

# **Emergency Action Plan Template for Florida Dams**

## **Florida Dam Safety Program**

**January 2023**



## **Acknowledgements**

The *Emergency Action Plan Template for Florida Dams* (EAP Template) and companion *Emergency Action Plan Template for Florida Dams Instruction Manual* (Instruction Manual) were developed by drawing liberally on the work of several agencies: the Florida Department of Environmental Protection (DEP); the five Regional Water Management Districts of Florida; the USDA Natural Resources Conservation Service; the Texas Commission on Environmental Quality; the Federal Emergency Management Agency (FEMA); the Federal Energy Regulatory Commission; the National Dam Safety Review Board Emergency Action Plan Workgroup; the National Weather Service; the Association of State Dam Safety Officials; and the United States Army Corps of Engineers.

These documents were created by the Florida Dam Safety Program and HDR Engineering, Inc. (HDR), especially the following staff: Owete S. Owete, PhD, PE, DEP; Tracy Woods, PG, DEP; Stanley Inabinet, DEP; Pamela Gonzales, PE, HDR; Vicki L. Burke, PE, CFM, HDR; David R. Borys, EI, HDR; and Brice S. Shrader II, EI, HDR. Additional thanks to Steve Jamieson, P.E., W. W. Wheeler and Associates, Inc., for his invaluable expertise.

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## **Disclaimer**

The mention of a specific product, company, or web address is for information purposes only and does not constitute an endorsement of that product, company, or service.

## **Assistance to the Preparer**

The Instruction Manual is a valuable tool to aid the preparer in completing this EAP Template. Additional information and draft EAP reviews may be requested by contacting the State Dam Safety Officer by mail, email or telephone through the contact information provided below.

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# Emergency Action Plan (EAP)

**Dam Name**

**National Inventory of Dams Identification Number:** [Redacted]

**County Name** County, Florida

**Water Management District**

**Permit Type/Number**

**Downstream Hazard Potential**

**Month and Year**

Insert Regional or County map showing location of dam

Insert local area map showing specific location of dam and GPS coordinates

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Dam Owner or Dam Owner's Representative:

Name: [Redacted]

Signature: [Redacted]

Date: [Redacted]

Copy [Redacted] of [Redacted]

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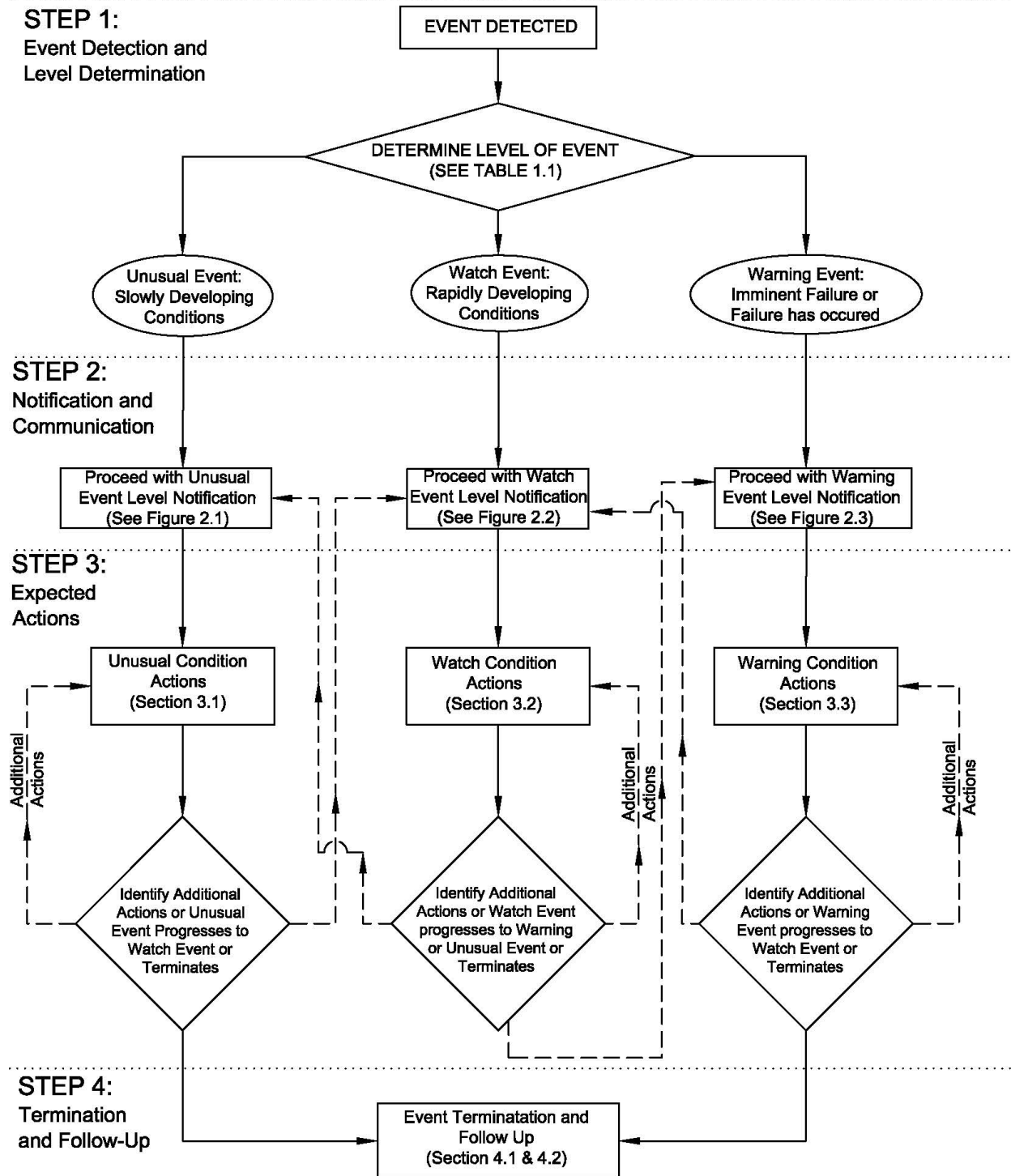
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**EAP Overview**  
**EAP Flow Chart**

**EAP FLOW CHART**

(see Summary of EAP Process on following page)



## **Summary of EAP Process**

The EAP Process consists of four (4) steps that must be followed anytime an event has been detected. The four steps are as follows.

Step 1: Event Detection and Level Determination.

Step 2: Notification and Communication.

Step 3: Expected Actions.

Step 4: Termination and Follow-Up.

### **Step 1 Event Detection and Level Determination**

When an event is detected at the dam, the level of the event must be determined. Section 1.0 *Event Detection and Level Determination* will serve as a guide to determine event level. Each event level has a specific notification and expected actions associated with it. The three levels of events are as follows.

Unusual Event Level - slowly developing, unusual situation.

Watch Event Level - rapidly developing, potential dam failure situation.

Warning Event Level - imminent dam failure or dam failure occurring.

### **Step 2 Notification and Communication**

Once the level of event has been determined, notifications will be made in accordance with the applicable event level notification flow chart included in Section 2.0 *Notification and Communication*.

### **Step 3 Expected Actions**

Specific actions will be executed depending on the level of event. The specific actions for each event level can be found in Section 3.0 *Expected Actions*. A continuous process of acting, notification and assessing the status of the situation may happen during this step. The event may go through multiple event levels as the situation either improves or worsens. After the actions have been performed, evaluation of the actions will occur before proceeding to the next step. If actions have not rectified the event conditions, additional actions may be performed. If event conditions have improved, the event level will be reduced or terminated as the situation dictates.

### **Step 4 Termination and Follow-up**

Once the event has ended, termination and follow-up procedures will be followed as explained in Section 4.0 *Termination and Follow-up*. The EAP operations can only be terminated after completing the actions and all issues have been rectified.



## Dam Description and Potential Impact Area Summary

### Purpose

The purpose of this EAP is to quickly identify an unusual or emergency event at Dam Name, NID ID Number, located in County Name County, Florida, to expedite notifications, remedial actions, and evacuations, if necessary, to prevent or reduce the risk to human life, property, lifeline interests, and environment, including water quality degradation.

### Directions to Dam Name

U. S. National Grid (NAD 83): Grid

Directions to the dam from all four directions are provided below. (See Appendix A-1: *Project Location Map* and Appendix A-2: *Project Watershed Map*).

