

**MISSOURI**  
**DEPARTMENT OF**  
**NATURAL RESOURCES**

## **Guidelines for owner completion of the Emergency Action Plan, or EAP, Template**

- Replace all highlighted text (including MAGENTA and GREEN with appropriate names, descriptions, or phone numbers.
- State Emergency Management Agency area letters for all counties in the state are available at <http://sema.dps.mo.gov/sacp.htm>
- Assistance is available from your local Emergency Management Director for the items in the template designated in GREEN. A list of Emergency Management Directors is available at <http://sema.dps.mo.gov/All%20EMDs%20Dec%202009.pdf>
- Appendix A, inundation maps will be provided by the department when they become available. However all other portions of the Emergency Action Plan can be completed prior to the addition of the inundation map.
- Owners can begin completing the **Residents/Businesses/Entities/Infrastructure at Risk** table using their best judgment and updating the list when an inundation map becomes available.
- The Water Resources Center Dam and Reservoir Safety Program will assist in completing Appendix B highlighted in YELLOW. Please contact the department at 573-368-2175.
- When completed, a minimum of three copies are required. See appendix E for the required record holders.

For questions concerning the EAP process contact:

Missouri Dept. of Natural Resources

Dam and Reservoir Safety Program

Phone: 573-368-2175

Other sources of information: [www.damsafetyaction.org](http://www.damsafetyaction.org)

## **Emergency Action Plan, or EAP**

### **Hickory Lake Dam**

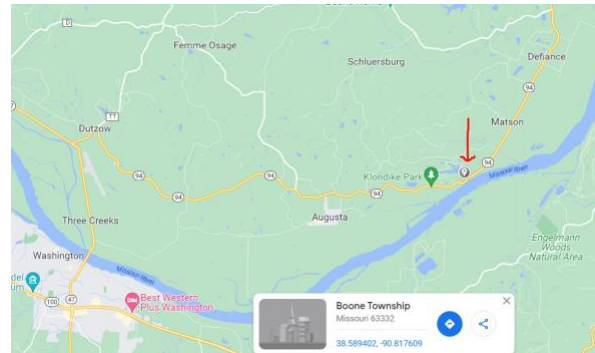
# National Inventory of Dams, or NID, MO32042

## St. Charles County, Missouri

### SEMA Area C

Reviewed and Updated:

02/03/2023



Lowell Pfenning – ASOA Representative

Augusta Shores Owners Association

Physical Address: 4503 Hwy 94 South

Augusta, MO 63332

Mailing Address; PO Box 53

Defiance MO 63341

*Hickory Lake Dam owner/operator*

Date: May 1, 2023

Dave Todd

*Emergency Management Director*

*St. Charles County*

*Date:*

## **Basic EAP Data**

### **Purpose**

The purpose of this EAP is to reduce the risk to human life and minimize property damage during an unusual or emergency event at Hickory Lake Dam.

### **Notification Procedure**

This EAP provides general guidance for recognizing and characterizing an emergency situation occurring at the dam. The dam owner should act quickly to evaluate the emergency situation and then follow the notification procedures according to the corresponding level of emergency.

### **Potential Impacted Area**

See *Inundation Map* (Appendix A) and *Residents/Businesses/Entities at Risk* table for the locations and contact information of the following residents and businesses that may be flooded if the dam should fail. This list may also include critical infrastructure such as pipelines, power plants, substations, or sewer plants.

(Describe homes, businesses, and roads in the downstream evacuation area)

- Hwy 94 – MODOT
- Duckett Creek Sewage Treatment Plant – 636-441-1244
- Katy Trail – MO State Parks – 636-441-4554
- Klondike Boat Ramp – St. Charles County Parks

### **Directions to dam** (Review Arrival Time Map that shows major roads to the dam)

- From Hwy 94: Access Augusta Shores development at the front gate by turning onto Berg Crossing. Follow it until intersection with Augusta Shores Drive, and turn right. In approximately one mile, turn right onto the Hickory Lake access gravel road, which is just before North High Post Road.
- Second Access Point: From Hwy 94, turn onto Terry Road and follow this to the top of the hill and access Augusta Shores development turning onto North High Post Road. At the bottom of the hill, at the stop sign, turn right onto Augusta Shores Drive and then an immediate left onto the Hickory Lake Dame gravel access road.

