

EMERGENCY ACTION PLAN

Macallen Dam Newmarket, NH

Dam # ~~177.01~~ D1770013
(Significant Hazard Dam - ~~Class H~~)

High

Reissued: March 1, 2015

A NEW DAM
NUMBERING
SYSTEM WAS
RECENTLY
IMPLEMENTED.

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SECTION 2 - NOTIFICATION FLOWCHART

Notification Flow Chart

Macallen Dam, Newmarket, NH
NH Dam # 177.01

EVENT DETECTED BY MONITOR

EVENT DETECTED BY PUBLIC

Call 9-1-1 or 603-659-6636 (24 hr #s)
(Newmarket Emergency Dispatch Center)

If calls initiated
by public

Police

Newmarket Public
Works

Office 603-659-3093
(M-F 7am-3:30pm)

Cell 603-765-1106

Newmarket Police
Dept.

Chief - 603-659-6636

Newmarket Police
Duty Unit

Rockingham County
Sheriff's Office
Dispatch

603-679-2225
24 hr#

Newmarket
Fire & Rescue
Department

Chief -603-659-3334

Cell 603-765-1106

Newmarket EMA
Director

Office - 603-292-1205
(M-Th 7am-5:30pm)

Cell 603-828-4941

NH State Police
800-852-3411
24 hr#

NH Dept of Transportation
Transportation Mgt Center
(TMC)

603-271-6862
24 hr#

NH Highway
District #6

603-868-1133

NH Dept of
Environmental Services
(Dam Bureau)

Cell - 603-419-9206
Pager - 603-639-6982

NH Dept of Homeland
Security & Emergency
Management

1-800-852-3792
603-271-2231
24 hr #s

See Table 4-2 for actions
to take following
completion of
notifications.

Inundation Maps are
located in Appendix C

Use appropriate message based
on type of emergency. See
Table 3-1 of this EAP.

Use Notification Checklist
Forms in Section 3 to
document information
and continuing notifications
made.

SECTION 2 - GENERAL RESPONSIBILITIES

2.1 Overview

Macallen Dam, in Newmarket, New Hampshire, is owned and operated by the Town of Newmarket. The Emergency Action Plan (EAP) for this dam has been developed under guidelines outlined in the NHDES-WD administrative rules, section Env-Wr 505. This section was established to ensure notification of local emergency response personnel in the event that a potentially hazardous situation develops at the dam.

Each person making calls as indicated on the Notification Flowchart (Section 1) is responsible for completing the appropriate Notification Checklist, in Section 3. It is recommended that the standard Messages contained in Section 3 be used to ensure all required information is relayed during the notifications. These checklists should be completed during an actual emergency incident and during EAP testing. Additional copies are available by contacting the Newmarket Public Works Director. You can also photocopy the page applicable to your agency from this EAP.

If an actual or potentially hazardous situation exists at the dam, personnel are requested to start the notification process as shown on the Notification Flowchart. A flood inundation map is included in Appendix C to assist local authorities in the development of an evacuation plan in the case of dam failure. A summary of areas likely to be impacted is contained in Appendix B.

Table 2-1 provides a reference for the responsibilities of each agency or person shown on the notification flowchart during an emergency situation at this dam.

Section 4 of this EAP includes details on actions that should be taken to assist in mitigating the potential for failure at the dam. This section also summarizes the EAP responsibilities during non-emergency periods.

Appendix A provides a description of the dam and directions to the dam. Appendix D discusses requirements for training on and testing of this EAP.

2.2 Types of Emergencies

Two types of emergencies are possible for the dam:

A failure is imminent or has occurred

In this situation, there is little time for corrective action. This is an extremely urgent situation when a dam failure is occurring or obviously about to occur and cannot be prevented. Flash flooding will occur downstream of the dam. In such situations, ~~downstream~~ evacuation must be started immediately as the either the dam has failed or time has "run out" and remedial actions will not prevent the dam from failing.

of the building located on the dam's right
abutment

IF time and conditions allow, local responders should tour the area just downstream to warn others of the possibility of dam failure.

A potentially hazardous condition is 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. Such conditions can include unusually high spillway flows due to periods of heavy or extended rainfall, flash flood warnings, rapid snow melt, observable cracks in the dam structure or abutments, seepage or piping through the dam and "boils" or whirlpools in the water downstream of the dam. 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. Such conditions may suggest that implementation of specific remedial measures may prevent the dam from failing. Other observations that suggest an unusual situation is occurring include:

- seepage from ^{through the dam or abutments} outlet pipes is increasing and /or is cloudy - there are no outlet pipes.
- the increase in seepage is noticeable increasing
- the reservoir level is falling without apparent cause, or
- cracks in the dam or abutments appear to be increasing,
- stone blocks in the dam or abutments are shifting or falling away, or

2.3 Summary of Responsibilities

A summary of the responsibilities of each entity on the Notification Flowchart during an emergency is included on Table 2.1. Remedial Actions that should be considered to be implemented at the dam during an emergency are summarized in Sections 4.3 to 4.9 and on Table 4-2. Responsibilities during non-emergency periods are summarized in Section 4 and Appendix D.

fish ladder

- flow over the spillway has become irregular and floating debris does not appear to be the cause.