Direction:	Description:
North:	Insert Directions from the North
East:	Insert Directions from the East
South:	Insert Directions from the South
West:	Insert Directions from the West

### Potential Impact Areas

See Appendix A-3A: *Inundation Maps for a Sunny Day Dam Failure* of Dam Name ; Appendix A-3B: *Inundation Maps for 100-Year Storm Dam Failure* of Dam Name; Appendix A-3C: *Inundation Maps for Probable Maximum Precipitation (PMP) Dam Failure* of Dam Name; and Appendix A-3D: *Evacuation Maps for Sunny Day/Rainy Day Dam Failures*.

### Dam Description

Dam Name: [ ]	Former Dam Name: [ ]
Year Completed: [ ]	Year Modified: [ ]
Dam Operator: [ ]	Dam Height: [ ]
Latitude: [ ]	Longitude: [ ]
Public Land Survey: S [ ] T [ ] R [ ]	NID ID: [ ]
River or Stream: [ ]	Nearest Downstream City/Town: [ ]
Normal Storage: [ ]	Downstream Hazard Potential: [ ]

## General Roles and Responsibilities

### **Dam Owner/ Dam Owner's Representative/Dam Operator:** Name, Affiliation

- As soon as an event is observed or reported, immediately determine the level (see Table 1.1: *Event Level Determination Guidance Table* in Section 1.3: *Examples of Emergency Situations*).

**Unusual Event Level** - slowly developing, unusual situation.

**Watch Event Level** - rapidly developing, potential dam failure situation.

**Warning Event Level** - imminent dam failure or dam failure occurring.

- Immediately notify the personnel in the order shown on the notification chart for the appropriate level (see Figure 2.1: *Unusual Event Level Notification*, Figure 2.2: *Watch Event Level Notification*, and Figure 2.3: *Warning Event Level Notification*, in Section 2.1 *Notification Charts*).
- Provide updates of the situation to the Incident Commander 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 current EAP holders.

### **Dam Owner's Technical Representative:** Name Affiliation

- Advise the dam owner of the event level determination.
- Advise the dam owner of the necessary remedial actions to take, **if** time permits.

### **Incident Commander (e.g., Sheriff, Emergency Operations Center):** Name, Affiliation

- Serve as the primary contact person responsible for coordination of all emergency actions in the dam area and downstream.
- When a Watch Event Level situation occurs.
  - Prepare emergency management personnel that evacuations may be needed if a Warning Event Level situation occurs.
- When a Warning Event Level situation occurs.
  - Initiate warnings and order evacuation of people at risk downstream of the dam.
  - Order emergency management personnel to carry out the evacuation of people and close roads within the evacuation area.
- Control communication with media.
- Decide when to terminate EAP activation.
- Participate in an annual review and update of the EAP.

### **Emergency Management Services:** Name, Affiliation

- Maintain communication with media.
- When a Watch Event Level situation occurs.
  - Support Incident Commander with preparation of emergency management personnel for possible evacuations that may be needed if a Warning Event Level situation occurs.

- Alert the public as appropriate.
- When a Warning Event Level situation occurs.
  - Alert the public.
  - Immediately close roads and evacuate people within the evacuation area (see *Evacuation Maps*).
- Participate in an annual review and update of the EAP.

**Water Management District:** Name

- Provide technical assistance and regulatory support in relation to flooding extent and repair, as needed.
- Participate in an annual review and update of the EAP.

**DEP Bureau of Emergency Response:** Name, Affiliation

- Provide technical and on-site assistance to ensure threats to the environment and human safety are addressed.
- Manage requests for assistance from the State Watch Office and provide information through a communication network.

**DEP State Dam Safety Officer:** Tracy Woods, P.G.

- Facilitate obtaining information and engineering plans through communications with dam owners, consulting firms, and personnel in DEP, Florida Department of Emergency Management, Water Management Districts, local agencies, U.S. Army Corps of Engineers, and Federal Emergency Management Agency.
- Review the EAP and participate in emergency exercises.
- Provide grant support, as available, for EAP revisions, including inundation modeling, and other activities as allowed.
- Maintain accurate dam and contact information in the Florida Dam Safety Program database.

**Department of Homeland Security:** 911

- Assist in cases where an event may be caused by sabotage or terrorist threat.

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## **1.0 Event Detection and Level Determination**

### **1.1 Event Detection**

An Unusual, Watch, or Warning Event may be detected by the following.

- Observations at or near the dam by the dam owner, staff, visitors, or the general public.
- Evaluation of the dam instrumentation data.
- Forewarning of conditions which may cause an event at the dam, i.e., severe weather forecast.
- Suspicious activity or security threats.

Once an event has been detected and reported, the dam owner or operator must verify the situation and determine what level of event has occurred and start the notification process, Section 1.2 *Event Level Determination* will further describe how to determine the event level.

### **1.2 Event Level Determination**

There are three types of events that may occur: Unusual, Watch and Warning Event.

#### **Unusual Event Level**

An Unusual Event Level is defined as a slowly developing situation that may compromise the structural integrity of the dam. This event will be closely monitored, and the appropriate notifications will be made according to the notification chart in Section 2.1 *Notification Charts*, Figure 2.1: *Unusual Event Level Notification*. Event preparedness agencies do not need to be notified for an unusual event.

#### **Watch Event Level**

A Watch Event Level is defined as a rapidly developing situation that may become a serious emergency, including possible dam failure. Time is usually available to attempt corrective measures to mitigate or prevent the dam's failure. Emergency preparedness agencies will be notified, so they may prepare to evacuate downstream areas, if necessary. They will also be provided with updates of the situation other notifications will be given according to the notifications chart in Section 2.1 *Notification Charts*, Figure 2.2: *Watch Event Level Notification*.

#### **Warning Event Level**

A Warning Event Level is defined as an imminent dam failure or dam failure that has already occurred. Time is not available to try corrective measures. Emergency preparedness agencies will be immediately notified so that immediate evacuations of the impact areas can begin. Specific notifications will be given according to the notifications chart in Section 2.1 *Notification Charts*, Figure 2.3: *Warning Event Level Notification*.

Table 1.1: *Event Level Determination Guidance Table* will serve as an aide providing criteria to help determine the level of event that is occurring. Table 1.1: *Event Level Determination Guidance Table* is provided in Section 1.3 *Examples of Emergency Situations*.

### **1.3 Examples of Emergency Situations**

Table 1.1: *Event Level Determination Guidance Table* provided below lists typical emergency situations for earthen dams with the associated Event Level.

Table 1.1: Event Level Determination Guidance Table

Event	Situation	Event Level
Spillway Flow	Reservoir water surface elevation at auxiliary spillway crest or spillway is flowing with no active erosion	Unusual
	Spillway flowing with active gully erosion	Watch
	Spillway flow that could result in flooding of people downstream if the reservoir level continues to rise	Watch
	Spillway flowing with an advancing headcut that is threatening the control section	Warning
	Spillway flow that is flooding people downstream	Warning
Flooding	Reservoir water surface greater than elevation XXX and flows in XXX River channel at elevation XXX are greater than XXX cfs	Unusual
	Reservoir water surface greater than elevation XXX	Watch
	Reservoir water surface greater than elevation XXX	Warning
Embankment Overtopping	Intermittent overwash of waves is occurring, but is not eroding the outside embankment slope	Unusual
	Reservoir level is 1 foot below the top of the dam	Watch
	Water from the reservoir is flowing over the top of the dam	Warning
Seepage	New seepage areas in or near the dam	Unusual
	New seepage areas with cloudy discharge or increasing flow rate	Watch
	Seepage with discharge greater than 10 gallons per minute	Warning
Sinkholes	Observation of new sinkhole in reservoir area or on embankment	Watch
	Rapidly enlarging sinkhole	Warning
Embankment Cracking	New cracks in the embankment greater than ¼-inch wide without seepage	Unusual
	Cracks in the embankment with seepage	Watch
Embankment Movement	Visual movement/slippage of the embankment slope	Unusual
	Sudden or rapidly proceeding slides of the embankment slopes	Warning
Instruments	Instrumentation readings beyond predetermined values	Unusual
Earthquake	Measurable earthquake felt or reported on or within 50 miles of the dam	Unusual
	Earthquake resulting in uncontrolled release of water from the dam	Watch
	Earthquake resulting in visible damage to the dam or appurtenances	Warning
Security Threat	Verified bomb threat that, if carried out, could result in damage to the dam	Watch
	Damage to dam or appurtenances with no impacts to the functioning of the dam	Warning
	Detonated bomb that has resulted in damage to the dam or appurtenances	Warning
Sabotage/ Vandalism	Damage to dam or appurtenance with no impacts to the functioning of the dam	Unusual
	Modification to the dam or appurtenances that could adversely impact the functioning of the dam	Unusual
	Damage to dam or appurtenances that has resulted in seepage flow	Watch
	Damage to dam or appurtenances that has resulted in uncontrolled water release	Warning

### **1.4 Site-Specific Concerns**

The following are site-specific concerns, including any historical events, actions, and photographs, where available.

