

# STATE OF RHODE ISLAND

**2015**

Annual Report to the Governor  
on the Activities of the

## **DAM SAFETY PROGRAM**



*Oak Swamp Dam (No. 168) in Johnston, repaired in 2015*

Department of Environmental Management

Prepared by the Office of Compliance and Inspection

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**STATUTORY AND REGULATORY AUTHORITY OF RHODE ISLAND'S DAM SAFETY PROGRAM**

The Rhode Island dam inspection and inventory program had its inception in 1883, and was under the authority and responsibility of the Commissioner of Dams and Reservoirs. At that time, there were 86 dams included in the records; today, there are 667 inventoried dams.

A complete list of the inventoried dams, sorted by town and river, is attached.

**STATUTES**

As set forth in Rhode Island General Laws, Chapters 46-18 and 46-19, a dam owner has the responsibility for the safe operation of his/her dam, and is liable for the consequences of accidents or failures of the dam. In general, a dam owner is required to use "*reasonable care*" in the operation and maintenance of a dam. This responsibility includes the proper operation, maintenance, repair and rehabilitation of a dam, which are essential elements in preventing a dam failure.

The criteria governing the administration and enforcement of Rhode Island's Dam Safety Program are contained in the General Laws of Rhode Island, Chapter 46-19. The Department of Environmental Management (DEM) has the responsibility to cause to be inspected dams to determine their condition, to review and approve plans for construction or substantial alteration of a dam, to order the owner to make repairs or to take other necessary action to make a dam safe.

In 2001, Section 46-12.2-2 was amended, authorizing the Clean Water Finance Agency to issue loans for projects associated with dam safety.

In 2005, Chapter 45-62 (Dam Management Districts) was added, authorizing municipalities to create dam management districts for dam repairs, maintenance, management and/or removal.

In 2006 two amendments to Chapter 46-19 were enacted. Section 4 was amended to authorize DEM, in an emergency, to take necessary actions to mitigate an unsafe condition at a dam and to assess the costs of those actions against the dam owner. Section 9 was amended to require a city or town where a high or significant hazard dam is located, and to require a state agency that owns a high or significant hazard dam, to complete by July 1, 2008, an Emergency Action Plan (EAP) for the dam. Rhode Island's Emergency Management Agency is responsible for coordinating development of the EAPs and must give final approval for the EAP to be considered complete.

In 2012, Section 46-19-4 was amended by adding subsection (c). This change authorizes DEM to record an enforcement action for an unsafe dam in the land evidence records of the city or town in which the dam is located. Upon satisfactory completion of the requirements of the enforcement action, DEM is also authorized to record such written notice in the land evidence records.

Federal Energy Regulatory Commission Authority

In 2011, DEM became aware that for any dam in the state that has a Federal Energy Regulatory Commission (FERC) Permit or Exemption, DEM does not have any dam safety regulatory authority. In 2015, the following 9 dams were under FERC Authority:

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>	<b>HAZARD CLASS</b>
Central Falls / Cumberland	063	Valley Falls Pond	Low
Central Falls / Pawtucket	064	Central Falls	Low
North Smithfield	043	Slatersville Reservoir Upper	High
North Smithfield	045	Slatersville Upper Intermediate	Low
North Smithfield	393	Blackstone	Low
Pawtucket	066	Pawtucket Lower	Low
West Warwick	147	Riverpoint Pond Upper	High
West Warwick	148	Arctic	High
Woonsocket	056	Woonsocket Falls	Significant

DEM REGULATIONS

On December 20, 2007 DEM's *Rules and Regulations for Dam Safety* (Dam Safety Regulations) went into effect. The regulations, which are available on DEM's website at

<http://www.dem.ri.gov/pubs/regs/regs/compinsp/dams07.pdf>, include the following:

- Definitions of important terms including dam, hazard classifications, maintenance, repair and unsafe dam;
- Assignment of a hazard classification to each dam in the state inventory;
- Requirement that owners register their dams and notify DEM when ownership is transferred (no associated fee);
- A schedule for visual inspections of high and significant hazard dams;
- Procedure to streamline repair of high and significant hazard dams (no associated permit fee); and
- A procedure for dam owners to take emergency actions at high and significant hazard dams.

