Connecticut Department of Energy and Environmental Protection
Connecticut’s Dam Safety Program

Emergency Action Plans

New Section 22a-409-3 RCSA

May 1, 2014
Liz Napier EA 3
Public Outreach to Professional Engineers
EAPs Class C & B Dams

• Class C Dams 263 (92%+ have EAPs)

• Class B Dams 277 (50%+ have EAPs)
Requirements for Emergency Action Plans

RCSA 22a-409-3 (New)

- EAPs for Class C Dams due 12 months/ regulation adopted.
- EAPs for Class B Dams due 18 months/ regulation adopted.
- Update every 2 years, or more frequently to reflect significant changes.
Owner Coordinate with Agencies to Plan
Content of EAP Proposed Regulation

• Criteria for inundation mapping

• Dam Monitoring Procedure

• Formal Warning Notification Procedure

• Submission of the plan to DEEP
Inundation Mapping

• Require the inundation map be prepared by a Professional Engineer. (Guidance being developed)

• Require use of topographical map sufficient in scale to clearly show the downstream inhabited areas and the inundation zone. (Contours/Elevations)
Features on the Map Include:

- location of the dam
- inundation zone for dry weather and wet weather with arrows indicating the direction of the flood wave
- a north arrow and bar scale
- pertinent downstream cross sections, such as roads (identify the road names)
Example of an Un-Acceptable Map

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Example of Good Inundation Map
Example of Good Inundation Map
Example of Good Inundation Map
Information with Map

- An estimated timeline that shows arrival times of floodwaters at critical intersections and structures.

- A description of the method or computer model used to prepare the inundation map.
A major flood caused by a sudden breach of the dam is estimated to affect many homes, businesses, roadways, and bridges. There are too many properties to list individually. The following lists can be used to help coordinate evacuations.

<table>
<thead>
<tr>
<th>Street Numbers</th>
<th>Street Name</th>
<th>Property Type</th>
<th>Number of Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>Asylum Avenue</td>
<td>Residential</td>
<td>1</td>
</tr>
<tr>
<td>1904-1932 even</td>
<td>Asylum Avenue</td>
<td>Residential</td>
<td>18</td>
</tr>
<tr>
<td>141 &amp; 146</td>
<td>Fox Chase Lane</td>
<td>Residential</td>
<td>2</td>
</tr>
<tr>
<td>90-155 all</td>
<td>Pioneer Drive</td>
<td>Residential</td>
<td>26</td>
</tr>
<tr>
<td>4-11 all</td>
<td>Shady Lane</td>
<td>Residential</td>
<td>5</td>
</tr>
<tr>
<td>2-37 all</td>
<td>Harvest Lane</td>
<td>Residential</td>
<td>13</td>
</tr>
<tr>
<td>1944</td>
<td>Asylum Avenue</td>
<td>Loyd in Bugbee School</td>
<td>1</td>
</tr>
<tr>
<td>1901-1917 odd</td>
<td>Asylum Avenue</td>
<td>Residential</td>
<td>4</td>
</tr>
<tr>
<td>7 &amp; 8</td>
<td>Willow Lane</td>
<td>Residential</td>
<td>2</td>
</tr>
<tr>
<td>38-36 all</td>
<td>Hathaway Drive</td>
<td>Residential</td>
<td>8</td>
</tr>
<tr>
<td>42-52 even</td>
<td>Hickory Lane</td>
<td>Residential</td>
<td>5</td>
</tr>
<tr>
<td>51</td>
<td>Hickory Lane</td>
<td>Residential</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>Brookside Place</td>
<td>Residential</td>
<td>1</td>
</tr>
<tr>
<td>57 &amp; 51</td>
<td>Brookside Boulevard</td>
<td>Residential</td>
<td>2</td>
</tr>
<tr>
<td>61 &amp; 71</td>
<td>Brookside Drive</td>
<td>Residential</td>
<td>2</td>
</tr>
<tr>
<td>167 &amp; 171</td>
<td>Clifford Road</td>
<td>Residential</td>
<td>20</td>
</tr>
<tr>
<td>4-51 all</td>
<td>Bartrum Road</td>
<td>Residential</td>
<td>20</td>
</tr>
<tr>
<td>3-67 all</td>
<td>Wywood Road</td>
<td>Residential</td>
<td>31</td>
</tr>
<tr>
<td>175-181 odd</td>
<td>North Main Street</td>
<td>Residential</td>
<td>5</td>
</tr>
<tr>
<td>142-192 even</td>
<td>North Main Street</td>
<td>Residential</td>
<td>14</td>
</tr>
<tr>
<td>67 &amp; 73 odd</td>
<td>Linmar Road</td>
<td>Residential</td>
<td>2</td>
</tr>
<tr>
<td>62-66 even</td>
<td>Linmar Road</td>
<td>Residential</td>
<td>3</td>
</tr>
<tr>
<td>59-69 odd</td>
<td>Linbrook Road</td>
<td>Residential</td>
<td>9</td>
</tr>
<tr>
<td>56-66 even</td>
<td>Linbrook Road</td>
<td>Residential</td>
<td>5</td>
</tr>
<tr>
<td>3-25 odd</td>
<td>Clifford Drive</td>
<td>Residential</td>
<td>9</td>
</tr>
<tr>
<td>10-30 even</td>
<td>Clifford Drive</td>
<td>Residential</td>
<td>6</td>
</tr>
<tr>
<td>8-41 all</td>
<td>Herninck Drive</td>
<td>Residential</td>
<td>19</td>
</tr>
<tr>
<td>44-68 even</td>
<td>Clifford Drive</td>
<td>Residential</td>
<td>7</td>
</tr>
<tr>
<td>51-73 odd</td>
<td>Clifford Drive</td>
<td>Residential</td>
<td>9</td>
</tr>
<tr>
<td>73-95 odd</td>
<td>Montclair Drive</td>
<td>Residential</td>
<td>7</td>
</tr>
<tr>
<td>85-98 even</td>
<td>Montclair Drive</td>
<td>Residential</td>
<td>6</td>
</tr>
<tr>
<td>100-140 even</td>
<td>Montclair Drive</td>
<td>Residential</td>
<td>19</td>
</tr>
<tr>
<td>101-129 odd</td>
<td>Montclair Drive</td>
<td>Residential</td>
<td>9</td>
</tr>
<tr>
<td>4-20 even</td>
<td>Brookfield Road</td>
<td>Residential</td>
<td>5</td>
</tr>
<tr>
<td>3-45 all</td>
<td>Fox Meadow Lane</td>
<td>Residential</td>
<td>32</td>
</tr>
<tr>
<td>3-22 all</td>
<td>Duffield Road</td>
<td>Residential</td>
<td>12</td>
</tr>
<tr>
<td>3-38 all</td>
<td>Craigmoor Road</td>
<td>Residential</td>
<td>23</td>
</tr>
<tr>
<td>41-90 odd</td>
<td>Craigmoor Road</td>
<td>Residential</td>
<td>7</td>
</tr>
</tbody>
</table>
Location Map
Dam Surveillance/Monitoring