## **Guidance for Determining the Emergency Level**

This information should be used as a general guide for recognizing and characterizing the type of emergency situation occurring at the dam. The dam owner should notify the appropriate emergency contacts based upon the emergency level assigned to each situation.

### **Level 1 Emergency - Nonemergency, unusual event, slow to develop**

- Reservoir water surface elevation at emergency spillway crest or spillway is flowing with no active erosion.
- New seepage areas in or near the dam.
- New cracks in the embankment greater than ¼-inch wide without seepage.
- Visual movement/slippage of the embankment slope.
- Instrumentation readings beyond predetermined values.
- Measurable earthquake felt or reported on or within 50 miles of the dam.
- Damage (vandalism/sabotage) to dam or appurtenances with no impacts to the functioning of the dam.
- Modification (vandalism/sabotage) to the dam or appurtenances that could adversely impact the functioning of the dam.

### **Level 2 Emergency - Potential dam failure situation, rapidly developing**

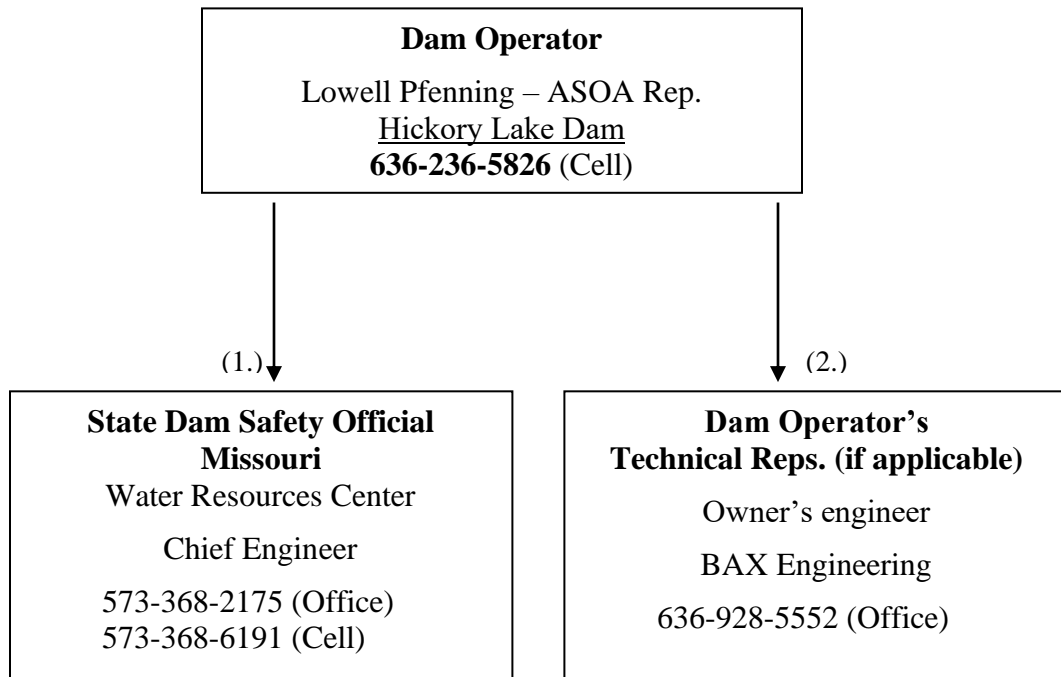
- Spillway flowing with active gully erosion.
- Spillway flow that could result in flooding of people downstream, if the reservoir level continues to rise.
- Reservoir level is 1 foot below the top of the dam.
- New seepage areas with cloudy discharge or increasing flow rate.
- Observation of new sinkhole in reservoir area, on embankment or downstream of dam.
- Cracks in the embankment with seepage.
- Earthquake resulting in visible damage to the dam or appurtenances.
- Verified bomb threat that, if carried out, could result in damage to the dam.
- Damage to dam (vandalism/sabotage) or appurtenances that has resulted in seepage flow.