In such cases, evacuation of the building at the dam's right abutment should be considered as based upon the developing condition. In addition, local responders should ... (see note on p.3)

**TABLE 2-1
RESPONSIBILITIES DURING EMERGENCIES**

Person or Agency	Responsibilities
Dam Monitor	<ul style="list-style-type: none"> • Monitor and operate the dam, report findings to Owner • Report unusual conditions /serious malfunctions to Emergency Dispatch Center to initiate EAP if Owner not reachable • Implement actions as directed by Dam Owner • Update Owner with status updates on conditions
Dam Owner (Newmarket Director of Public Works)	<ul style="list-style-type: none"> • Provide for increased surveillance if unusual condition exists: <ul style="list-style-type: none"> ◦ during periods of unusually high precipitation and runoff ◦ when reservoir pool rises significantly and is within one foot from top of dam ◦ upon report of malfunction ◦ upon notice of upstream dam failure or malfunction ◦ immediately after earthquake activity ◦ report of threats to the dam • Contact Emergency Dispatch Center - 911 if an emergency situation is developing or has developed. Use appropriate Message. • Implement appropriate response to the situation. See details contained in Section 4 of this EAP. • Communicate changing event status to the Emergency Dispatch Center as needed.
911 Emergency Dispatch Center	<ul style="list-style-type: none"> • If initial alert is received from a member of the public, request dam status verification from the Newmarket Police Dept • Implement notifications as shown on the Notification Flowchart using the appropriate Message. • Disseminate updated dam status information to assigned agencies on Notification Flowchart as information is received • Respond to calls received from the public regarding the dam emergency. Re-route calls to applicable response agencies as appropriate
Newmarket Police Department	<ul style="list-style-type: none"> • Verify situation at dam if requested by Emergency Dispatch. Report situation to Emergency Dispatch • Implement notifications as shown on the Notification Flowchart • Prepare for / initiate or assist with evacuations • Provide for security measures at the dam • Secure and control access to evacuated areas • Assist in rescue operations as required
Newmarket Fire Department	<ul style="list-style-type: none"> • Implement notifications as shown on the Notification Flowchart • Prepare for / initiate or assist with evacuations • Initiate Mutual Aid Agreements as needed • Assist in rescue operations as required

Person or Agency	Responsibilities
Newmarket Emergency Management Director	<ul style="list-style-type: none"> • Serve as Incident Commander for emergency actions • Serve as liaison between the Town and NH Homeland Security & Emergency Management • Coordinate road closure activities between NHDOT #6 and local police • Coordinate with the media as required • In consultation with NH Homeland Security & Emergency Management, make determination of when the emergency at the dam has ended; and when flooding has subsided, termination of the emergency situation in the community
NHDOT Traffic Management Center (TMC)	TMC personnel will alert the District #6 office of the emergency situation.
NHDOT District #6	District #6 highway personnel will close all impacted state roadways and provide for detours as necessary.
NH State Police	<ul style="list-style-type: none"> • Implement notifications as shown on the Notification Flowchart and on internal procedures • Aid in road closures
NH Department of Safety Homeland Security & Emergency Management (HSEM)	<ul style="list-style-type: none"> • Implement additional notifications (based on internal procedures) as needed for the emergency • Provide help or assistance to local communities as necessary • Consult with the Incident Commander in determination of when the emergency at the dam has ended; and when flooding has subsided, termination of the emergency situation in the community

Any questions concerning actions to be taken or notifications to be made should be addressed to:

<p style="text-align: center;">Town of Newmarket Director of Public Works 4 Young Lane Newmarket, NH 03857</p> <p style="text-align: center;">See Notification Flowchart for contact numbers</p>
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SECTION 3 - NOTIFICATION PROCEDURES

3.1 Emergency Communication Procedures

The calls shown on the Notification Flowchart, in the order shown, shall be made regardless of which type of emergency is occurring. The following shall be implemented:

- Utilize the appropriate "message" for the type of emergency that has occurred (see Table 3-1)
- If the emergency is observed by a member of the Newmarket Public Works, the Newmarket Emergency Dispatch Center shall be notified first.
- If a member of the public makes the initial observation, they are likely to contact the Dispatch Center by calling 911 which will start the notifications
- If an intermediate person on the Notification Flowchart receives the first call, the Emergency Dispatch Center should be notified to ensure all required notifications are made.
- In the unlikely event that the entity listed cannot be reached, the person attempting that call shall make the "continuing notifications" on that "list". Only after completing these calls shall an attempt be made to reach the entity that could not be reached.
- Complete the applicable Notification Checklist contained at the end of this Section to document your calls.
- NH State Police, NH911, and NH DOT (TMC) Dispatch use different procedures, so a Notification Checklist is not included for these entities.

3.2 Emergency Messages

Table 3-1 contains the two types of Emergency Messages that should be used to describe the emergency situation to entities receiving the notifications.

**TABLE 3-1
EMERGENCY MESSAGES**

Standby-By Alert - A Potentially hazardous situation may be developing:

- "This is _____." (Identify your name and position)
- We have a **potential emergency condition developing** at the Macallen Dam, located off Bay Rd in Newmarket NH. (Directions included in Appendix A)
- We have activated the Emergency Action Plan for this dam and are implementing predetermined actions to respond to a developing situation.
- Evacuation may become necessary if the dam's condition worsens. Please prepare to evacuate along low-lying areas identified in the Inundation Map in Appendix C in your copy of this Emergency Action Plan.
- We will advise you when the situation is resolved or if the situation gets worse.
- If you are responsible for making notifications according to this Emergency Action Plan, please be sure to issue this same information to those you notify.
- To ensure this message is understood, please repeat back the name of the dam and type of emergency.
- I can be contacted at the following number _____.
- I repeat, this is a Standby-By Alert for the Macallen Dam.

