concerning the need for warnings, road closures, and evacuations.

D. If time permits, the Owner should inspect the dam. At a minimum, inspect the full length of the upstream slope, crest, downstream toe, and downstream slope. Also, check the reservoir area, abutments, and downstream channel for signs of changing conditions. **If piping, increased seepage, erosion, cracking, or settlement are observed, immediately report the observed conditions to the County Sheriff; refer to the emergency level table (page 7) for guidance in determining the appropriate event level for the new condition and recommended actions.**

E. Record all contacts that were made on the *Contact Checklist* (Appendix A–1). Record all information, observations, and actions taken on the *Event Log Form* (Appendix A–2). Note the time of changing conditions. Document the situation with photographs and video, if possible.

F. If time permits, the following emergency remedial actions should be taken as appropriate.

Emergency Level 2—Potential dam failure situation; rapidly developing—continued:

Emergency remedial actions

If time permits, the following emergency remedial actions should be considered for Emergency Level 2 conditions. Immediate implementation of these remedial actions may delay, moderate, or prevent the failure of the dam. Several of the listed adverse or unusual conditions may be apparent at the dam at the same time, requiring implementation of several modes of remedial actions. Close monitoring of the dam must be maintained to confirm the success of any remedial action taken at the dam. Time permitting, any remedial action should be developed through consultation with the Owner representative. See *Resources Available* (Appendix A–5) for sources of equipment and materials to assist with remedial actions.

Embankment overtopping

1. If the water level in the reservoir is no longer rising, place sandbags along the low areas of the top of the dam to control wave action, reduce the likelihood of flow concentration during minor overtopping, and to safely direct more water through the spillway.
2. Cover the weak areas of the top of the dam and downstream slope with riprap, sandbags, plastic sheets, or other materials to provide erosion-resistant protection.

Seepage and sinkholes

1. Open the principal spillway gate to lower the reservoir level as rapidly as possible to a level that stops or decreases the seepage to a nonerosive velocity. If the gate is damaged or blocked, pumping or siphoning may be required.

   Continue lowering the water level until the seepage stops.

2. If the entrance to the seepage origination point is observed in the reservoir (possible whirlpool) and is accessible, attempt to reduce the flow by plugging the entrance with readily available materials such as hay bales, bentonite, soil or rockfill, or plastic sheeting.
3. Cover the seepage exit area(s) with several feet of sand/gravel to hold fine-grained embankment or foundation materials in place. Alternatively, construct sandbag or other types of ring dikes around seepage exit areas to retain a pool of water, providing backpressure and reducing the erosive nature of the seepage.
4. Prevent vehicles and equipment from driving between the seepage exit points and the embankment to avoid potential loss from the collapse of an underground void.

Embankment movement

1. Open outlet(s) and lower the reservoir to a safe level at a rate commensurate with the urgency and severity of the condition of the slide or slump. If the gate is damaged or blocked, pumping or siphoning may be required.
2. Repair settlement of the crest by placing sandbags or earth and rockfill materials in the damaged area to restore freeboard.
3. Stabilize slides by placing a soil or rockfill buttress against the toe of the slide.

Earthquake

1. Immediately conduct a general overall visual inspection of the dam.
2. Perform a field survey to determine if there has been any settlement and movement of the dam embankment, spillway, and low-level outlet works.
3. Drain the reservoir, if required.

Emergency Level 3—Urgent; dam failure appears imminent or is in progress:

A. The Owner shall immediately contact the County Sheriff and others as shown on the notification chart.

B. The County Sheriff shall lead the efforts to carry out warnings, close roads, and evacuate people at risk downstream from the dam (see Appendix B-1 tab).

C. Emergency management services personnel shall alert the public and immediately evacuate at-risk people and close roads as necessary.

D. The Owner shall contact the National Weather Service and request they broadcast the flash flood warning for (DAM NAME).

E. The Owner shall maintain continuous communication and provide the Sheriff with updates of the situation to assist him/her in making timely decisions concerning warnings and evacuations.

F. The Owner should record all contacts that were made on the *Contact Checklist* (Appendix A–1). Record all information, observations, and actions taken on the *Event Log Form* (Appendix A–2). Note the time of changing conditions. Document the situation with photographs and video, if possible.

G. If time permits, State dam safety officials should be contacted to be apprised of the situation.

H. Advise people monitoring the dam to follow safe procedures. Everyone should stay away from any of the failing structures or slopes and out of the potential breach inundation areas.