In June 2007, DEM's *Rules and Regulations for Governing the Administration and Enforcement of the Freshwater Wetlands Act* were amended to allow high hazard and significant hazard dam repair requests to be approved under the Dam Safety Regulations. The Dam Safety Program coordinates such requests with the Freshwater Wetlands Program.

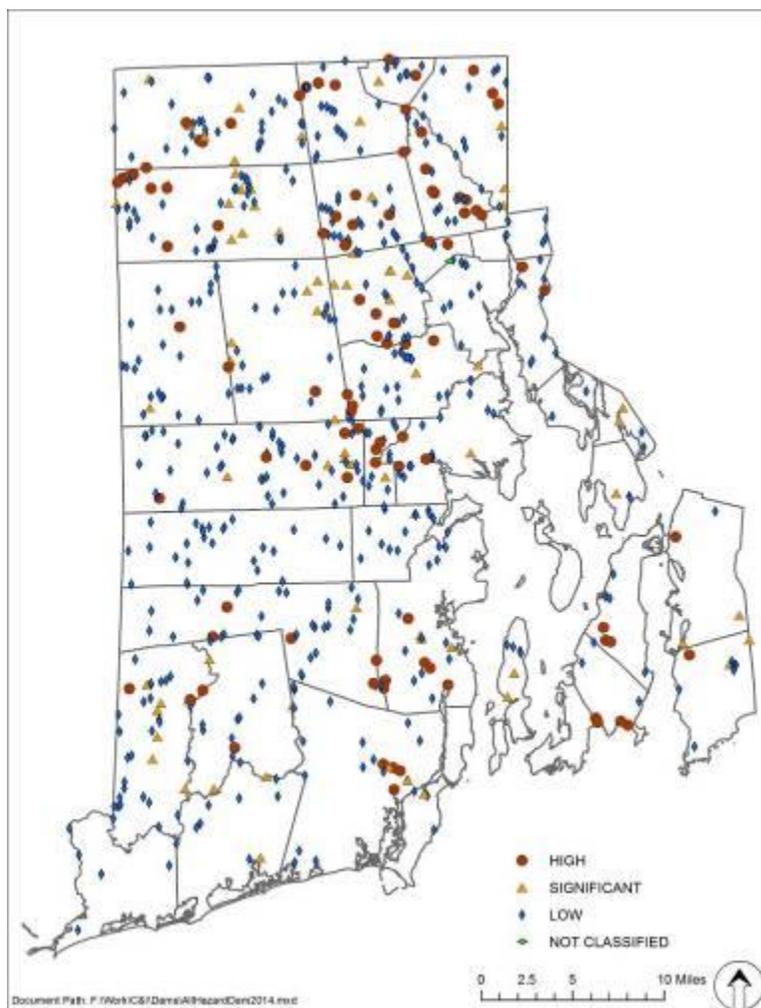
HAZARD CLASSIFICATIONS

Inventoried dams are classified by the hazard, which relates to the probable consequences of failure or misoperation of the dam; it does not relate to the current condition or the likelihood of failure of the dam. The hazard classifications are defined in the Dam Safety Regulations as follows:

*High Hazard* – means a dam where failure or misoperation will result in a probable loss of human life.

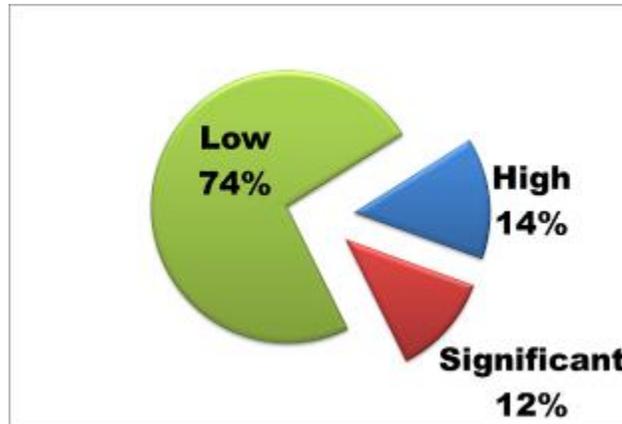
*Significant Hazard* – means a dam where failure or misoperation results in no probable loss of human life but can cause major economic loss, disruption of lifeline facilities or impact other concerns detrimental to the public’s health, safety or welfare. Examples of major economic loss include washout of a state or federal highway, washout of two or more municipal roads, loss of vehicular access to residences, (e.g. a dead end road whereby emergency personnel could no longer access residences beyond the washout area) or damage to a few structures.