- 1) Insert Photo and Description Here.
- 2) Insert Photo and Description Here.
- 3) Insert Photo and Description Here.
- 4) Insert Photo and Description Here.

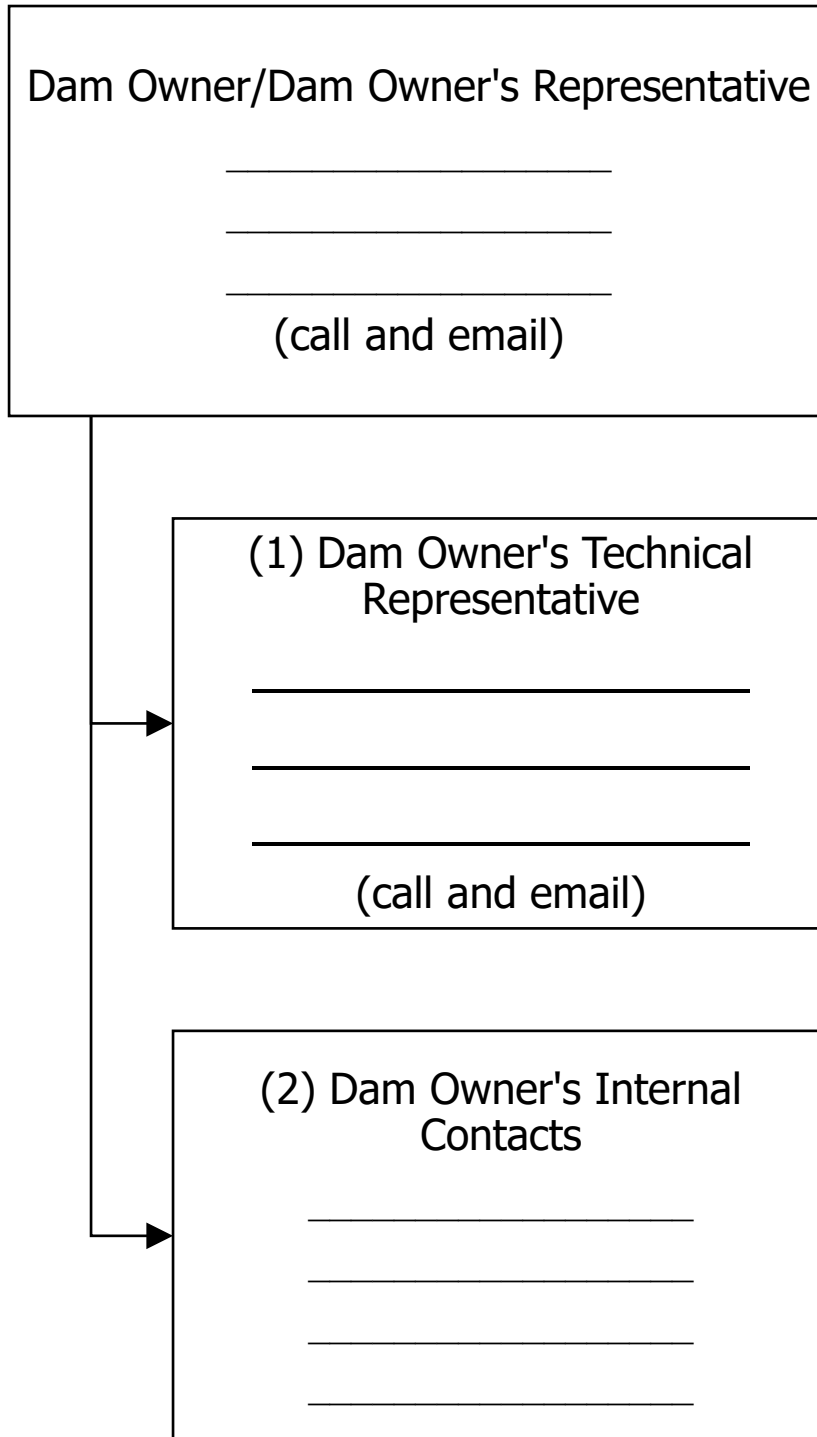


## ***2.0 Notification and Communication***

### **2.1 Notification Charts**

The notification charts on the following pages are for the three types of event levels: Unusual Event, Watch Event, and Warning Event, in that order.

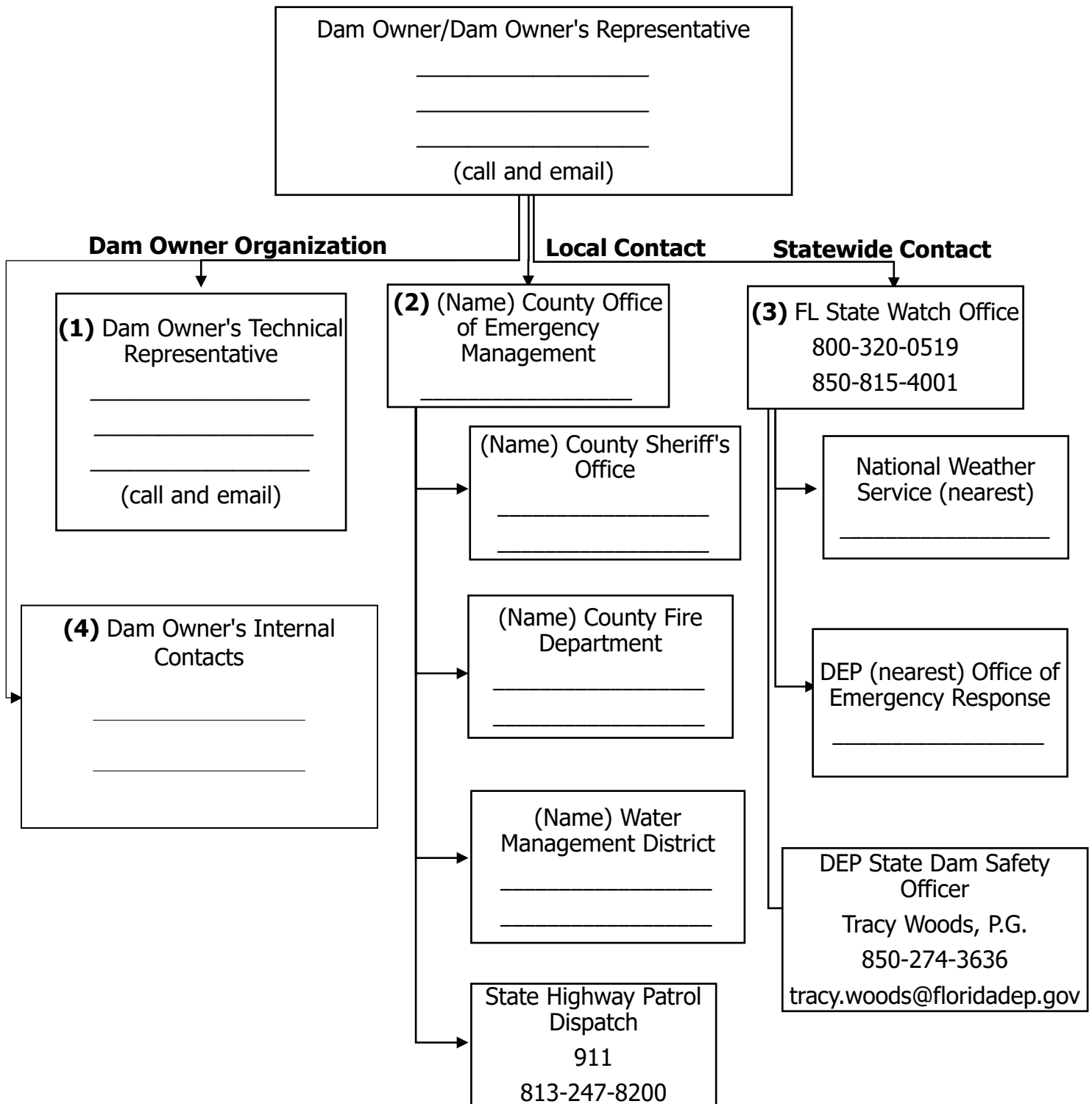
Figure 2.1: Unusual Event Level Notification