• Procedure for monitoring the dam during periods of heavy rainfall and runoff, or when conditions develop that warrant close monitoring.

• Monitoring starts when National Weather Service announces a Flood Watch, or when conditions develop that warrant close monitoring.

• Owner notifies the local authority when monitoring has started.

• The plan identifies the person responsible for conducting surveillance/monitoring of the dam.
Monitoring Includes:

- If feasible, walking the dam and its components to observe any changes in the dam.

- Include a list identifying personnel that can be utilized by the owner for implementing emergency repairs.
Inventory of Emergency Equipment

Emergency Supplies and Equipment
The Fire District Superintendent, or his designee, will be responsible for implementing all emergency repairs.

Following is an inventory of available equipment and supplies stored at the Fire District Office, 24 DeForest Street, Watertown, Connecticut.

Equipment:
- One portable generator
- Emergency portable lighting
- Trench pumps
- Small tools, gate valve operating tools, and usual water utility operating and repair equipment.

Motor Vehicles:
- One light utility pickup trucks.
- Two 4x4 3/4-ton pickup trucks with plows.
- One 1/2-yard 4x4 front-end loader.

Contractors Available for Emergency Assistance

Construction, Sand/Gravel
- O&G Industries, Inc. (Rock, paving materials) (860) 489-1836
- O&G (Woodbury) (203) 263-2708
- Scalia Brothers (sand) (860) 583-6466
- Public Works Supply (860) 667-0894

Pumping Equipment:
- Gould Pump, Seneca Falls, NY (315) 568-2811
- Torrington Supply Company, Waterbury, CT (203) 756-3641, ext. 260
- Stephen B. Church Company, Oxford (203) 888-2132
Warning Notification Procedure

• Formal warning notification procedure required for owner to alert local official who is responsible for the warning and, or evacuation of residents in the inundation zone in the event of a potential dam failure.