### **Level 3 Emergency - Urgent; dam failure imminent or is in progress**

- Spillway flowing with an advancing headcut that is threatening the control section.
- Spillway flow that is flooding people downstream.
- Water from the reservoir is flowing over the top of the dam (not just auxiliary/emergency spillway).
- Seepage that is obviously eroding soil from within the embankment or rapidly increasing in flow rate.
- Rapidly enlarging sinkhole.
- Sudden or rapidly progressing slides of the embankment slopes.
- Earthquake resulting in uncontrolled release of water from the dam.
- Detonated bomb that has resulted in damage to the dam or appurtenances.
- Damage to dam (vandalism/sabotage) or appurtenances that has resulted in uncontrolled water release.

## **Emergency Level 1 Notifications**

### **Nonemergency, unusual event; slowly developing.**



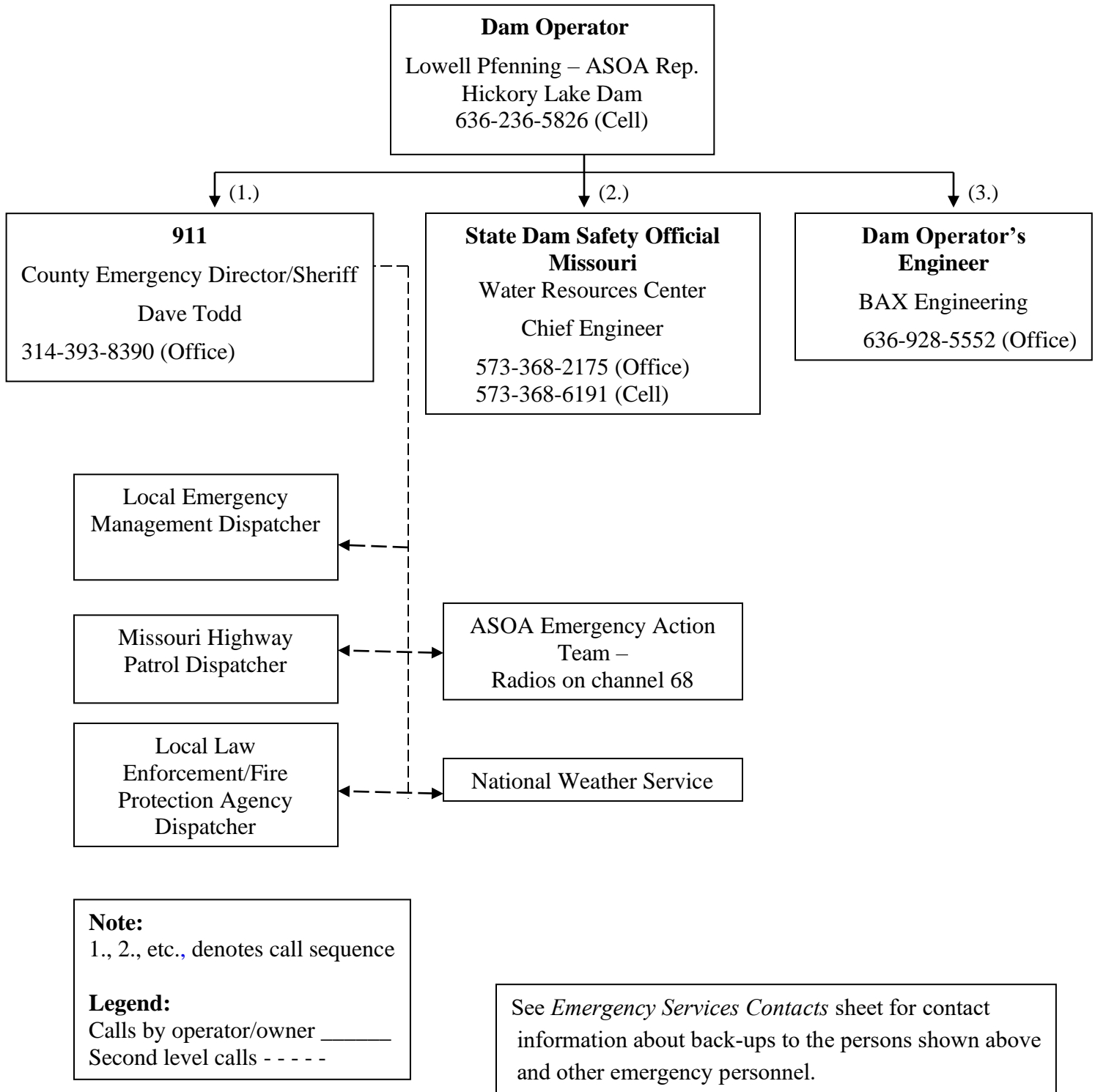
**Note:**  
1., 2., etc., denotes call sequence