Legend: (1) and (2) Call sequence  
Dam Owner Calls Contacts 1 and 2

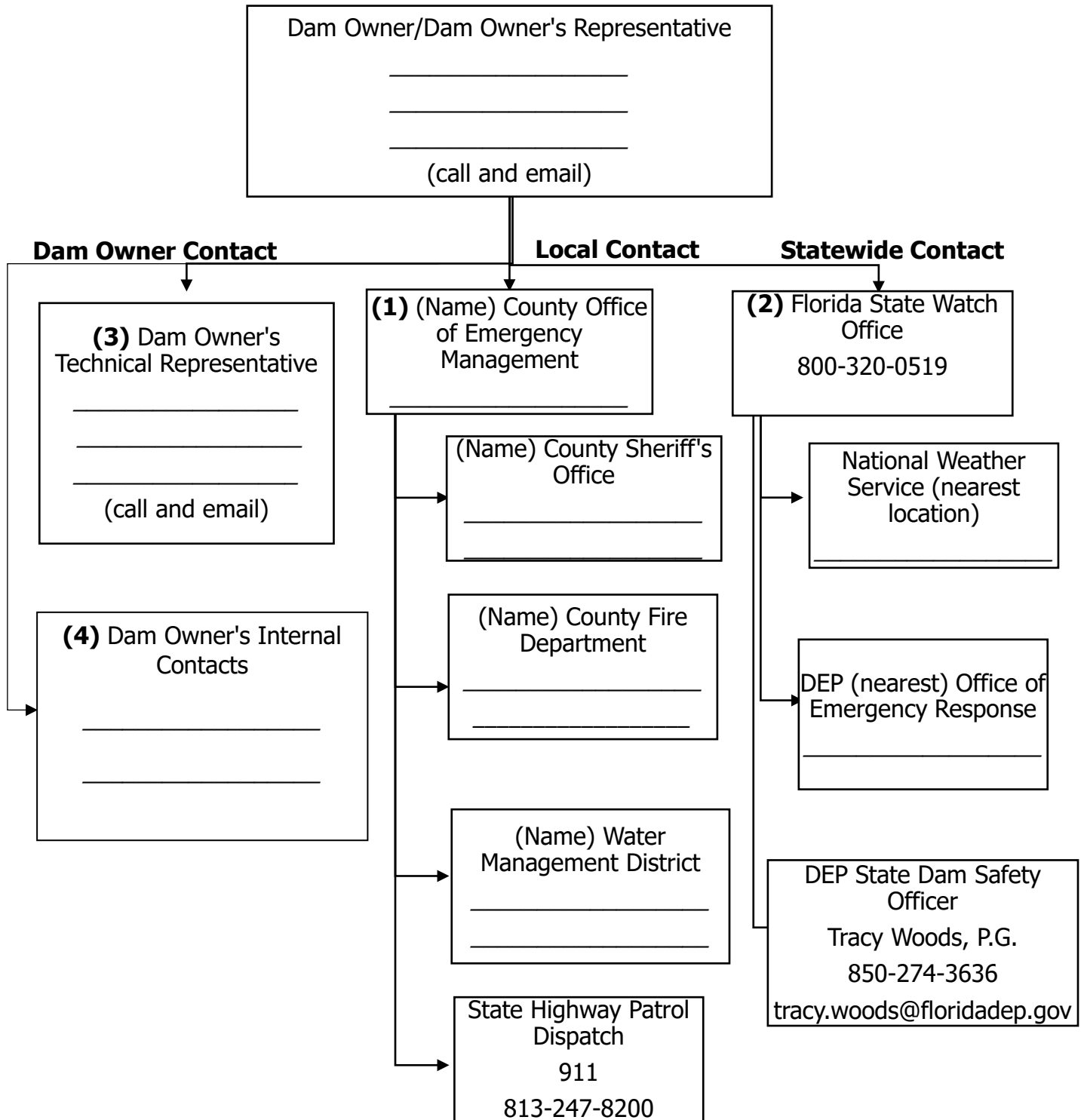
**See Table 2.1: EAP Contact Table in Section 2.3: EAP Contacts for alternate contact names, phone numbers, and email addresses.**

Figure 2.2: Watch Event Level Notification



Legend: (1), (2), (3), and (4) Call sequence  
 Dam Owner Calls Contacts 1, 2, 3, and 4 and they call the others as indicated for initial notification.  
**See Table 2.1: EAP Contact Table in Section 2.3: EAP Contacts for alternate contact names, phone numbers, and email addresses.**

Figure 2.3: Warning Event Level Notification



Legend: (1), (2), (3), and (4) Call sequence

Dam Owner Calls Contacts 1, 2, 3, and 4 and they call the others as indicated for initial notification.

**See Table 2.1: EAP Contact Table in Section 2.3: EAP Contacts for alternate contact names, phone numbers, and email addresses.**

## 2.2 Prescript Messages

Appendix B-1: *Communication Checklist* provides a list of critical information to provide to the emergency management personnel during a Watch or Warning Event.

### Watch Event Level Message

This is an emergency message. Dam Owner has declared a Watch Event and possible dam failure of Dam Name, NID ID Number. Attempts to save Dam Name are under way, but their success cannot yet be determined. Emergency water releases to Nearby River or Stream Name **are or are not** being made. We request that you initiate the Emergency Action Plan and prepare for evacuation of the potential inundation areas. If Dam Name fails, flooding is expected to occur in the areas shown on the inundation maps in *Appendix A-3A for a Sunny Day, Appendix A-3B for a 100-Year storm, or Appendix A-3c for a Probable Maximum Precipitation storm*. Evacuation maps, showing estimated arrival times, flood velocities, flood depths, and distances, for Dam Name failure are provided in Appendix A-3d.

### Warning Event Level – Imminent Dam Failure Message

**Urgent!** This is an emergency message. Dam Owner has declared a Warning Event. Dam Name, NID ID Number is in imminent danger of failing. Attempts to save the dam will continue, but their success is unlikely. We request that you IMMEDIATELY initiate the Emergency Action Plan and evacuate the potential inundation areas shown in *Appendix A-3A for a Sunny Day, Appendix A-3B for a 100-Year storm, or Appendix A-3c for a Probable Maximum Precipitation storm*. Evacuation maps, showing estimated arrival times, flood velocities, flood depths, and distances for Dam Name failures are provided in Appendix A-3d. If Dam Name fails, a flood wave will move down Nearby River or Stream Name.

### Warning Event Level – Dam Failure Message

**Emergency!** This is an emergency message. Dam Owner has declared a Warning Event. Dam Name, NID ID Number has failed. A flood wave is moving down Rivers or Streams (add/remove rivers or streams as needed). The flood waters have already reached (name of location). We request that you IMMEDIATELY initiate the Emergency Action Plan and evacuate the potential inundation areas shown in *Appendix A-3A for a Sunny Day, Appendix A-3B for a 100-Year storm, or Appendix A-3c for a Probable Maximum Precipitation storm*. Evacuation maps, showing estimated arrival times, flood velocities, flood depths, and distances for Dam Name failures are provided in Appendix A-3d.

## 2.3 EAP Contacts

Table 2.1: EAP Contact Table

Main Roles	Primary Contact Information	Alternative Contact Information
Dam Owner/Dam Owner's Representative	Contact Person: Phone Number: Email Address:	Contact Person: Phone Number: Email Address:
Dam Owner's Technical Representative		
Incident Commander	Contact Person: Phone Number:	
DEP State Dam Safety Officer	Division of Water Resource Management Tracy Woods, P.G. 850-274-3636 (emergency cell) <a href="mailto:Tracy.Woods@FloridaDEP.gov">Tracy.Woods@FloridaDEP.gov</a>	Division of Water Resource Management Aaron Ray, EI 850-245-8035 (office) <a href="mailto:Aaron.J.Ray@FloridaDEP.gov">Aaron.J.Ray@FloridaDEP.gov</a>
Water Management	Contact Person: Phone Number:	
DEP Office of Emergency Response	Contact Person: Phone Number:	Contact Person: Phone Number:
Homeland Security	Nationwide Suspicious Activity Reporting 911	NSI 877-437-7411
County Sheriff	Contact Person: Phone Number:	
State Highway Patrol Dispatcher	911 or *FHP (347)	
State Watch Office	Deputy Chief of Response Ian Guidicelli 800-320-0519	State Watch Officer/Chief State Meteorologist Amy Godsey 850-591-0071 (back-up cell)
National Weather Service	Lead Forecaster Contact Person: Phone Number:	

## **2.4 Dam Owner's Organization and Roles and Responsibilities**

The following is the internal organizational structure, with roles and responsibilities defined for personnel involved in the implementation of the EAP.