Dam Failure Emergency - Dam failure appears imminent or is in progress:

- "This is _____." (Identify your name and position.)
- We have a **dam failure emergency condition** at the Macallen Dam, located off Bay Rd in Newmarket NH. (Directions included in Appendix A)
- The Macallen Dam (denote "has failed" or "is about to fail"). Dam failure occurred at _____ (denote time of failure).
- We have activated the Emergency Action Plan for this dam and are implementing predetermined actions to mitigate the dam failure event.
- Evacuation should begin immediately along low-lying areas identified in the Inundation Map in Appendix C in your copy of this Emergency Action Plan.
- We will advise you when the situation changes.
- If you are responsible for making notifications according to this Emergency Action Plan, please be sure to issue this same information to those you notify.
- To ensure this message is understood, please repeat back the name of the dam, type of emergency, and time of dam failure.
- I can be contacted at the following number _____.
- I repeat, this is a Dam Failure Emergency Notification for the Macallen Dam."

SEE NOTES IN
SECTION 2.2
AND APPENDIX E

NEWMARKET PUBLIC WORKS <i>Notification Checklist*</i>

Your Name:		Call received from:	
Failure location:	Date:	Time call is received:	
Macallen Dam			
Actual Emergency _____ Standby Alert Actual Emergency _____ Dam has failed or failure is imminent. Time dam failed: _____ Remember to use the appropriate Message and clear terms such as: "Evacuation MAY become necessary, if dam's condition worsens" or "Evacuation should begin immediately"		EAP Test _____ See page ____ for Test Message	
Record any details received:			
AGENCY CONTACTED	TIME	PERSON CONTACTED	
1. Newmarket Emergency Dispatch Center			

**This Checklist shall be filled out during emergency condition notifications and during testing of the EAP. When used for a test, forward a completed copy to the Director of Public Works (see Appendix F for the mailing address and fax number).*

Signature: _____

NEWMARKET EMERGENCY DISPATCH CENTER <i>Notification Checklist*</i>
--

Your Name: _____		Call received from: _____	
Failure location: Macallen Dam	Date: _____	Time call is received: _____	
Actual Emergency _____ Standby Alert Actual Emergency _____ Dam has failed or failure is imminent. Time dam failed: _____ Remember to use the appropriate Message and clear terms such as: "Evacuation MAY become necessary, if dam's condition worsens" or "Evacuation should begin immediately"		EAP Test _____ See page ____ for Test Message	
Record any details received:			
AGENCY CONTACTED	TIME	PERSON CONTACTED	
1. Newmarket Public Works (if not initially notified by Public Works)			
2. Newmarket Police Department			
3. Newmarket Fire & Rescue Department			
4. NH State Police			

**This Checklist shall be filled out during emergency condition notifications and during testing of the EAP. When used for a test, forward a completed copy to the Director of Public Works (see Appendix F for the mailing address and fax number).*

Signature: _____

NEWMARKET POLICE DEPARTMENT
*Notification Checklist**

Your Name:		Call received from:	
Failure location:	Date:	Time call is received:	
Macallen Dam			
Actual Emergency _____ Standby Alert Actual Emergency _____ Dam has failed or failure is imminent. Time dam failed: _____ Remember to use the appropriate Message and clear terms such as: "Evacuation MAY become necessary, if dam's condition worsens" or "Evacuation should begin immediately"		EAP Test _____ See page ____ for Test Message	
Record any details received:			
AGENCY CONTACTED	TIME	PERSON CONTACTED	
Newmarket Emergency Dispatch Center (Call-back to Emergency Dispatch Center following event verification)			
1. Rockingham County Sheriff's Office Dispatch			

**This Checklist shall be filled out during emergency condition notifications and during testing of the EAP. When used for a test, forward a completed copy to the Director of Public Works (see Appendix F for the mailing address and fax number).*

Signature: _____

NEWMARKET FIRE & RESCUE DEPARTMENT <i>Notification Checklist*</i>

Your Name:		Call received from:	
Failure location:	Date:	Time call is received:	
Macallen Dam			
Actual Emergency _____ Standby Alert Actual Emergency _____ Dam has failed or failure is imminent. Time dam failed: _____ Remember to use the appropriate Message and clear terms such as: "Evacuation MAY become necessary, if dam's condition worsens" or "Evacuation should begin immediately"		EAP Test _____ See page ____ for Test Message	
Record any details received:			
AGENCY CONTACTED	TIME	PERSON CONTACTED	
1. Newmarket EMA Director			

**This Checklist shall be filled out during emergency condition notifications and during testing of the EAP. When used for a test, forward a completed copy to the Director of Public Works (see Appendix F for the mailing address and fax number).*

Signature: _____

ROCKINGHAM COUNTY SHERIFF'S OFFICE
DISPATCH
*Notification Checklist**

Form below may be used to record information received and calls made not shown on Notification Flowchart

Your Name:		Call received from:	
Failure location:	Date:	Time call is received:	
Macallen Dam			
Actual Emergency _____ Standby Alert Actual Emergency _____ Dam has failed or failure is imminent. Time dam failed: _____ Remember to use the appropriate Message and clear terms such as: "Evacuation MAY become necessary, if dam's condition worsens" or "Evacuation should begin immediately"		EAP Test _____ See page ____ for Test Message	
Record any details received:			
AGENCY CONTACTED	TIME	PERSON CONTACTED	