• Early Warning (potential failure)

• Final Warning (evacuation)
Early Warning – Potential Failure

Emergency Level 2 Notifications

Emergency event, potential dam failure, auxiliary spillway flow situation; rapidly developing

Dam Operator’s Rep.
CT DEEP Western District Headquarters
Skip Keams:
860-485-0226 (Office)
860-803-1585 (Cell/Pager)
860-858-7347 (Home)

Dam Owner’s Rep.
CT DEEP
Jennifer Perry
860-424-3852 (Office)
860-896-1918 (Home)
860-823-1934 (Cell)

DEEP Flood Emergency Operations Center (FEOC)
860-424-3937
860-424-3333 (Dispatch)

State Dam Safety Official
CT DEEP
Arthur Christian
860-424-3880 (Office)
860-668-0585 (Home)
860-922-9062 (Cell)

(WRCS State Engineer)
Arthur Ramthun
860-871-4030 (Office)
860-238-7096 (Home)
860-578-0304 (Cell)

Local Emergency Operations Center (LEOC)
Director of Emergency Management
Gary Alyn
860-523-2020
860-561-8300 (Office)
860-848-2462 (Home)
860-883-7953 (Cell)

CT Department of Transportation (CT DOT)
860-894-2620

National Weather Service
508-823-2392
508-824-2714

West Hartford Fire Chief
940-581-8300

Incident Commander
West Hartford
Manager’s Chief
Executive Officer
860-581-7440

West Hartford Police Chief
860-523-5203

Connecticut Department of Energy and Environmental Protection
Early Warning

• Early Warning Notice initiated by the dam owner, or operator to the local authority responsible for providing emergency services.

• EAP includes a warning notification list with addresses for residences, businesses, and highways located in the inundation zone to be used to warn inhabitants downstream.
“This is [dam owner/operator name]. Conditions at [name of dam and location] indicate that the dam may be compromised and may fail, potentially causing extensive and rapid flooding downstream. Please warn residents in those areas within the limits of potential flooding, as described in this EAP, that an evacuation may be necessary.”
Early Warning Criteria

A marked increase in seepage through an embankment, particularly if evidence of a boil is observed.
Overtopping

An increase in the rise of the impoundment such that the non-overflow section of the dam may be overtopped.
Conditions are developing at the dam that could lead to a potential failure.
Final Warning

Final Warning Notice initiated by the dam owner, or operator to the local authority responsible for providing emergency services.
Final Warning Notice

“This is [dam owner/operator name]. [name of dam and location] is failing, or in imminent danger of failing. Please warn residents that an immediate evacuation is necessary for those areas within the limits of potential flooding, as described in this EAP.”
Final Warning Criteria

A dramatic increase in seepage flow (or a pre-existing boil), particularly if piping is occurring.
Movement of masonry or concrete spillways, training walls or other structures.
Overtopping

The rise of the impoundment is such that the non-overflow sections of the dam will overtop or is overtopping and the dam is failing or is in imminent danger of failing.
Erosion/Sloughing

Substantial erosion or sloughing of dam embankments.
Evacuation

Any other condition resulting in a probable failure of the dam.
Other EAP Requirements

Identify location of an Emergency Operation Center.
<table>
<thead>
<tr>
<th>Copy Number</th>
<th>Organization</th>
<th>Person receiving copy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Connecticut Department of Energy and Environmental Protection Engineering Services Section 79 Elm St, Hartford, CT 06106</td>
<td>Dam Owner’s Representative: Jennifer Perry</td>
</tr>
<tr>
<td>2</td>
<td>Connecticut Department of Energy and Environmental Protection Dam Safety Section 79 Elm St, Hartford, CT 06106</td>
<td>State Dam Safety Official: Arthur Christian</td>
</tr>
<tr>
<td>3</td>
<td>Connecticut Department of Energy and Environmental Protection Western District Headquarters 230 Plymouth Road, Hanover, CT 06791</td>
<td>Skip Kearns</td>
</tr>
<tr>
<td>4</td>
<td>NRCS State Office 344 Merrow Road Tolland, CT 06084</td>
<td>NRCS State Engineer: Arthur Ramthun</td>
</tr>
<tr>
<td>5</td>
<td>West Hartford Emergency Management 95 Raymond Road West Hartford, CT</td>
<td>Director of Emergency Management (Fire Chief): Gary Allyn</td>
</tr>
</tbody>
</table>
Other Requirements continued...

Description of an exercise, or test to be conducted at a minimum of every two years.
Termination of Emergency Conditions. Includes a procedure for determining when a termination of emergency conditions will be declared to allow downstream inhabitants to return to the area.
Questions?

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Elizabeth.napier@ct.gov
860-424-3717