Describe Organizational Structure Here.

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### ***3.0 Expected Actions***

The following actions should be taken for each event level.

#### **3.1 Unusual Event Level**

In this condition, the situation is slowly developing. The following actions should be taken:

1. If Dam Owner becomes aware of a situation at the dam and they determine that the event level is an Unusual Event, call according to the Event Level Notification chart (Figure 2.1: *Unusual Event Level Notification*).
2. Dam Owner or Technical Representative 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. Refer to Table 3.1: *Typical Remedial Actions* for a list of conditions and specific actions.
3. If increased seepage, erosion, cracking, or settlement is observed, immediately report the observed conditions to Dam Owner or Technical Representative and refer to Table 1.1: *Event Level Determination Guidance Table*, in Section 1.3 to determine the appropriate event level for the new condition and recommended actions.
4. Record all calls, information, observations, and actions taken on Appendix B-2: *Action Event Log*. Following the termination of the event, complete Appendix B-3: *Dam Event Situation Report*. Note the time of changing conditions. Document the situation with photographs and video, if possible.

Table 3.1: Typical Remedial Actions

<b>Condition</b>	<b>Recommended Actions</b>
<b>Embankment Overtopping</b>	<ul style="list-style-type: none"> <li>a. 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.</li> <li>b. 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.</li> </ul>
<b>Flooding</b>	<ul style="list-style-type: none"> <li>a. Monitor flood conditions and report any reservoir water surface changes of 0.5 foot within 12 hours.</li> <li>b. Consider opening the gates as much as reservoir and downstream change conditions allow. Notify downstream residents.</li> <li>c. Inspect the dam, including the full length of the upstream slope, crest, downstream toe, and downstream slope. Look for piping, increased seepage, erosion, cracking or settlement and report any of these finds immediately.</li> </ul>
<b>Seepage and Sinkholes</b>	<ul style="list-style-type: none"> <li>a. Open the principal spillway gate or low-level outlet works to lower the reservoir level as rapidly as possible to a level that stops or decreases seepage to a non-erosive velocity. If the gate is damaged or blocked, pumping or siphoning may be required. Continue lowering the water level until seepage stops. Continue operating at a reduced level until repairs are made.</li> <li>b. If the entrance to the seepage origination point is observed in the reservoir (possible whirlpool) and is accessible, attempt to reduce flow by plugging the entrance with readily available materials such as hay bales, bentonite, soil or rockfill, or plastic sheeting.</li> <li>c. 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.</li> <li>d. Prevent vehicles and equipment from driving between the seepage exit points and the embankment to avoid potential loss of life and dam failure from the collapse of an underground void.</li> </ul>

<b>Condition</b>	<b>Recommended Actions</b>
<b>Embankment Movement</b>	<ul style="list-style-type: none"> <li>a) 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. Continue operation at a reduced level until repairs are made.</li> <li>b) Repair settlement of the crest by placing sandbags or earth and rockfill materials in the damaged area to restore freeboard.</li> <li>c) Stabilize slides by placing a soil or rockfill buttress against the toe of the slide.</li> </ul>
<b>Auxiliary Spillway Erosion</b>	<ul style="list-style-type: none"> <li>a) Provide temporary protection at the point of erosion by putting in place sandbags, riprap materials, or plastic sheets weighted with sandbags.</li> <li>b) Consider pumps and siphons to help reduce the water level in the reservoir.</li> <li>c) When inflow subsides, lower the water in the reservoir to a safe level. Continue operation at a lower water level to minimize spillway flow.</li> </ul>
<b>Failure at an Appurtenant Structure Such as an Inlet or Outlet Spillway</b>	<ul style="list-style-type: none"> <li>a) Implement temporary measures to protect the damaged structure, such as closing the inlet or putting in place temporary protection for a damaged spillway.</li> <li>b) Employ experienced, professional divers, if necessary, to assess the problem and possibly implement repair.</li> <li>c) Lower the water level in the reservoir to a safe elevation. If the inlet is inoperable, pumping or siphoning may be required.</li> </ul>
<b>Malicious Human Activity (Sabotage, Vandalism, or Terrorism)</b>	<ul style="list-style-type: none"> <li>a) If malicious human activity that could endanger public safety is suspected, contact law-enforcement personnel for their help in evaluating the situation.</li> <li>b) If the principal spillway or low-level outlet works have been damaged or plugged, implement temporary measures to protect the damaged structure. Employ experienced, professional divers, if necessary, to assess the problem and possibly implement repair.</li> </ul>

<b>Condition</b>	<b>Recommended Actions</b>
	<p>c) If the embankment or auxiliary spillway has been damaged or partially removed, provide temporary protection in the damaged area by putting in place sandbags, riprap materials, or plastic sheets weighted with sandbags. Use pumps and siphons to help reduce the water level in the reservoir.</p> <p>d) If the water supply has been contaminated, immediately close all inlets to the water supply system and notify appropriate authorities.</p>

### 3.2 Watch Event Level

In this condition, the emergency type is a potential dam failure event that is rapidly developing. The following actions should be taken.

1. If **Dam Owner** becomes aware of a situation at the dam and they determine that the event level is a Watch Event, call according to the Event Level Notification chart (Figure 2.2: *Watch Event Level Notification*). Be prepared to provide the information listed in Appendix B-1: *Information for Emergency Management* to emergency management personnel.
2. If time permits and it is safe to do so, **Dam Owner** or **Technical Representative** 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.
3. **Dam Owner** will designate at least one person for onsite monitoring of the situation at the dam and keep **Dam Owner** or **Technical Representative** informed of developing conditions at the dam from the time that an event starts until the event has been terminated. Provisions for security measures at the dam during the event should be specified.
4. If time permits, emergency remedial actions should be taken as appropriate. Typical remedial actions are listed in Table 3.1: *Typical Remedial Actions* in Section 3.1. Immediate implementation of these remedial actions may delay, moderate, or prevent the failure of the dam. The dam must be closely monitored to confirm the success of the actions taken.
5. Record all calls, information, observations, and actions taken on Appendix B-2: *Action Event Log*. Following the termination of the event, complete Appendix B-3: *Dam Event Situation Report*. Note the time of changing conditions. Document the situation with photographs and video, if possible. Attach as supplementary information to the *Action Event Log*.
6. If increased piping, seepage, erosion, cracking, or settlement is observed, immediately report the observed conditions to **Dam Owner** or **Technical Representative**; refer to Table 1.1: *Event Level Determination Guidance Table* in determining the appropriate event level for the new condition and recommended actions.
7. Provide updates to **County Emergency Management Name** to assist the Incident Commander in making timely decisions concerning the need for warnings, road closures, and evacuations.

### 3.3 Warning Event Level

In this condition, dam failure is imminent or is occurring. The following actions should be taken.

1. If **Dam Owner** becomes aware of a situation at the dam and they determine that the event level is a Warning Event, call according to the Event Level Notification chart (Figure 2.3: *Warning Event Level Notification*). Be prepared to provide the information listed in Appendix B-1: *Information for Emergency Management* to emergency management personnel.
2. The Incident Commander shall lead the efforts to carry out warnings, close roads, and evacuate people at risk downstream from the dam. Emergency management services personnel shall alert the public and immediately evacuate at-risk people and close roads as necessary.
3. **Dam Owner** will advise the people monitoring the dam and the event to follow safe procedures. Everyone should stay away from any of the failing structures or slopes and out of the potential breach inundation areas.
4. **Dam Owner** will maintain continuous communication with the Incident Commander to provide updates of the situation to assist their ability to make timely decisions concerning warnings and evacuations.
5. **Dam Owner** will record all calls, information, observations, and actions taken on Appendix B-2: *Action Event Log*. Following the termination of the event, complete Appendix B-3: *Dam Event Situation Report*. Document the situation with photographs and video, if possible. Attach photographs or video to the *Action Event Log*.

### **3.4 Locally Available Equipment, Labor, and Materials**

Equipment and supplies such as sandbags, riprap, fill materials, and heavy equipment, along with other resources may be needed. A list of available resources, labor, and site-specific equipment is provided in the table in Appendix C: *Resources Available*.