Step 5 Termination

Whenever the EAP has been activated, an emergency level has been declared, all EAP actions have been completed, and the emergency is over, the EAP operations must eventually be terminated, and follow-up procedures completed.

Termination responsibilities

The Sheriff is responsible for terminating EAP operations and relaying this decision to the Owner. It is then the responsibility of each person to notify the same group of contacts that were notified during the original event notification process to inform those people that the event has been terminated.

Prior to termination of an Emergency Level 3 event that has not caused actual dam failure, Owner, will inspect the dam or require the inspection of the dam to determine whether any damage has occurred that could potentially result in loss of life, injury, or property damage. If it is determined that conditions do not pose a threat to people or property, the County Sheriff will be advised to terminate EAP operations as described above.

The Owner shall ensure that the *Dam Safety Emergency Situation Report* (Appendix A–3) is completed to document the emergency event and all actions that were taken. The Owner shall distribute copies of the completed report to the Arkansas Natural Resources Division (ANRD).

Maintenance—EAP Review and Revision

EAP annual review

The Owner will review and, if needed, update the EAP at least once each year. The EAP annual review will include the following:

- Calling all contacts on the three notification charts in the EAP to verify that the phone numbers and persons in the specified positions are current. The EAP will be revised if any of the contacts have changed.
- Contacting the local law enforcement agency to verify the phone numbers and persons in the specified positions. In addition, the Owner will ask if the person contacted knows where the EAP is kept and if responsibilities described in the EAP are understood.
- Calling the locally available resources to verify that the phone numbers, addresses, and services are current.

Revisions

The Owner is responsible for updating the EAP document. The EAP document held by the Owner is the master document. When revisions occur, the Owner will provide the revised pages and a revised revision summary page to all the EAP document holders. The document holders are responsible for revising outdated copy of the respective document(s) whenever revisions are received. Outdated pages shall be immediately discarded to avoid any confusion with the revisions.

EAP periodic test

The Owner will host a "Tabletop" Exercise of the EAP. At least one tabletop exercise per year and one test drill every three years will be conducted as required by The Arkansas Natural Resources Commission's Rules Governing Design and Operation of Dams (Title 7).

Attendance should include the Owner/Manager, key staff members, state dam safety officials, at least one representative of the local law enforcement agency, and others with key responsibilities listed in the EAP. At the discretion of the Owner, other organizations that may be involved with an unusual or emergency event at the dam are encouraged to participate. Before the tabletop exercise begins, meeting participants will visit the dam during the periodic test to familiarize themselves with the dam site.

The tabletop exercise will begin with the facilitator presenting a scenario of an unusual or emergency event at the dam. The scenario will be developed prior to the exercise. Once the scenario has been presented, the participants will discuss the responses and actions that they would take to address and resolve the scenario. The narrator will control the discussion, ensuring realistic responses and developing the scenario throughout the exercise. The Owner/Manager should complete an event log as they would during an actual event.

After the tabletop exercise, the five steps of the EAP will be reviewed and discussed. Mutual aid agreements and other emergency procedures can be discussed. The Owner or Facilitator will prepare a written summary of the periodic test and revise the EAP, as necessary.

Record of Holders of Control Copies of this EAP

Copy Number	Organization	Person receiving copy
1		
2		
3		
4		
5		

Appendices—Forms, Glossary, Maps, and Supporting Data

Appendix A

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A–2 Unusual or Emergency Event Log Form

A–3 Dam Emergency Situation Report Form

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A-5 Resources Available

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Appendix B

B–0 Dam Design Drawings

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Appendix A–1

Contact Checklist

(Dam Name)

(County), Arkansas Date _____

The following contacts should be made immediately after the emergency level is determined (see Pages 7-12 for guidance to determine the appropriate emergency level for a specific situation). The person making the contacts should initial and record the time of the call and who was notified for each contact made. See the Notification Charts for critical contact information and Emer. Services Contacts for contact information for other possible emergency services.

Emergency Level 1	Person Contacted	Time Contacted	Contacted by
County Sheriff	_____	_____	_____
Arkansas Natural Resources Division	_____	_____	_____

Emergency Level 2	Person Contacted	Time Contacted	Contacted by
County Sheriff	_____	_____	_____
County Emergency Management	_____	_____	_____
Arkansas Natural Resources Division	_____	_____	_____

Emergency Level 3	Person Contacted	Time Contacted	Contacted by
County Sheriff	_____	_____	_____
County Emergency Management	_____	_____	_____
Arkansas Natural Resources Division	_____	_____	_____

Appendix A–2

Unusual or Emergency Event Log

(to be completed during the emergency)

Dam Name:_____ County:_____

When and how was the event detected?