**Legend:**  
Calls by operator/owner \_\_\_\_\_  
Second level calls - - - - -

See *Emergency Services Contacts* sheet for contact information about back-ups to the persons shown above and other emergency personnel.

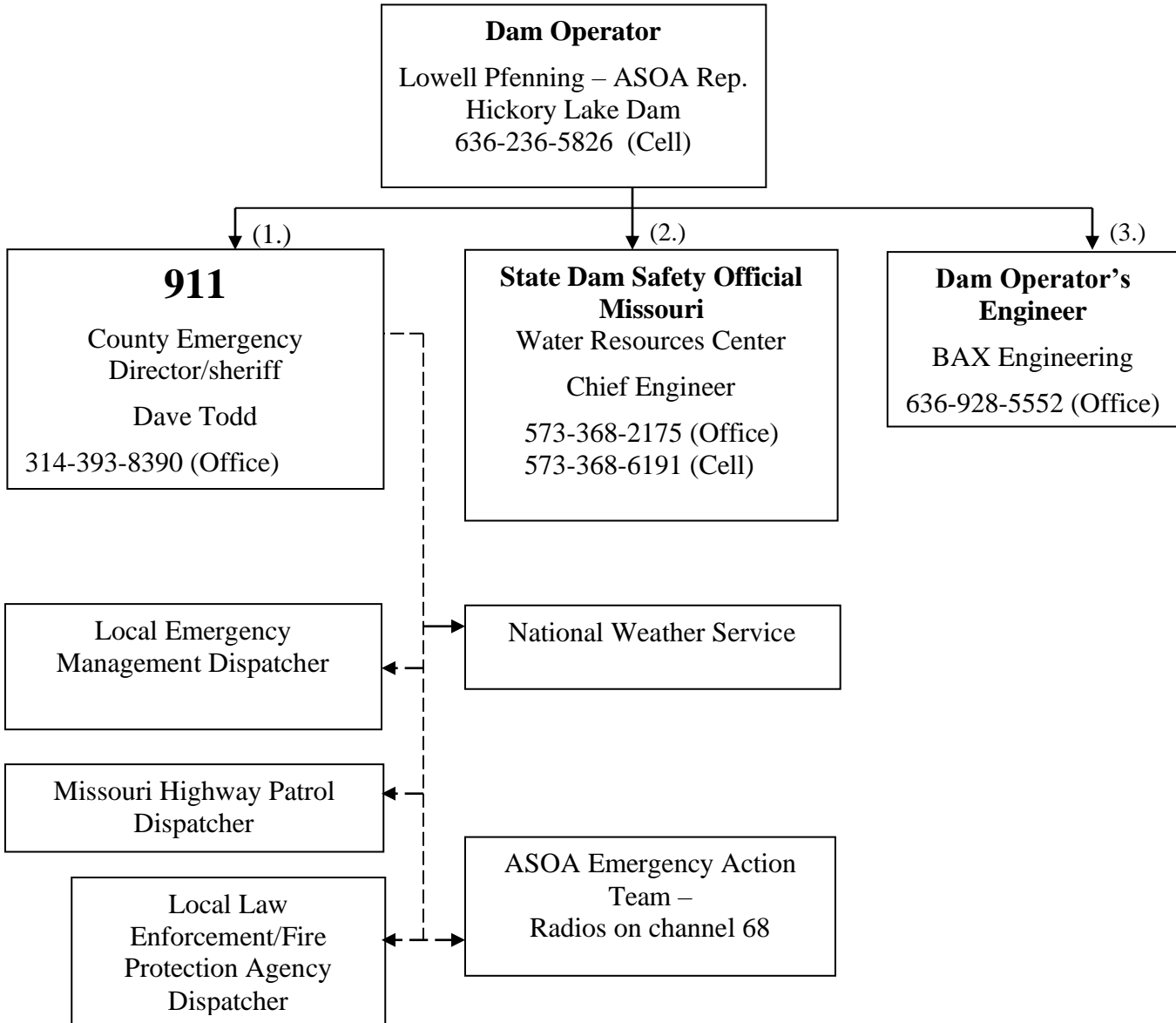
## Emergency Level 2 Notifications

**Emergency event, potential dam failure situation; rapidly developing.**



## Emergency Level 3 Notifications

**Urgent event, dam failure appears imminent or is in progress.**



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

**Legend:**  
Calls by operator/owner \_\_\_\_\_  
Second level calls - - - - -

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

## Emergency Services Contacts

Agency / Organization	Principal Contact	Address	Office Phone No. with Area Code	Alternate Telephone Numbers
St. Charles County Sheriff	Sheriff's Name	Contact Address	636-949-3000	XXX-XXX-XXXX (H) XXX-XXX-XXXX (C)
Owner/Representative of Hickory Lake		Contact address	phone	XXX-XXX-XXXX (H) XXX-XXX-XXXX (C)
County Emergency Management Director	Dave Todd		636-949-3023	636-561-2425 (H) 314-393-8390 (C)
AFPD - Local Fire Department	Paul Hopen - Chief	5551 South Hwy 94	636-228-4403	
Local Police	Contact Name	Contact Address	911	
Local Highway Patrol	Contact Name	Contact Address	911	
St. Charles County Road Department	Contact Name, Supervisor	Contact Address	800-525-5555	XXX-XXX-XXXX (H) XXX-XXX-XXXX (C)
Water Resources Center Dam and Reservoir Safety Program	Chief Engineer	111 Fairgrounds Rd. Rolla, MO 65401	573-368-2175	573-368-6191 (C)
Department of Natural Resources Emergency Response	Duty Officer EER	P.O. Box 176 Jefferson City, MO 65102	<b>24 HOUR NO:</b> 573-634-2436	573-526-3380
SEMA Duty Officer			573-751-2748	
National Weather Service	Jim Kramper	St. Charles, MO	636-447-1876	1-800-852-7497 636-447-1769 (Fax)
National Weather Service	Andy Bailey	Kansas City, MO	816-540-5417	
National Weather Service	Steve Runnels	Springfield, MO	417-863-1456	