#### **Resources that may be helpful include the following.**

- Earth-moving equipment.
- Riprap.
- Sand and gravel.
- Sandbags.
- Pumps.
- Pipe.
- Laborers.
- Lighting equipment.
- Divers.

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## ***4.0 Termination and Follow-up***

After the EAP actions have been completed and the situation is over, the activation of the EAP must be terminated. An evaluation of the situation, actions, and the results should be performed and documented.

### **4.1 Termination Responsibilities**

The Incident Commander is responsible for terminating EAP operations and relaying this decision to all parties involved in the emergency. It is the responsibility of the Incident Commander 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 Event Level that has not resulted in dam failure, **Dam Owner** will inspect 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 Incident Commander will be advised to terminate EAP operations as described above.

### **4.2 Follow-up**

After an event, a follow-up evaluation by all participants should be conducted; the nature of this evaluation should be planned and specified. The results of the evaluation should be documented in a written report.

**Dam Owner** will assure that the Appendix B-3: *Dam Event Situation Report* form is completed to document the event and all actions that were taken. **Dam Owner** will keep the original completed event records, Appendix B-1, B-2, and B-3 forms, and available photographs and videos. **Dam Owner** will make available copies of the completed report to the Incident Commander and the DEP State Dam Safety Officer.

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## ***5.0 EAP Distribution, Review, Revision, Training, and Exercises***

### **5.1 EAP Distribution**

Appendix D-1: *Record of Holders of Control Copies of this EAP* is to be completed to document each EAP distribution. Appendix D-2: *Concurrences* is provided to document the signatures of EAP participants with assigned roles and responsibilities. Email responses from the recipients may also provide the necessary documentation in place of Appendix D-2. Provide complete copies of the EAP to at least the persons/entities, such as the dam operator, emergency personnel, other local officials, and the State Dam Safety Officer, identified in the Notification Charts. Portions of the EAP are marked "limited distribution" and should not be shared with other than trusted persons. Keep the original signed forms (or printed email responses) in the master EAP and provide copies to the other signatories.

### **5.2 EAP Annual Review and Updating**

This plan should be updated promptly after each change in assigned roles. At a minimum, the plan will be reviewed and updated annually by **Dam Owner** and should include review by **County Emergency Management Name** in conjunction with an annual maintenance inspection of the dam. Be aware of any significant change in operation, downstream development, or other conditions which affect the plan. All signatories to the plan are encouraged to attend and to ensure that all names and contact information are current. If all signatories do not attend, **Dam Owner** will follow up with those entities individually to verify that the names and phone numbers identified in the specified positions are current.

**Dam Owner** is responsible for updating the EAP document. The EAP document held by **Dam Owner** is the master document. When revisions occur, **Dam Owner** will electronically provide the revised report and revision summary page, Appendix D-3: *Record of Revisions Made to EAP*, to all the EAP document holders. The document holders are responsible for replacing the hardcopy pages or electronic document or clearly labeling and controlling or securely disposing of the outdated versions in both formats. The record of the revisions is to be kept in the master EAP.

### **5.3 Training**

**Dam Owner** will ensure that persons involved in the EAP will be trained so that they are thoroughly familiar with its elements, the availability of equipment, and their responsibilities and duties under the plan. Personnel will be trained in problem detection, evaluation, and appropriate corrective measures. This training is essential for proper evaluation of developing situations at all levels of responsibility. **Dam Owner** will keep records of the training provided to those individuals involved in the EAP on form Appendix D-4: *Record of Training*. **Dam Owner** should keep the training records in Appendix D of the master document and may provide these records in subsequent revisions.

## **5.4 EAP Exercises**

A tabletop exercise is to be conducted at least once every five years, but once a year is recommended for High Hazard Potential dams. The tabletop exercise involves a meeting between Dam Owner, Technical Representative, County Emergency Management Name and other persons with assigned roles. The exercise begins with a description of a simulated event and proceeds with discussions by the participants. The purpose of the discussions is to evaluate the EAP and response procedures and resolve concerns regarding coordination and responsibilities. Dam Owner will serve as facilitator during the discussion. Appendix D-5: *Simulated Event Exercise* should be completed to record the exercise and maintained in the master document. Any problems identified during an exercise may prompt revisions to the EAP.

## ***Appendices –Maps, Forms, Resources, Supporting Data & Glossary***

- A – Maps, Tables, and Details.
- B – Checklist, Logs and Report.
- C – Resources Available.
- D – Supplementary Information.
- E – Glossary of Terms.

## ***Appendix A: Maps, Tables and Details***

- Appendix A-1: Project Location Map Example.
- Appendix A-2: Project Watershed Map Example.
- Appendix A-3: Inundation Calculations (SIMs) Maps and Evacuation Maps (Limited Distribution).
- Appendix A-4: Plan View of Dam (Limited Distribution).
- Appendix A-5: Profile of Principal Spillway (Limited Distribution).
- Appendix A-6: Reservoir Elevation-Area-Volume and Spillway Capacity Data (Limited Distribution).
- Appendix A-7: National Inventory of Dams (NID) Data.

## **Appendix A-1: Project Location Map**

## **Appendix A–2: Project Watershed Map**



## **Appendix A–3A: Inundation Map for Sunny Day Dam Failure (Limited Distribution)**

**Appendix A–3B: Inundation Map for 100-Year Storm Dam Failure (Limited Distribution)**

## **Appendix A–3c: Inundation Maps for Probable Maximum Precipitation (PMP) Dam Failure (Limited Distribution)**

**Appendix A–3D: Evacuation Maps for Sunny Day/Rainy Day Dam Failures (Limited Distribution)**

## **Appendix A–4: Plan View of Dam (Limited Distribution)**

## **Appendix A–5: Profile of Principal Spillway (Limited Distribution)**

**Appendix A–6: Dam Name Elevation-Area-Storage and Discharge Data (Limited Distribution)**

Elevation (ft)	Surface Area (ac)	Storage Volume (ac-ft)	Drop Shaft Discharge (cfs)	Emergency Spillway Discharge (cfs)	Dam Overtopping Discharge (cfs)	Total Discharge (cfs)	Description

**Appendix A–7: National Inventory of Dams (NID) Data**

No.	Description:	Data:
1	Dam Name	
2	Other Dam Name(s)	
3	Former Dam Name(s)	
4	State Agency / Permit Number	
5	NID ID	
6	Number of Separate Structures	
7	Longitude and Latitude	
8	Public Land Survey (Section, Township, and Range)	
9	County	
10	River or Stream	
11	Nearest Downstream City or Town	
12	Distance to Nearest City or Town	
13	Dam Owner Name	
14	Dam Owner Type	
15	Dam Type	
16	Core	
17	Foundation	
18	Dam Purpose(s)	
19	Year Completed	
20	Year Modified	
21	Dam Length	
22	Dam Height	
23	Structural Height	
24	Hydraulic Height	
25	NID Height	
26	Maximum Discharge	
27	Maximum Storage	
28	Normal Storage	
29	NID Storage	
30	Surface Area	
31	Drainage Area	
32	Downstream Hazard Potential	
33	Emergency Action Plan (Y/N/NR)	
34	Last EAP Revision	
35	Last Inspection Date and Frequency	
36	Spillway Type	
37	Spillway Width	
38	Condition Assessment and Date	
39	State Regulatory Agency	
40	State Agency / Permit Number	



41	Outlet Gates	
42	Number of Locks	
43	Lock Length	
44	Lock Width	

## ***Appendix B: Checklist, Logs and Report***

- Appendix B-1: Information for Emergency Management.
- Appendix B-2: Action Event Log.
- Appendix B-3: Dam Event Situation Report.