*Low Hazard* – means a dam where failure or misoperation results in no probable loss of human life and low economic losses.



*Dams / Hazard Classifications*

In 2015, there were 96 high hazard dams, 81 significant hazard dams and 490<sup>1</sup> low hazard dams, for a total inventory of 667 dams. The following chart illustrates the percentage of dams in each hazard classification:



### **INSPECTION PROGRAM**

In accordance with the Dam Safety Regulations, a dam's hazard classification determines the inspection frequency. Visual inspections of high hazard dams are required every 2 years (48 each year) and visual inspections of significant hazard dams are required every 5 years (16 each year). Low hazard dams are required to be inspected every five years to determine whether downstream conditions have changed over time that warrant raising the hazard classification to significant or high. Also, DEM will visually inspect a high or significant hazard dam whenever DEM has reason to believe that the dam may be unsafe.

The visual inspections performed are conducted under a general inspection format based on guidelines established in 1976 by the United States Army Corps of Engineers for the National Program for the Inspection of (Non-Federal) Dams. A visual inspection may be performed by DEM, by an engineer hired by DEM or by an engineer hired by the dam owner.

As part of each visual inspection, the condition of the major components of the dam are subjectively rated as *good*, *fair*, *poor* or *unsafe*. The major components of a dam are the embankment, the spillway and the low level outlet. *Good* is defined as meeting minimum guidelines, where no irregularities are observed and the component appears to be maintained properly. *Fair* is defined as a component that requires maintenance. *Poor* is defined as a component that has deteriorated beyond a maintenance issue and requires repair; the component no longer functions as it was originally intended. *Unsafe* means the condition of a regulated dam, as determined by the DEM, is such that an unreasonable risk of failure exists that will result in a probable loss of human life or major economic loss. Among the conditions that would result in this determination are:

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<sup>1</sup> There were 491 low hazard dams in the 2014 report; one such dam was removed in 2015 (*Removals*, page 22)

excessive vegetation that does not allow the DEM to perform a complete visual inspection of a dam, excessive seepage or piping, significant erosion problems, inadequate spillway capacity, inadequate capacity and/or condition of control structure(s) or serious structural deficiencies, including movement of the structure or major cracking.

A detailed investigation may be required if a visual inspection leads to a determination that a dam is or may be unsafe. A detailed investigation may include studies, investigations and analyses appropriate to evaluate the structural safety and hydraulic capacity of a dam or reservoir and appurtenant works, such as soil analysis, concrete or earth stability analysis, materials testing, foundation explorations, hydraulic and hydrologic analysis, including basin studies, flood potential, and an analysis of the dam's ability to pass flood waters.

Following a visual inspection performed by DEM, a dam inspection report is prepared, identifying specific deficiencies and, when warranted, recommending corrective measures. A copy of the report is forwarded to the owner, with the expectation that the deficiencies will be corrected. If it is determined that a dam may be unsafe or is unsafe, then DEM will order additional investigation or corrective action.

**ACTIVITIES IN 2015**

**UNSAFE DAMS**

One of DEM's primary responsibilities in the Dam Safety Program is to identify unsafe or potentially unsafe dams and take appropriate action to return the dams to a safe condition. An unsafe dam is a high or significant hazard dam whose condition is such that an unreasonable risk of failure exists.

Following a visual or detailed inspection of a dam, the owner is notified of any condition that DEM considers to be unsafe or that may be unsafe. Notification is in the form of a Notice of Violation and Order (NOV), which sets forth the unsafe condition(s) and requires the owner to make the dam safe.