_____

_____

Weather conditions: _____

_____

General description of the emergency:

_____

_____

_____

Emergency level determination: _____Made by: _____

Actions and Event Progression

Date	Time	Action/event progression	Taken by

Report prepared by:_____Date: _____

Note: *Distribute copies of the completed form to ANRD, See* Emer. Services Contacts *for contact information.*

Appendix A–3

Dam Emergency Situation Report

(to be completed following the termination of the emergency)

Dam Name: _____

National Inventory of Dams (NID) AR No.:

Date:_____Time:_____

Weather conditions: _____

General description of emergency:

_____

_____

Area(s) of dam affected:

_____

_____

Extent of dam damage: _____

Possible cause(s): _____

Effect on dam's operation:_____

Initial reservoir elevation: _____ Time:_____

Maximum reservoir elevation: _____ Time:_____

Final reservoir elevation: _____ Time: _____

Description of area flooded downstream/damages/injuries/loss of life: _____

_____

Other data and comments:

_____

Observer's name and telephone number:_____

Report prepared by:_____Date: _____

Note: *Distribute copies of the completed form to ANRD, See Emer. Services Contacts for contact information.*

Appendix A–4

Glossary of Terms

Abutment That part of the valley side against which the dam is constructed. The left and right abutments of dams are defined with the observer looking downstream from the dam.

Acre-foot A unit of volumetric measure that would cover 1 acre to a depth of 1 foot. One acre-foot is equal to 43,560 cubic feet or 325,850 gallons.

Berm A nearly horizontal step (bench) in the upstream or downstream sloping face of the dam.

Boil A disruption of the soil surface due to water discharging from below the surface. Eroded soil may be deposited in the form of a ring (miniature volcano) around the disruption.

Breach An opening through the dam that allows draining of the reservoir. A controlled breach is an intentionally constructed opening. An uncontrolled breach is an unintended failure of the dam.

Conduit A closed channel (round pipe or rectangular box) that conveys water through, around, or under the dam.

Control section A usually level segment in the profile of an open channel spillway above which water in the reservoir discharges through the spillway.

Cross section A slice through the dam showing elevation vertically and direction of natural water flow horizontally from left to right. Also, a slice through a spillway showing elevation vertically and left and right sides of the spillway looking downstream.

Dam An artificial barrier generally constructed across a watercourse for the purpose of impounding or diverting water.

Dam failure The uncontrolled release of a dam's impounded water.

Dam Operator The person(s) or unit(s) of government with responsibility for the operation and maintenance of dam.

Drain, toe or foundation, or blanket A water collection system of sand and gravel and typically pipes along the downstream portion of the dam to collect seepage and convey it to a safe outlet.

Drainage area (watershed) The geographic area on which rainfall flows into the dam.

Drawdown The lowering or releasing of the water level in a reservoir over time or the volume lowered or released over a particular period of time.

Emergency A condition that develops unexpectedly, endangers the structural integrity of the dam and/or downstream human life and property, and requires immediate action.

Emergency Action Plan (EAP)	A formal document identifying potential emergency conditions that may occur at the dam and specifying preplanned actions to minimize potential failure of the dam or minimize failure consequences including loss of life, property damage, and environmental impacts.
Evacuation map	A map showing the geographic area downstream of a dam that should be evacuated if it is threatened to be flooded by a breach of the dam or other large discharge.
Filter	The layers of sand and gravel in a drain that allow seepage through an embankment to discharge into the drain without eroding the embankment soil.
Freeboard	Vertical distance between a stated water level in the reservoir and the top of dam.
Gate, slide or sluice, or regulating	An operable, watertight valve to manage the discharge of water from the dam.
Groin	The area along the intersection of the face of a dam and the abutment.
Hazard classification	A system that categorizes dams (high, significant, or low) according to the degree of their potential to create adverse incremental consequences such as loss of life, property damage, or environmental impacts of a failure or misoperation of a dam.
Height, dam	The vertical distance between the lowest point along the top of the dam and the lowest point at the downstream toe, which usually occurs in the bed of the outlet channel.
Hydrograph, inflow or outflow, or breach	A graphical representation of either the flow rate or flow depth at a specific point above or below the dam over time for a specific flood occurrence.
Incident Commander	The highest predetermined official available at the scene of an emergency.
Instrumentation	An arrangement of devices installed into or near dams that provide measurements to evaluate the structural behavior and other performance parameters of the dam and appurtenant structures.
Inundation area or map	The geographic area downstream of the dam that would be flooded by a breach of the dam or other large discharge.
Notification	To immediately inform appropriate individuals, organizations, or agencies about a potential emergency so they can initiate appropriate actions.
Outlet works (principal spillway)	An appurtenant structure that provides for controlled passage of normal water flows through the dam.
Piping	The progressive destruction of an embankment or embankment foundation by internal erosion of the soil by seepage flows.