## **Appendix B-1: Information for Emergency Management**

(Typical information requested by emergency management personnel)

Time of Call: [REDACTED]

Caller name/call back phone number/caller represents: [REDACTED]

Time/Date of incident: [REDACTED]

Location of incident (dam name, street address, city, county): [REDACTED]

Has the dam failed? Yes/No

If no break, is it anticipated, and time: [REDACTED]

Any threat to population: [REDACTED]

Evacuations (yes/no), (where & how many): [REDACTED], [REDACTED]

Injuries (# and severity): [REDACTED]

Fatalities #: [REDACTED]

What agencies are on scene: [REDACTED]

Any assistance requested: [REDACTED]

Who has been notified? [REDACTED]

Water level in the dam: [REDACTED]

Staging location: [REDACTED]

Estimated time for repairs: [REDACTED]

**Appendix B-2: Action Event Log**

(To be completed during Unusual, Watch, or Warning Events)

Dam Name: [ ]

County Name: [ ]

When and how was the event detected? [ ]

Weather conditions: [ ]

General description of the event situation: [ ]

Event Level determination: [ ]

Event Level determination made by: [ ]

**Calls, Information, Actions and Event Progression**

(Include caller's name, organization, and contact information)

Date	Time	Action / Event Progression	Taken by
[ ]	[ ]	[ ]	[ ]
[ ]	[ ]	[ ]	[ ]
[ ]	[ ]	[ ]	[ ]
[ ]	[ ]	[ ]	[ ]
[ ]	[ ]	[ ]	[ ]
[ ]	[ ]	[ ]	[ ]
[ ]	[ ]	[ ]	[ ]

Report prepared by: [ ]

Date: [ ]

### Appendix B-3: Dam Event Situation Report

(To be completed following the termination of the event)

Dam Name: [redacted]

National Inventory of Dams ID: Number [redacted]

Dam location: City, County, Latitude and Longitude, Stream/River [redacted]

Date: [redacted]

Time: [redacted]

Weather conditions: [redacted]

General description of emergency situation: [redacted]

Area(s) of dam affected: [redacted]

Extent of dam damage: [redacted]

Possible cause(s): [redacted]

Effect on dam's operation: [redacted]

Initial reservoir elevation: [redacted]

Time: [redacted]

Maximum reservoir elevation: [redacted]

Time: [redacted]

Final reservoir elevation: [redacted]

Time: [redacted]

Description of area flooded downstream/damages/injuries/loss of life: [redacted]

Other data and comments: [redacted]

Observer's name: [redacted]

Telephone Number: [redacted]

Report prepared by: [redacted]

Date: [redacted]

Note: Initial and date all entries, including new or corrected data, that are made at a later date as information becomes known.

## ***Appendix C: Resources Available***

Locally available equipment, labor and materials:

Entity Name has/have the following resources that can be used in an event:

- Count and Item Description.
- Count and Item Description.
- Count and Item Description.
- Count and Item Description.
- Count and Item Description.
- Count and Item Description.
- Count and Item Description.

Contact the City/County Road Department to learn of available resources — See Emergency Management Services (Table 2.1: *EAP Contact Table*, in Section 2.3 *EAP Contacts*).

**Other locally available resources include the following.**

















<b>Resource Category</b>	<b>Name</b>	<b>Address</b>	<b>Phone Number</b>	<b>Website</b>	<b>Email</b>
<b>Heavy Equipment Service and Rental</b>					
<b>Sand and Gravel Supply</b>					
<b>Ready-Mix Concrete Supply</b>					
<b>Pumps</b>					
<b>Diving Contractor</b>					
<b>Sandbags</b>					

## ***Appendix D: Supplementary Information***

- Appendix D-1: Record of Holders of Control Copies of this EAP.
- Appendix D-2: Concurrences.
- Appendix D-3: Record of Revisions Made to EAP.
- Appendix D-4: Record of Training.
- Appendix D-5: Simulated Event Exercises.



**Appendix D-1: Record of Holders of Control Copies of this EAP**

Copy Number	Organization Name, Address, Phone Number, and Email Address	Person Receiving Copy
1	<div style="text-align: center;">  </div>	<div style="text-align: center;">  </div>
2	<div style="text-align: center;">  </div>	<div style="text-align: center;">  </div>
3	<div style="text-align: center;">  </div>	<div style="text-align: center;">  </div>
4	<div style="text-align: center;">  </div>	<div style="text-align: center;">  </div>
5	<div style="text-align: center;">  </div>	<div style="text-align: center;">  </div>
6	<div style="text-align: center;">  </div>	<div style="text-align: center;">  </div>
7	<div style="text-align: center;">  </div>	<div style="text-align: center;">  </div>
8	<div style="text-align: center;">  </div>	<div style="text-align: center;">  </div>

**Appendix D-2: Concurrences**

By my signature, I acknowledge that I, or my representative, have reviewed this plan and concur with the tasks and responsibilities assigned herein for me and my organization.

1. Printed Name: [ ] Organization: [ ]

---

*Signature and Date*

2. Printed Name: [ ] Organization: [ ]

---

*Signature and Date*

3. Printed Name: [ ] Organization: [ ]

---

*Signature and Date*

4. Printed Name: [ ] Organization: [ ]

---

*Signature and Date*

5. Printed Name: [ ] Organization: [ ]

---

*Signature and Date*

6. Printed Name: [ ] Organization: [ ]

---

*Signature and Date*

7. Printed Name: [ ] Organization: [ ]

---

*Signature and Date*

8. Printed Name: [ ] Organization: [ ]

---

*Signature and Date*

**Appendix D-3: Record of Revisions Made to EAP**

<b>Revision Number</b>	<b>Date (MM/DD/YYYY)</b>	<b>Description of Revisions Made</b>	<b>By Whom</b>
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

### Appendix D-4: Record of Training Attendees

Training Locations: [ ]

Date: [ ]

Time: [ ]

Instructor: [ ]

#### Class Sign-In

Printed Name	Signature

### Appendix D-5: Simulated Event Exercise

Date of Exercise: [Redacted]

Participant Sign In	Participant Sign In

Type of Simulation Conducted: [Redacted]

Event Type: Unusual, Watch, Warning (Imminent or Dam Failure)

Comments, Results of Exercise: [Redacted]

Revisions Needed to EAP Based on Results of Exercise: Yes/No

If yes, list revisions required: [Redacted]

## ***Appendix E: Glossary of Terms***

- Appendix E: Glossary of Terms.

## Appendix E: Glossary of Terms

**Abutment** - The 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.

**Appurtenant Structure** - A structure necessary for the operation of a dam such as outlets, trashracks, valves, spillways, powerplants, tunnels, etc.

**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 in 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.

**Condition Assessment and Date** - Assessment that best describes the condition of the dam based on available information (Satisfactory, Fair, Poor, Unsatisfactory, Not Rated). Date of the most recent condition assessment of 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.

**Core** - Indicates the position, type of watertight member and certainty: Position) Upstream facing, homogeneous, unlisted/unknown, Type) bituminous concrete, concrete, earth, metal, plastic, unlisted/unknown, and Certainty) known or estimated.

**Cross section** - A slice through the dam showing elevation vertically and direction of natural water flow horizontally from left to right. It is also a slice through a spillway showing elevation vertically and left and right sides of the spillway looking downstream. Cross section can also refer to a slice across a stream or channel from one bank to the other: showing changes in elevation vertically, and horizontally showing width and/or shape of the stream or channel at that section.

**County** - The name of the county in which the dam is located.

**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 Height** - The height of the dam, in feet to the nearest foot, which is defined as the difference between the lowest elevation on the crest of the dam and the lowest elevation in the original streambed; or if not present, the lowest elevation of the downstream toe of the embankment.

**Dam Length** - The length of the dam, in feet, which is defined as the length along the top of the dam. This also includes the spillway, powerplant, navigation lock, fish pass, etc., where these form part of the length of the dam. If detached from the dam, these structures should not be included.

**Dam Name** - The official name of the dam. No abbreviations unless the abbreviation is a part of the official name. For dams that do not have an official name, the popular name is used.

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

**Dam Owner** - Name(s) of the dam owner(s). If multiple owners, duplicate and complete this section for all other owners.

**Dam Owner Type** - Category describing the dam owner(s). List all dam owner types (Federal, State, Local Government, Public Utility, Private, Tribe, Not Listed). Local Government should have taxing authority or is supported by taxes. A Lake District is supported by taxes and considered Local Government. A lake association that is supported by association dues, would be Private.

**Dam Purposes** - Category describing the current purpose(s) for which the reservoir is used. List the most important purpose first: 1) Debris, 2) Fire Protection, Stock, or Small Farm Pond, 3) Fish and Wildlife Pond, 4) Flood Risk Reduction, 5) Grade Stabilization, 6) Hydroelectric, 7) Irrigation, 8) Navigation, 9) Recreation, 10) Tailings, 11) Water Supply, and 12) Other.

**Dam Type** - Category describing the main type of dam. If more than one type, the most dominant used is listed first (Arch, Buttress, Concrete, Earth, Gravity, Masonry, Multi-Arch, Rockfill, Roller-Compacted Concrete, Stone, Timber Crib, Other)

**Dam Volume** - Total number of cubic yards occupied by the materials used in the dam structure. Portions of powerhouse, locks, and spillways are included only if they are an integral part of the dam and required for structural stability.