During 2015, DEM addressed 41 unsafe dams as indicated in the table below. At the end of 2015, 7 of these dams were returned to a safe condition (shaded in grey below).

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>	<b>HAZARD CLASS</b>	<b>UNSAFE CONDITION(S)</b>	<b>OWNER</b>
Burrillville	027	Sucker	Significant	Vegetation prohibited inspection, plywood blocked spillway, low level outlet inoperable, auxiliary spillway modified	Bliss Golf Investors LLC
Burrillville	565	Ross	Significant	Vegetation prohibited inspection, low level outlet inoperable	George E. Binns Living Trust & Nancy F. Binns, Trustee

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>	<b>HAZARD CLASS</b>	<b>UNSAFE CONDITION(S)</b>	<b>OWNER</b>
Coventry	175	Quidnick	Significant	Vegetation prohibited inspection, low section of embankment, debris blocked low level outlet channel	YMCA Of Pawtucket Inc.
Coventry	186	Upper	Significant	Seepage & sediment transport, embankment section low, spillway discharge flowed along base of dam	Town of Coventry
Coventry	498	Hopkins Farm	Significant	Raised spillway crest, auxiliary spillway partially filled	Jeremy Votolato, D/B/A Island Green Golf, LLC
Coventry	645	Centre of New England #1	Significant	Vegetation prohibited inspection, spillway movement & debris impacting flow	Commerce Park Properties, LLC
Cranston	166	Curran Upper	High	Vegetation prohibited inspection, low level outlet inoperable	DEM
Cranston	198	Curran Lower	High	Vegetation prohibited inspection, vegetation in spillway inhibited flow, low level outlet inoperable	DEM
Exeter	219	Boone	High	Vegetation prohibited inspection, debris in spillway affected flow, leakage with sediment transport through spillway	Boone Lake Dam Management District
Exeter	238	Edward's	Significant	Vegetation prohibited inspection	Peter C. Hendrick Revocable Trust
Exeter	239	Slocum	High	Low level outlet inoperable	American Baptist Churches Of R.I.
Glocester	727	Bowdish Lower	High	Vegetation prohibited inspection, debris obstructing spillway, low level outlet operability unknown	Lynda Jean Marshall, a/k/a Lynda J. Schmidt
Glocester / Smithfield	111	Waterman	High	Vegetation/debris prohibited inspection, drainage trench clogged	Citizens For The Preservation Of Waterman Lake, Inc.
Hopkinton	226	Yawgoog	High	Vegetation prohibited inspection, low level outlet inoperable	Rhode Island Boy Scouts
Hopkinton	440	Hoxie Farm	Significant	Vegetation prohibited inspection	RI Department of Transportation
Hopkinton / Richmond	216	Wyoming Upper	High	Embankment soil missing & displaced, sinkholes, sediment at the downstream toe, possible spillway leakage, low level outlet inoperable	DEM
Jamestown	575	Jamestown Lower	Significant	Vegetation prohibited inspection, low level outlet could not be located	Town of Jamestown
Johnston	168	Oak Swamp	High	Severe embankment erosion, low level outlet inoperable	Town of Johnston