**This Checklist shall be filled out during emergency condition notifications and during testing of the EAP. When used for a test, forward a completed copy to the Director of Public Works (see Appendix F for the mailing address and fax number).*

Signature: _____

NEWMARKET EMA DIRECTOR **Notification Checklist***

Form below may be used to record information received and calls made not shown on Notification Flowchart

Your Name:		Call received from:	
Failure location:	Date:	Time call is received:	
Macallen Dam			
Actual Emergency _____ Standby Alert Actual Emergency _____ Dam has failed or failure is imminent. Time dam failed: _____ Remember to use the appropriate Message and clear terms such as: "Evacuation MAY become necessary, if dam's condition worsens" or "Evacuation should begin immediately"		EAP Test _____ See page ____ for Test Message	
Record any details received: 			
AGENCY CONTACTED	TIME	PERSON CONTACTED	

*This Checklist shall be filled out during emergency condition notifications and during testing of the EAP. When used for a test, forward a completed copy to the Director of Public Works (see Appendix F for the mailing address and fax number).

Signature: _____

by? (EMD, FIRE CHIEF, DPW...?)

SECTION 4 - PREVENTATIVE ACTIONS

4.1 Dam Operations and Monitoring

Monitoring is a crucial step in the emergency action process. It provides the information on how certain unusual events may affect or are affecting the dam. Monitoring may range from frequent periodic inspections to evaluate physical conditions, adjust gates and check river levels, to continuous monitoring during unusual events or dam malfunctions.

The Town of Newmarket, Public Works, has the responsibility to:

- Ensure that the dam is regularly inspected.
- Increase the inspection frequency as dictated by occurring unusual conditions.
- Ensure required inspection reports are maintained.
- Ensure that the dam is maintained to protect against deterioration and failure
- Ensure engineering files for dam are accessible for use in emergencies.
- Serve as point of contact for the Town with the NH State Dam Engineer(s) for dam related activities.
- Ensure that the EAP is maintained (see Section 4.10 for details)
- Implement the Training and Testing activities noted in Appendix D

If needed, local authorities may be requested to provide a means of temporary monitoring.

No instrumentation presently exists for remote monitoring of water levels at the dam. Portable lighting equipment may be used as necessary for illumination.

No alternative sources of power are available for spillway gate operations or other emergency uses. Gates may be operated manually.

Table 4-1 is a sample of the Inspection Form used by dam Monitors during inspections of the dam. Such inspections are performed at least . Any unusual findings and equipment malfunction are immediately brought to the attention of the Director of the Newmarket Pubic Works. Completed inspection records are maintained .

by the incident commander (EMD)

4.2 Malfunctions at the Dam

Will be repaired immediately by the Public Works Department.

4.3 Monitoring During Emergencies

More frequent inspection of the dam is conducted when the following conditions occur:

- during periods of unusually high precipitation and run-off
- when the impoundment rises significantly and is within one foot of the top of the dam
- upon report of a malfunction at the dam

(suggestions)
every hours
when the water
level exceeds
 feet over the
spillway (or
when the water
is within inches
from)

This language
seems appropriate
for when to
perform inspections
during unusual events.

- upon notification of an upstream dam failure or malfunction
- immediately after earthquake activity
- report of threats to the dam

The frequency of inspections is dependant upon the triggering event and conditions found at the dam. The dam may be monitored continuously if warranted. The form shown on Table 4-1 is used to record observations during these events. Status updates are reported to the Director of Public Works as they are observed. The Director or his designee determines if an emergency situation should be declared and the EAP implemented.

4.4 Mitigative Actions to be Undertaken During Emergency Situations

The Table 4-2 lists some, but not all, of the events which can lead to the failure of the dam. A brief outline of actions to take to assess and attempt to stabilize the situation is included. These conditions may lead to a **"Standby Alert"** notification.

All decisions regarding the severity of the dam conditions and remedial actions to implement are the responsibility of the individual conducting the inspection in consultation with the Director of Public Works. The NH Dam Bureau should be consulted for technical advice on remedial actions. (See the Notification Flowchart for contact telephone numbers.) Regardless of the cause of the problem, the dam should be operated at a reduced level until final repairs can be completed. If the remedial actions are unsuccessful and the dam fails or is about to fail, the **"Dam Failure Emergency Notification"** must be given.

Formatted: Bullets and Numbering

4.5 Emergency Supplies and Resources

In an emergency situation, equipment and supplies might be needed on short notice, such as sandbags, rip rap, fill materials, large equipment such as backhoes, and laborers. Table 4-3 is a partial list of the equipment and materials owned by the Town of Newmarket and available for use. A list of contractors and suppliers that would be contacted for acquisition of additional equipment and material is also shown on this Table.

4.6 Response during Periods of Darkness

The spillway, gate structures, and any distressed areas of the dam should be illuminated if an emergency condition develops during periods of darkness. This will allow the emergency condition to be monitored and assessed, and help facilitate a response. The Newmarket Public Works and Fire Department will provide temporary emergency power and illumination during such events.

4.7 Response during Weekends and Holidays

The Emergency Notification Flowchart can be used for Weekends and Holidays. In most cases, the contact numbers are manned 24 hours. When practical, alternate telephone contact numbers have been provided. This should maximize the probability of activating the Notification Flowchart and engaging all of the responsible parties.

4.8 Response during Periods of Adverse Weather

2.

During periods of adverse weather, the access route described in Appendix A should be utilized. Limited quantities of gravel and or/or crushed stone are stockpiled at the [redacted] and would be transported to the site to allow access roads to be maintained and for making emergency repairs. Local contractors would used to bring additional materials.