Probable Maximum Precipitation (PMP) or Flood (PMF)	The theoretically greatest precipitation or resulting flood that is meteorologically feasible for a given duration over a specific drainage area at a particular geographical location.
Reservoir	The body of water impounded or potentially impounded by the dam.
Riprap	A layer of large rock, precast blocks, bags of cement, or other suitable material, generally placed on an embankment or along a watercourse as protection against wave action, erosion, or scour.
Risk	A measure of the likelihood and severity of an adverse consequence.
Seepage	The natural movement of water through the embankment, foundation, or abutments of the dam.
Slide	The movement of a mass of earth down a slope on the embankment or abutment of the dam.
Spillway (auxiliary or emergency)	The appurtenant structure that provides the controlled conveyance of excess water through, over, or around the dam.
Spillway capacity	The maximum discharge the spillway can safely convey with the reservoir at the maximum design elevation.
Spillway crest	The lowest level at which reservoir water can flow into the spillway.
Tailwater	The body of water immediately downstream of the embankment at a specific point in time.
Toe of dam	The junction of the upstream or downstream face of an embankment with the ground surface.
Top of dam (crest of dam)	The elevation of the uppermost surface of an embankment which can safely impound water behind the dam.

Appendix A-5

Resources Available

Locally available equipment, labor, and materials:
The following businesses have resources that can be purchased or rented in the event of an emergency:

- Conway Equipment Rental (Phone: 501-499-2606) has Mini Excavator, skid steer, and Scissor Lift for rental at site.
- Redstone Construction group at Little Rock (Phone: 501-374-1557) has excavators, dump trucks, and other earth moving equipment on-site all the time.
- Riggs Cat Equipment at I-30 Little Rock (Phone: 501-570-3100) has all types of heavy equipment for both sale and rental at site all times.

Contact the County Road Department—see Emergency Services Contacts. Other

locally available resources include:

Heavy equipment service and rental	**Sand and gravel supply**	**Ready-mix concrete supply**
Pumps	**Diving contractor**	**Sand bags**

Appendix A–6

National Inventory of Dams (NID) Data*

Dam Name:

State:

NID ID:

Longitude:

Latitude:

Geodetic location:

County:

Stream:

Nearest town:

Distance to nearest town:

Operator:

Year constructed: Max.

discharge: **ft^3/s** Max.

storage: **acre-ft** Normal

storage: **acre-ft** Surface

area: **acre**

Drainage area: **mi^2**

Inspection frequency: **ND**

State regulated?:

State reg. agency:

Federal funding:

Federal design:

*Data reported as currently stated in NID Database.

Program authority: **ND**

Federally Constructed:

Watershed No.: **ND**

Watershed name: **ND**

Service life: **ND**

O&M insp. resp.: **ND**

O&M insp. current?:

ND Population at risk:

ND Dam height: **ft**

Dam length: **ft**

Dam volume: **ND**

Design hazard potential: **ND**

Current hazard potential:

Hazard potential class. year:

Sediment storage: **ND**

Flood storage: **ND**

Surcharge storage: **ND**

Other storage: **ND**

Principal spillway type:\

Principal spillway conduit diameter: **ND**

Auxiliary spillway type: **ND**

Auxiliary spillway width: **ND**

Appendix B–0

Dam Design Drawings

The following drawings were provided by the ANRD Dam Safety Section.

Appendix B–1

Residents, Businesses, and Roadways at Risk

A major flood caused by a sudden breach of the dam in a sunny day event is estimated to inundate or surround (number of structures with a list).

Appendix B–2

Sunny Day Breach Inundation Map

Appendix B–3

Probable Maximum Flood (PMF) Breach Inundation Map

Appendix B–4

Sunny Day Maximum Depth Grid

Appendix B–5

Sunny Day Maximum Water Surface Elevation Grid

Appendix B–6

Sunny Day Maximum Water Velocity Grid

Appendix B–7

Reporting Locations