National Weather Service	Ricky Shanklin	Paducah, KY	270-744-6440	
Missouri Department of Transportation	Emergency Operation Center 24-hour cell no.		573-522-9503	
Missouri Department of Transportation	County Shed			XXX-XXX-XXXX
Local TV Station	Contact Name <b>Manager</b>	Contact Address		XXX-XXX-XXXX
Local Radio Station XXXX AM or FM	Contact Name Manager	Contact Address		



## Residents/Businesses/Entities/Infrastructure at Risk

Brief summary of number of entities within inundation zone.

Entity No.	Resident/business or other impacted entity	Address	Phone No. with area code	Distance downstream from dam (miles)
1	Hwy 94 – MO DOT	MODOT	573-522-9503	<1 mile
2	Duckett Creek Sewage Treatment Plant	Downstream from Hickory Lake Dam	636-441-1244	< 1 mile
X	KATY Trail	MO State Parks	636-441-4554	< 1 mile
X	Klondike Boat Ramp	St. Charles County Parks		< 1 mile

(Use additional sheets if necessary)

## Resources Available

Locally available resources include: (if not available please note)

<b>Heavy Equipment Service and Rental</b>	<b>Sand and Gravel Supply</b>	<b>Ready-mix Concrete Supply</b>
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Name: Ballmann Earthworks Address: Augusta, MO (636) 236-4242	Name: BMC Stone Address: 216 Highway DD Defiance, MO 63341 636.798.2501	Name: Address: Phone number with area code:
<b>Pumps</b>	<b>Other Resources</b>	<b>Sand Bags</b>
Name: Address: Phone number with area code:	Open Valve located on the dam	Name: Address: Phone number with area code:

## Appendix A Inundation Study

### Inundation Map vs. Evacuation Area

**Inundation maps** have been developed from best available information using reasonable assumptions and standardized methods. They are approximations of the maximum water surface extents resulting from a complete

dam breach and draining of the full reservoir. Inundation maps are empirical hydrologic and hydraulic simulations that can only be field verified in the event of an actual breach.