4.9 Availability of Use of Alternate Systems of Communications

It is assumed that interruption of telephone service during an emergency condition could occur and that the evacuation of affected homes and businesses should be performed by the police or fire personnel informing residents by going street to street. Cellular phones would be used for communications between individuals at the dam and response agencies. Radio communication is available between the Newmarket Emergency Dispatch Center and [redacted]. As appropriate, the state's CONOPS system will be activated.

4.10 Emergency Action Plan Review and Updating

The Director of Public Works or his designee is responsible for ensuring that the EAP is properly maintained. This is accomplished by:

- Ensuring the entire EAP, including the Inundation Maps, is reviewed annually. Changes to the maps are needed if new development has occurred within the inundated area. If no changes are needed to the EAP, the form included on Table D-2 shall be submitted as noted in Appendix D.
- If changes are needed, they shall be reviewed with the NHDES Dam Bureau prior to their finalization and distribution to ensure no other modifications are needed.
- Revisions will be distributed within 30 days of when the need for the change was identified.
- The entire EAP will be reprinted and distributed every 8 years unless:
 - no changes were needed in this period, or
 - only the Notification Flowchart required changes and those revisions were distributed
- When distributing the full reprints, they must be sent "return receipt requested" or have forms included to be signed by the recipient acknowledging its receipt, and the forms returned to the Director of Public Works.
- The inundation maps will not be reprinted and distributed during the 8 year cycle if no changes have occurred. However notation will be made of the date of the current map and a "check-off box" included on the form noted above indicating that the EAP holder has the current inundation map.
- A copy of any "missing" inundation maps will be provided to the applicable EAP holder if so notified in the above form.

D177001
TABLE 4-1
INSPECTION CHECKLIST - MACALLEN DAM (No. 177.01)

Inspected by:	Date:	Time:
Item	Comments	
WATER LEVEL Is the reservoir level changing rapidly? Obvious reason for changing water level? Pool elevation relative to dam top?		
SPILLWAY General Condition Cracks? Leaning? Seepage? Significant debris collected?		
GATES/ STOPLOG BAYS General Condition Gate mechanism condition Any obvious malfunction?		
EMBANKMENT CREST Visual Settlement? Misalignment? Cracking?		
EMBANKMENT UPSTREAM SLOPE Erosion? Condition of Ground Cover? Longitudinal/Vertical Cracks? Settlement, depressions, bulges? Trees, shrubs, other woody vegetation? Adequate riprap protection? Other comments		
EMBANKMENT DOWNSTREAM SLOPE Erosion? Condition of Ground Cover? Longitudinal/Vertical Cracks? Settlements, depressions, bulges? Soft spots or boggy areas? Movement at or beyond toe? Boils at Toe? Other comments		
SEEPAGE Location: Is seepage cloudy (i.e contains fine soil particles)? Is seepage rapidly increasing? Approximate amount of flow? (hint: garden hose full blast = approximately 5 gallons per minute.)		
ABUTMENT CONTACTS General Condition Cracks? Leaning?		

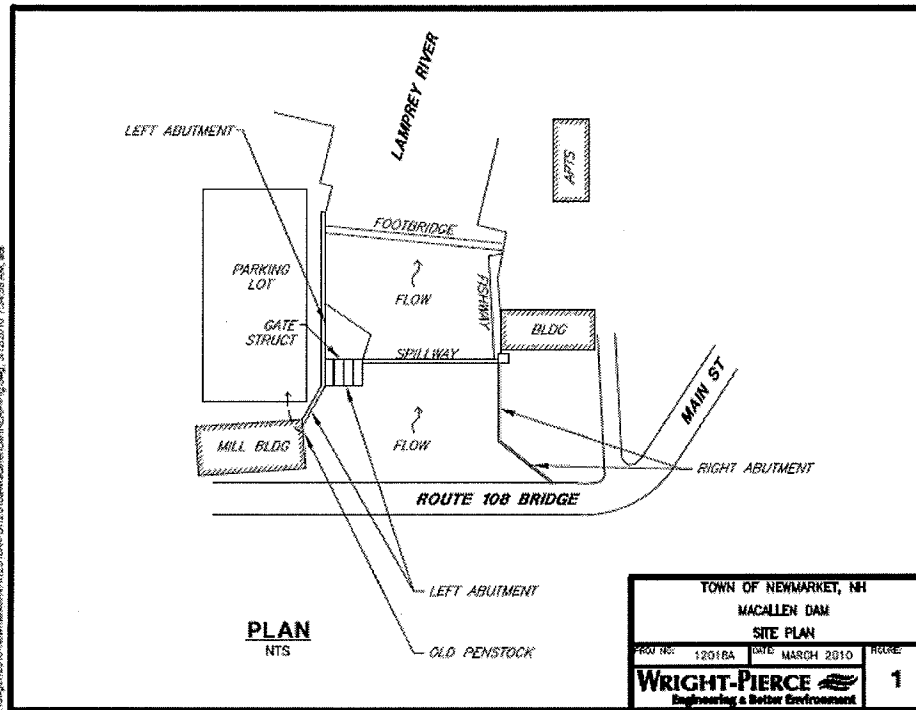
OTHER COMMENTS

Signature:_____

Complete information noted below for monitoring during emergencies:

Information reported to _____ at _____.
(individual) (date and time)

MacAllen Dam Diagram



**TABLE 4-2
EMERGENCY SITUATIONS AND POSSIBLE REMEDIAL ACTIONS**

The NH Dam Bureau should be consulted for technical advice as needed.