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>	<b>HAZARD CLASS</b>	<b>UNSAFE CONDITION(S)</b>	<b>OWNER</b>
Johnston	169	Almy	High	Vegetation prohibited inspection, spillway not functioning properly, low level outlet inoperable	Town of Johnston
Johnston	170	Simmons Upper	High	Vegetation prohibited inspection, low level outlet inoperable	Town of Johnston
Johnston	171	Simmons Lower	High	Vegetation prohibited inspection, severe embankment erosion, spillway not functioning properly, low level outlet inoperable	Town of Johnston
Johnston	313	Hughesdale Upper	High	Low section of embankment, low level outlet inoperable	Jeannette Y. Fontaine Of The Fontaine Living Trust
Lincoln / North Smithfield	070	Woonsocket #1	High	Vegetation prohibited inspection	Woonsocket Water Division
Lincoln	097	Butterfly	High	Low level outlet inoperable	Town Of Lincoln
Lincoln	104	Bleachery	High	Low level outlet inoperable	Providence Casket Co.
New Shoreham	424	Rod & Gun Club	Significant	Vegetation prohibited inspection, auxiliary spillway not present	Estate Of George Russell James
North Kingstown	553	Belleville	Significant	Vegetation prohibited inspection, low section & large area of erosion on embankment, sediment transport thru spillway	Town Of North Kingstown
North Kingstown	710	Slocum Road Upper	High	Vegetation prohibited inspection, spillway stop log operability unknown	Maurice N. Klein & Kimberly Perry
North Providence	084	Wenscott	High	Low level outlet inoperable	Town Of North Providence
North Smithfield	067	Todd's	Significant	Vegetation prohibited inspection, low level outlet inoperable	Paul R & Karen A Hazard
North Smithfield / Smithfield	068	Woonsocket #3	High	Auxiliary spillway blocked	Woonsocket Water Division
Portsmouth	761	Melville #1	Significant	Vegetation prohibited inspection, low level outlet inoperable	Town Of Portsmouth
Providence	093	Canada Upper	Significant	Low level outlet inoperable	City Of Providence
Smithfield	109	Stillwater	Significant	Vegetation prohibited inspection, vegetation inhibited spillway flow, low level outlet inoperable	Breakwater Preservation Conservancy
Smithfield	123	Hawkins	Significant	Vegetation prohibited inspection, low level outlet inoperable	Louis Lafazia
South Kingstown	425	Wakefield	High	Vegetation prohibited inspection, low level outlet inoperable	Town Of South Kingstown

TOWN	DAM NO.	DAM NAME	HAZARD CLASS	UNSAFE CONDITION(S)	OWNER
Tiverton	742	Creamer	High	Vegetation prohibited inspection	Manuel Laureanno, Laureanno Development Corporation, Daniel T. Church Estate Homeowners' Association
Warren	479	Warren Lower	Significant	Vegetation prohibited inspection, low level outlet operability unknown	Bristol County Water Authority
Warren	480	Warren Upper	Significant	Vegetation prohibited inspection, spillway location unknown, low level outlet operability unknown	Bristol County Water Authority
West Warwick	455	Bouchar Farm	Significant	Vegetation prohibited inspection	Gary M. Appolonia/P&D Realty
Woonsocket	073	Harris	High	Vegetation prohibited inspection, low level outlet operability unknown	Woonsocket Water Division

A summary of each dam follows:

*Dam number 027 (Sucker) in Burrillville*

The dam was inspected in 2010 and DEM issued an NOV to the owner in 2011 for the unsafe conditions. In 2012 the owner cleared the vegetation, removed the plywood and hired an engineer to inspect the dam and complete a report, which was submitted to DEM. The low level outlet and auxiliary spillway issues have not been addressed. Since the owner did not request a hearing on the NOV, the case is eligible for action in Superior Court, provided that a review by the DEM's Office of Legal Services supports this opinion.

*Dam number 565 (Ross) in Coventry*

The dam was inspected in 2011 and DEM issued an NOV to the owner in 2013 for the unsafe conditions. The owner requested a hearing on the NOV and met with DEM in 2013 to discuss settlement. In 2015, DEM completed additional research to determine if the significant hazard classification is appropriate.

*Dam number 175 (Quidnick) in Coventry*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2013 for the unsafe conditions. The owner requested a hearing on the NOV and also worked toward compliance. In 2014, the owner resolved the vegetation and debris issues and was working toward resolution of the low embankment section. In 2015, DEM approved plans to repair the low section of embankment. Work began later in the year and is expected to be completed in 2016.



*Embankment repair at Quidnick Reservoir Dam (No. 175) in Coventry*

*Dam number 186 (Upper) in Coventry*

The dam was inspected in 2011 and DEM issued an NOV to the owner in 2013 for the unsafe conditions. The owner requested a hearing on the NOV and also negotiated with DEM, entering a Consent Agreement in 2013 to resolve the NOV. The Consent Agreement includes a plan and schedule to return the dam to a safe condition. In 2014, the compliance date in the Consent Agreement was extended to June 2014 at the owner's request, which included the addition of an analysis to determine the capacity of the spillway and to appropriately resize it if needed. The compliance date was not met and a stipulated penalty was accruing. In 2015, DEM agreed to extend the compliance date and waive the penalty, and subsequently received an application to repair the dam.