**Evacuation areas and call lists** should take into consideration the anticipated local impacts of flooding; knowledge of local infrastructure, both occupancy and ownership; and potentially interrupted services or cut-off access, which would be caused by dam failure. Depending upon actual circumstances, appropriate alert and evacuation areas could be more or less extensive than the simulated inundation zones.

Insert inundation map here. It is suggested this section be denoted by a tabbed divider to allow quick access to the inundation map during an emergency.

**Appendix B**  
**National Inventory of Dams (NID) Data**

**Hickory Lake Dam:**

State: **Missouri**

NID ID: **MO32042**

Section: **7** Township: **44N** Range: **R 02 E**

Longitude: **-90.82 decimal degree**

Latitude: **38.59 decimal degree**

Longitude: **+90 ° 49' 03"**

Latitude: **38° 35' 21"**

County: **St. Charles**

Stream: **Missouri River**

Nearest town downstream: **Matson**

Distance to nearest town downstream: **2 mi**

Year constructed: **1973**

Nearest town: **Matson**

Distance to nearest town: **2 mi**

Type of dam: (indicate only one)

**earthfill** rockfill concrete tailings

Max. discharge: **4330 ft<sup>3</sup>/s**

Max. storage: **593 ac-ft**

Normal storage: **507 acre-ft**

Surface area: **44 acres**

Drainage area: **476 acres**

Inspection frequency: **5 yrs**

State regulatory agency:

**Missouri DNR WRC DRSP**

Dam height: **37 ft**

Dam length: **400 ft**

Current hazard class: **3**

Principal spillway type: **5x5 foot concrete drop inlet to 36" RCP pipe**

Emergency spillway type: **Concrete-lined open channel on right abutment**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Appendix C

### Unusual or Emergency Event Log

(To be completed during the emergency)

Hickory Lake Dam

County:

When and how was the event detected?

Weather conditions:

General description of the emergency situation:

Emergency level determination:

Made by:

### Actions and Event Progression

Date	Time	Action/event progression	Recorded by

## Appendix D

### Glossary

<b>Abutment</b>	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.
<b>Appurtenances</b>	Structures incident to or annexed to dams essential to the proper operation, maintenance or functioning of the dam. This includes such structures as spillways, low level outlet works and water conduits, such as tunnels, pipelines or penstocks, either through a dam or its abutments.
<b>Breach</b>	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.
<b>Control section</b>	A usually level segment in the profile of an open channel spillway above which water in the reservoir discharges through the spillway.
<b>Dam</b>	An artificial barrier generally constructed across a watercourse for the purpose of impounding or diverting water.
<b>Emergency spillway</b>	The appurtenant structure that provides the controlled conveyance of excess water through, over, or around the dam.
<b>Instrumentation</b>	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 spillway structures. Examples include seepage measuring weirs, piezometers, inclinometers and survey monuments.
<b>Low level outlet works</b>	An appurtenant structure, usually consisting of a pipe through the embankment or principal spillway structure equipped with a valve, whose purpose is to allow lowering the lake level.
<b>Principal spillway</b>	The appurtenant structure that conveys normal inflow through or around the embankment.
<b>Reservoir</b>	The body of water impounded or potentially impounded by the dam.
<b>Seepage</b>	The natural movement of water through the embankment, foundation, or abutment of the dam.

## Appendix E

### Record of Holders of Control Copies of this EAP

Copy Number	Organization	Person receiving copy	E-mail Address
1	Augusta Shores Owners Association	Lowell Pfenning	lowellpfenning@gmail.com
2	Local Emergency Management contact and address	Contact Name	Contact E-mail
3	Missouri Department of Natural Resources Dam Safety Program and address	Chief Engineer	mowaters@dnr.mo.gov

### Record of Revisions and Updates Made to EAP

Revision Number	Date	Revisions made	By whom
1	2/3/2023	Initial draft supplied to owner	J. Scheible