Event	Remedial Action
Embankment overtopping	<ul style="list-style-type: none"> • 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. • 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	<ul style="list-style-type: none"> • 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 non-erosive velocity. If the gate is damaged or blocked, pumping or siphoning may be required. <p style="margin-left: 40px;">Continue lowering the water level until the seepage stops.</p> <ul style="list-style-type: none"> • 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 bentonite, soil or rock fill, or plastic sheeting. • 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.
Embankment movement	<ul style="list-style-type: none"> • 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. • Repair settlement of the crest by placing sandbags or earth and rock fill materials in the damaged area to restore freeboard. • Stabilize slides by placing a soil or rockfill buttress against the toe of the slide.

Slides, stone dislocation.	<p>Slides or stone dislocation can drastically change the stability of the structure and impound or impede downstream flow if materials fall into downstream channel.</p> <ul style="list-style-type: none"> • Uses gravel or riprap to stabilize the structure. • Use plastic upstream and/or geotextile fabric downstream to slow the seepage. • Lower the water level via outlet/gate in stages to avoid trapping downstream residents
Earthquake	<ul style="list-style-type: none"> • Immediately conduct a general overall visual inspection of the dam. • Perform a field survey to determine if there has been any settlement and movement of the dam embankment, spillway, and low-level outlet works. • Drain the reservoir, if required. Issue Stand-by Alert if rate of water release may cause downstream flooding.
Threats to Dam	<ul style="list-style-type: none"> • Notify the Newmarket Emergency Dispatch Center or Newmarket Police Department immediately. See the Notification Flowchart for contact numbers. • Preserve any recordings of verbal messages or written threats for law enforcement investigation.

TABLE 4-3
EMERGENCY SUPPLIES

Town of Newmarket Supplies	
Item	Storage Location

Outside Sources for Equipment and Materials	
Contractor	Contractor

*add info
as appropriate*

APPENDICES

Appendix A	Project Description
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APPENDIX A - Project Description

BASIC DATA

The Macallen Dam is a concrete and stone gravity dam. The downstream face of the dam and retaining walls consist of stacked stone blocks. The top four feet of the sloped upstream face is concrete lined with stone at the surface. The spillway is 3 feet wide, with the east side bounded by a concrete gate structure. The gate structure consists of three channels controlled by hydraulic rack and pinion wood gates. The west side of the spillway is bounded by a concrete fishway. The upstream east wall and downstream west wall serve as foundations for existing buildings.

DESCRIPTION	DATA	COMMENT
Pond Area (normal) (maximum)	120 acres 300 acres	Water level at the spillway
Drainage Area	211 sq. mi.	
Storage (normal) (maximum)	480 ac-ft. 1740 ac-ft	Storage with Pond Level at Top of dam
Spillway Freeboard	6 ft	Distance from the spillway crest to the top of the dam
Spillway Length	68 ft	
Dam Height	27 ft	Lowest Elevation at Downstream Side to Top of dam left abutment
Dam Length	150 ft	
100-yr Storm	10,259 cfs	
Discharge Capacity	6,720 cfs	No Freeboard, Full operations

DIRECTIONS TO THE MACALLEN DAM

- Interstate 95 north or south to Exit 5
- Take NH Rt 16 / Spaulding Turnpike north towards Newington - Dover
- Take left turn onto Newmarket Road / NH Rt 108 south
- Take left turn onto Bay Rd
- Entrance to dam straight ahead

5 potentially to be

are the brick buildings on either side of the dam
and adjacent stone retaining walls and

Appendix B Impact of Breach

(Narrative description of areas and roads inundated.
Include the height of floodwave at critical areas, if a breach
analysis was required for this dam.)

The Breach analysis completed by Wright-Pierce in February of
2013 shows that water levels during a breach would not rise
above the first floor elevation of a habitable structure. The ~~only~~
area impacted is a very small Marina.

{ This section should focus on anticipated
impacts to properties adjacent to the dam
{ structure itself.

In addition, though no specific investigation has been
completed, dam failure could result in water levels and
flow velocities that could degrade the abutments and
their foundations at the NH Route 108 bridge
located just upstream of the dam.

Appendix C Inundation Map

~~This map~~ ^{These maps have}

has been provided for use only in emergency planning. The actual inundation area may vary, depending on the conditions existing at the time of dam failure, and the degree of failure.