**Downstream Hazard Potential** - Category indicating the potential hazard to the surrounding and downstream areas of a dam and its appurtenant structures should they fail or be mis-operated. The categories reflect probable loss of human life and impacts on economic, environmental, lifeline interests, and other concerns, such as water quality



degradation. The hazard potential does not indicate the current condition of the dam or the risk of it failing.

The four categories are as follows:

**Low Hazard Potential** - Failure or mis-operation is not expected to result in loss of human life and may result in low economic and/or environmental losses, that are largely limited to the owner's property.

**Significant Hazard Potential** - Failure or mis-operation would not probably result in loss of human life, but can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns, such as water quality. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be in areas with population and significant infrastructure.

**High Hazard Potential** - Failure or mis-operation of the dam will probably cause the loss of human life. Economic, environmental, and lifeline losses may also occur, but they are not necessary for this classification.

**Distance to Nearest City/Town** - Distance from the dam to the nearest affected downstream city/town/village (listed in the Nearest Downstream City/Town), to the nearest mile (and tenth, if appropriate).

**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** - Drainage area, in square miles, which is defined as the area that drains to the dam reservoir(s).

**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.

**Embankment** - Any dam constructed of excavated natural materials, such as both earthfill and rockfill dams, or of industrial waste materials, such as a tailings dam.

**Emergency Action Plan** - Indicates whether this dam has an Emergency Action Plan (EAP). An EAP is defined as a plan of action to be taken to reduce the potential for loss of human life and impacts to economic, environmental, and lifeline interests, and other concerns, such as water quality degradation, from failure or mis-operation of a dam or its appurtenant structures. The responses are either yes (Y), no(N), or not required (NR).

**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.

**Event** - A situation or a condition which develops that is of a serious nature that may endanger the dam, or endanger persons or property, and demands immediate attention.

**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.

**Former Dam Name** - Previous reservoir or dam name(s), if changed or combined into one dam system.

**Foundation** - The material upon which the dam is founded, and certainty (Rock, Rock and Soil, Soil, Unlisted/Unknown), (Known, or Estimated).

**Freeboard** - Vertical distance between a stated water level in the reservoir and the top of dam.

**Gate, slide or sluice** - An operable, watertight valve to manage the discharge of water from or regulating the dam.

**Groin** - The area along the intersection of the face of a dam and the abutment.

**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.

**Hydraulic Height** - Hydraulic height of the dam, in feet to the nearest foot, which is defined as the vertical difference between the maximum design water level and the lowest point in the original streambed or if not present, the lowest elevation of the downstream toe of the embankment.

**Hydrograph, inflow, 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 ranking predetermined official available at the scene of an emergency situation.

**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/zone** - The geographic area downstream of the dam that would be flooded by a breach of the dam or other large discharge.

**Inundation Map** - A map showing areas that would be affected by flooding from releases from a dam's reservoir. The flooding may be from either controlled or uncontrolled releases or as a result of a dam failure. A series of maps for a dam could show the incremental areas flooded by larger flood releases.

**Latitude** - The latitude at dam centerline as a single value in decimal degrees, as measured by the North American Datum of 1983 (NAD83).

**Last EAP Revision** - Date of the most recent revision of the Emergency Action Plan.

**Last Inspection Date and Frequency** - Date of the most recent inspection of the dam and the scheduled frequency interval for periodic inspections, in years.

**Lock Length** - The length of the primary navigation lock to the nearest foot.

**Lock Width** - The width of the primary navigation lock to the nearest foot.

**Longitude** - Longitude at dam centerline as a single value in decimal degrees, as measured by the North American Datum of 1983 (NAD83).

**Maximum Discharge** - Spillway discharge rate, in cubic feet per second, when the reservoir is at its maximum designed water surface elevation.

**Maximum Storage** - Defined as the total storage space, in acre-feet, in a reservoir below the maximum attainable water level, including any surcharge storage (storage between the emergency spillway crest and top of dam). Maximum storage shall be calculated by using one of the two methods shown below that is most representative of the actual storage volume. The dam height may be used as a surrogate for maximum depth if the depth is unknown.

- Using the Average End Area Method (volume (acre-feet) = length (feet) x (A1 + A2 (end areas (acre)) / 2)).
- Multiplying the maximum depth of the waterbody times the surface area of the waterbody times four tenths (impoundment storage (acre-feet) = depth (feet) x surface area (acre) x 0.4) (U.S. Department of Agriculture Soil Conservation Survey).

**Nearest Downstream City/Town** - Name of the nearest downstream city, town or village that is most likely to be affected by floods resulting from the failure of the dam.

**Normal Storage** - Normal storage, in acre-feet, is defined as the total storage space in a reservoir below the normal retention level, including dead and inactive storage and excluding any flood control or surcharge storage. For normally dry flood control dams, the normal storage will be zero. If unknown, enter *UNK* and not zero.

**Notification** - To immediately inform appropriate individuals, organizations, or agencies about a potentially emergency situation so they can initiate appropriate actions.

**NID Height** - Maximum value of either Dam Height, Structural Height, or Hydraulic Height. Accepted as the general height of the dam.

**NID ID** - The official National Inventory of Dams (NID) identification (ID) number for the dam. If the dam meets the NID criteria and it does not already have a NID ID, it will be assigned one by the State Dam Safety Officer. This field is used as the unique identifier for each NID dam.

**NID Storage** - Maximum value of either Normal Storage or Maximum Storage. Accepted as the general storage of the dam.

**Number of Locks** - Number of existing navigation locks for the project.

**Number. of Separate Structures** - Number of separate structures associated with this dam project. Include saddle dams (or dikes) as defined in FEMA 148: *Federal Guidelines for Dam Safety*, Glossary of Terms, as a subsidiary dam of any type constructed across a saddle or low point on the perimeter of a reservoir. Do not include the number of appurtenant works which are defined as, but not limited to, such structures as spillways, either in the dam or separate there from; the reservoir or its rim; low level outlet works; and water conduits, such as tunnels, pipelines or penstocks, either through the dam or its abutments.

**Other Dam Names** - Names other than the official name (for example, reservoir name), of the dam in common use.

**Outlet Gates** - Category describing the type of (1) spillway and (2) controlled outlet gates, if any. List outlet gates in decreasing size order, followed by number of gates (None, Uncontrolled, Tainter (radial), Vertical Lift, Roller, Bascule, Drum, Needle, Flap, Slide (sluice gate), Valve, or Other controlled).

**Outlet works** - An appurtenant structure that provides for controlled passage of normal (principal spillway) 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.

**Public Land Survey** - This information provides the dam location identified in the Public Land Survey System, such as, *S05 T01S R01E*. If the prime meridian location is needed to locate the dam within the state, include it in the field, e.g., *S05 T01S R01E (Sixth Prime Meridian)*.

**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.

**River or Stream** - The official name of the river or stream on which the dam is built. If the stream is unnamed, identify it as a tributary (-TR) to a named river or stream, e.g., *Snake-TR*. If the dam is located offstream, enter the name of the river or stream plus "-OS", e.g., *Snake-OS*.

**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.

**Spillway Type** - Category describing the type of spillway (Controlled, Uncontrolled, or None).

**Spillway Width** - The width of the spillway, to the nearest foot, available for discharge when the reservoir is at its maximum designed water surface elevation. Typically for an open channel spillway, this is the bottom width. For pipe spillways or drop inlets that have diameters, use the diameter of the pipe.

**State Agency / Permit Number** - Name of State permitting agency and permit number, if permitted.

**State Regulatory Agency** - Name of the primary state agency with regulatory or approval authority over the dam. In most cases, this is the Water Management District where the dam is located or a specific Florida Department of Environmental Protection program.

**Structural Height** - Structural height of the dam, in feet to the nearest foot, which is defined as the vertical distance from the lowest point of the excavated foundation to the top of the dam. Top of dam refers to the parapet wall and not the crest.

**Surface Area** - Surface area, in acres, of the impoundment at its normal water level.

**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.

**Year Completed** - Year (four digits) when the original main dam structure was completed. If unknown, and a reasonable estimate is unavailable, enter *UNK*.

**Year Modified** - Year (four digits) when major modifications or rehabilitation of dam or major control structures were completed. Major modifications are defined as a structural, foundation, or mechanical construction activity which significantly restores the project to original condition; changes the project's operation; capacity or structural characteristics (for example, spillway rehabilitation); or increases the longevity, stability, or safety of the dam

and appurtenant structures. Follow the year with the category describing the type of modification (Foundation, Hydraulic, Mechanical, Seismic, Structural, Other).