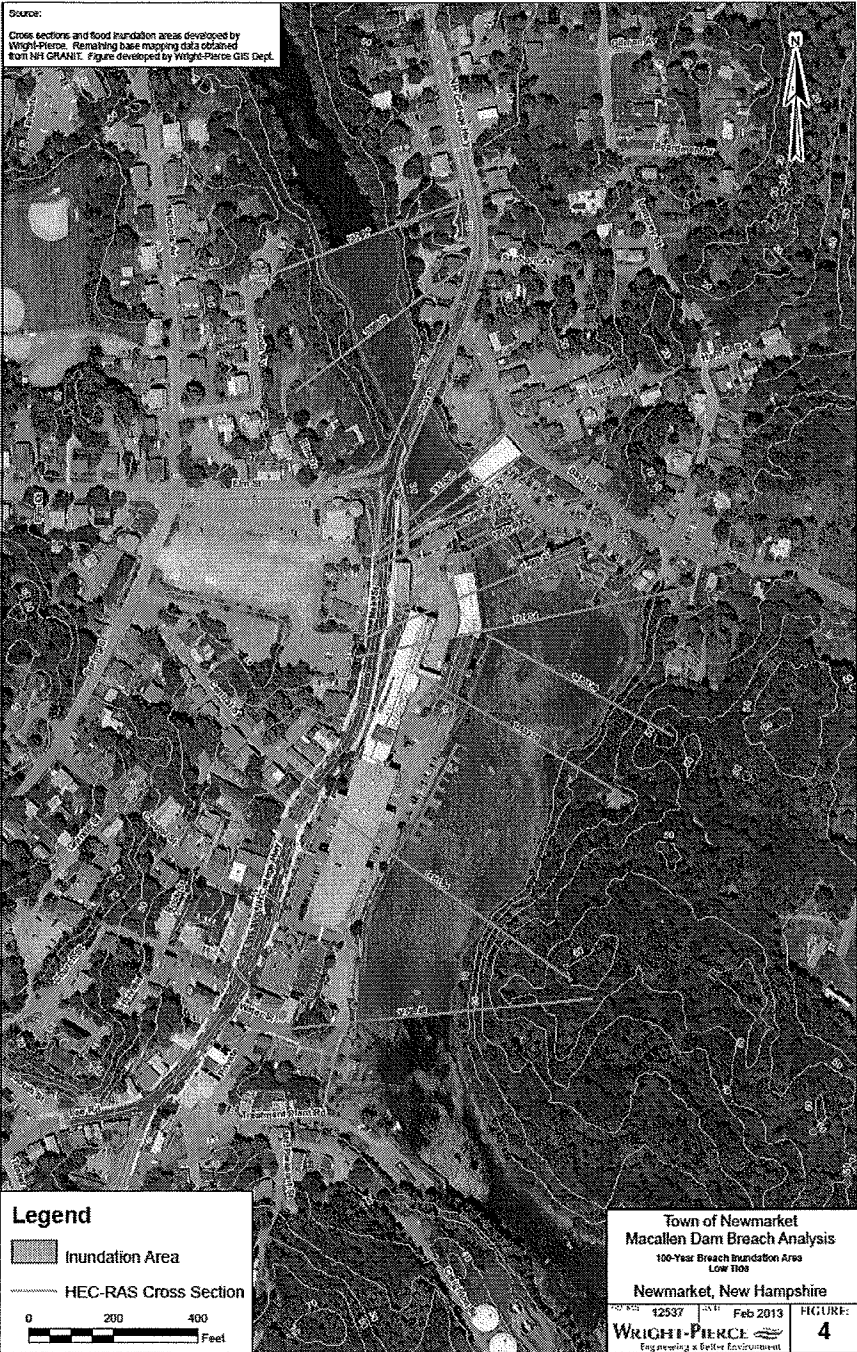
⁵
The map represents the approximate limits of the area inundated by a failure of the dam. All structures in and near the inundation area may not be represented on this map.

The maps are sufficient for as far as they go, but additional information is needed. Specifically, the items required are stated in Env-Wr 503.01(c)(4)-(6) related to flood wave parameters (timing, velocities and depths). This data is only required for "critical areas", so I suggest selecting 3 or 4 of the cross sections downstream of the dam. Wright-Pierce should have the data needed to edit the maps as required.

Source:
Cross sections and flood inundation areas developed by
Wright-Pierce. Remaining base mapping data obtained
from NH GRANIT. Figure developed by Wright-Pierce GIS Dept.



C-2



C-4



C-5

APPENDIX D

Training and Testing

D.1 Training of Dam Monitors

The dam is monitored by trained individuals under the direction of the Newmarket Public Works Department.

Training is done in house with Public Works staff and Newmarket Fire/Rescue Officers. Training consists of knowledge of the Operation and Maintenance Plan and Emergency Action Plan. This is conducted Yearly.

The name, address, home and business phone numbers of individuals serving as monitors must be included.

Rick Malasky	Gerry Hamel	Any Newmarket Fire/Rescue
310 Ash Swamp Road	7 Gonet Drive	Fire Officer
Newmarket, NH 03857	Newmarket, NH 03042	4 Young lane
Home 603 292 6542	Home 603 679 5280	Newmarket, NH 03857
Work 603 659 3093	603 659 3093	Business 603 659 3334
		Dispatch 603 659 6636

D.2 Training on the Emergency Action Plan

The Director of Public Works is responsible for coordinating with listed emergency response organizations to ensure common understanding of the EAP, and especially on use of the inundation map.

The following summarizes the responsibilities of the emergency response agencies who are listed on the Notification Flowchart of this EAP:

- Review, and be familiar with the Macallen Dam EAP, especially the assigned roles during an emergency, use of the inundation maps and Notification Flowchart
- Ensure the location of the agency's copy of the updated EAP is known by all staff
- Ensure that evacuation needs are understood including any unique requirements, such as special needs populations (agencies having evacuation responsibilities)
- Ensure that EAP updates are inserted as soon as possible. Destroy or return any outdated EAP material, as requested by the Director of Public Works.

D.3 Testing

As the Macallen Dam is classified as a "high hazard" dam, the Director of Public

Works shall conduct or arrange to have conducted a test of the emergency notification procedure once every two years. The first step is to verify that all contact numbers shown on the Notification Flowchart are accurate. Then the test shall be initiated by the Director or designee calling 9-1-1, and indicating:

"This is a test of the Emergency Action Plan for the Macallen Dam, in Newmarket, NH. Please make the calls assigned to you on the EAP Notification Flowchart. I repeat, this is only a test."

Each person responsible for making calls, as indicated on the Notification Flowchart, will make the contacts as indicated, stressing that this is a test of the procedures. Each person is requested to complete the appropriate checklist, included in Section 3, and return it to:

Town of Newmarket
Director of Public Works

See Appendix F for fax and address information

The Director is responsible for monitoring the test and collecting a copy of the completed notification checklists. A report indicating the time it took each individual/agency to make their notifications and whether any miscommunications occurred during the test will be developed. The results of the test shall be reported to the NH DES Dam Bureau using the form on Table D-1, or similar report providing the listed information. Submit the report to the NHDES Dam Engineer assigned to your dam at:

NH Dept of Environmental Services, Dam Bureau
PO Box 95
Concord, NH 03301-0095

If the test indicates that changes are necessary to ensure proper, more timely or complete notifications, the Director or his designee will update the Notification Flowchart, as necessary. The Dam Bureau shall be contacted prior to issuance of revisions to confirm if other changes are needed. (See Appendix F for contact information.) Updated pages shall be distributed to all EAP holders within 30 days. If no updates are required, the form on Table D-2 shall be completed and provided to the address above.

D-2

TABLE D-1

D177001

EAP NOTIFICATIONS TEST RESULTS

I conducted a test of the EAP for the Macallen Dam (#NH-177.01), in Newmarket, New Hampshire on _____.

Check the box that applies:

- ☐ All contacts were made in accordance with the most recent flowchart.
☐ Some contacts were not made, but all participants are aware of their role in the plan and have a copy of the EAP.
☐ Some changes to the EAP are necessary and are being prepared.
☐ Other

(Comments) _____

Attached are copies of notification checklists received from participants.

Signed: _____ Dated: _____

Position: _____

TABLE D-2

EAP REVIEWED, NO UPDATES REQUIRED

I have reviewed my Emergency Action Plan, as required by Env-Wr 507.02, and have spoken with our assigned NHDES Dam engineer (_____) or have reviewed the guidelines on the DES website, and there are no changes necessary at this time.

Signed: _____ Date: _____

Position: _____

Dam Name: Macallen Dam

Dam Number: NH # 177.01

D-3

APPENDIX E

Local Evacuation Procedure

Please refer to Section 2 in this document.

Section 2 simply refers to evacuations. I suggest that Town of NEWMARKET officials meet to discuss a step by step procedure for accomplishing the necessary evacuations and reviews (tours) of potentially affected areas. Who/which buildings will be evacuated and in what order? Which areas will be visited to determine if additional evacuations or precautions will occur? Who will do this work?

The inundation maps are helpful, but detailed procedures are needed to identify areas and effect evacuations.

APPENDIX F

Posting of the Plan

All persons and agencies listed below have been issued a copy of the EAP, and are provided updates, as needed, by the Director of Public Works. Telephone numbers are only included below if they are not shown on the Notification Flowchart.

NH Department of Environmental Services Attn: Dam Bureau 29 Hazen Drive PO Box 95 Concord, NH 03301-0095 603-271-3406 Email: damsafety@des.nh.gov	Newmarket Emergency Dispatch 70 Exeter St. Newmarket, NH 03857 603-659-6636
NH Dept of Safety Homeland Security and Emergency Management Attn: Operations 33 Hazen Drive Concord, NH 03305	Newmarket Fire and Rescue Fire Chief 4 Young Lane Newmarket, NH 03857 Fax 603-659-8804
NH Dept. of Transportation, Transportation Management Center (TMC) 110 Smokey Bear Boulevard Concord, NH 03301 Fax 603-271-8626 Email TMC@dot.state.nh.us <i>(Copy of the flowchart and checklist only.)</i>	Newmarket Police Department Chief 70 Exeter St. Newmarket, NH 03857 Fax 603-659-8507
NH Bureau of Emergency Communications (911) Att: Operations Supervisor 110 Smokey Bear Boulevard Concord, NH 03305 <i>(Copy of the flowchart and checklist only.)</i>	New Market Town Administrator's Office Town Administrator 186 Main St. Newmarket, NH 03857 603-659-3617
NH Dept. of Safety - State Police Headquarters/Communications 33 Hazen Drive Concord, NH 03301	Newmarket Public Works Director 4 Young Lane Newmarket, NH 03857 Fax - 603-659-4807
NH DOT District #6 District Engineer 271 Main St. (PO Box 740) Durham, NH 03824-0740	Rockingham County Sheriff's Office 101 North Road Brentwood, NH 03833 Captain 603-679-9487 Dispatch Fax 603-679-1877

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APPENDIX G

Documentation

The following sheets include signed Acknowledgment Forms and any letters relative to implementation of the Emergency Action Plan.

ACKNOWLEDGMENT FORM

D177001

I have received the latest copy of the Emergency Action Plan for the
Macallen Dam in Newmarket, NH. (NH Dam No. ~~477-01~~), dated _____, and
acknowledge the role of this agency in the event of an emergency and during testing of the
plan.

Signed: _____ Date: _____

Representing: _____
(Name of Agency)

Please return to:

Town of Newmarket
Director of Public Works
4 Young Lane
Newmarket, NH 03857
Fax - 603-659-4807

G-2

APPENDIX H

Record of Changes and Additions

The following chart shows pages which have been updated or added.

Page Number	Date of Revision	Reason for Change

H-1