*Dam number 498 (Hopkins Farm) in Coventry*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2013 for the unsafe conditions. The owner has not contacted DEM and a hearing was not requested on the NOV. The case is eligible for action in Superior Court, provided that a review by the DEM's Office of Legal Services supports this opinion.

*Dam number 166 (Curran Upper) in Cranston*

In 2006, DEM, as the owner of the dam, hired an engineering consultant to perform a complete evaluation of the dam as an initial step to a complete rehabilitation. The evaluation was completed in 2007. In 2008, an engineering consultant was hired to complete the final design for the project. In 2010, DEM's Dam Safety Program performed a routine inspection of the dam and determined it was unsafe. The final design was completed in 2012, which included a major reconfiguration of the spillway discharge channel and required DEM to acquire additional property adjacent to the dam. In 2012, a repair application was submitted to the Dam Safety Program, which was approved in 2013. The project went out to bid in 2013 and construction began in early 2014. The work was completed in 2015.

*Dam number 198 (Curran Lower) in Cranston*

The dam was inspected in 2010. DEM owns the dam and in 2012, DEM (Planning & Development) was notified of the unsafe conditions. Following completion of the rehabilitation of the Curran Upper Dam in 2015 (discussed above), the process of addressing the Curran Lower Dam then began.

*Dam number 219 (Boone) in Exeter*

The dam was inspected in 2013 and DEM issued an NOV to the owner in 2014 for the unsafe conditions. The owner requested a hearing on the NOV and also worked toward compliance. In 2014, the owner's engineer submitted a report to address the unsafe conditions and also noted additional leakage through the embankment. DEM required that the engineer develop a monitoring plan for the leakage. In 2015, DEM approved the monitoring plan and entered a Consent Agreement with the owner, which resolved the NOV. The Consent Agreement requires the leakage to be monitored for two years, at which time the results must be submitted to DEM in a report prepared by a the engineer, along with recommendations for any further action that may be needed.

*Dam number 238 (Edward's) in Exeter*

The dam was inspected in 2012 and DEM issued and NOV to the owner in 2015 for the unsafe conditions. The owner did not request a hearing on the NOV and the case is eligible for action in Superior Court, provided that a review by the DEM's Office of Legal Services supports this opinion

*Dam number 239 (Slocum) in Exeter*



*Repaired low level outlet at Slocum Dam (No. 239) in Exeter*

The dam was inspected in 2010 and DEM issued an NOV to the owner in 2011 for the unsafe conditions. The owner did not request a hearing on the NOV. A Consent Agreement was entered between DEM and the owner in 2011, which resolved the NOV and provided a schedule by which the dam would be returned to a safe condition. In 2012, DEM approved the owner's proposed engineering plan to place the low level outlet into proper operation. Through 2015, the owner continued to have problems lowering the pond to complete the work, but was finally successful later in the year. The work was substantially complete in late 2015 with final documentation remaining as the only outstanding item.

*Dam number 727 (Bowdish Lower) in Gloucester*

The dam was inspected in 2009 and DEM issued an NOV to the owner in 2012 for the unsafe conditions. The owner requested a hearing on the NOV, which was held in 2014. A Decision was issued in 2015; the appeal was denied and the NOV was upheld. No progress has been made toward resolving the NOV and the case is eligible for action in Superior Court, provided that a review by the DEM's Office of Legal Services supports this opinion

*Dam number 111 (Waterman) in Gloucester/Smithfield*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2014 for the unsafe conditions. The owner did not request a hearing on the NOV, but appears to be working toward resolution of the unsafe conditions.

*Dam number 226 (Yawgoog) in Hopkinton*

The dam was inspected in 2011 and DEM issued an NOV to the owner in 2013 for the unsafe conditions. The owner requested a hearing on the NOV and also worked toward resolving the unsafe conditions. In 2014 the vegetation was removed, the area was inspected and an application to repair the low level outlet was submitted and approved by DEM. The repair work was completed and the NOV was released in 2015.

*Dam number 440 (Hoxie Farm) in Hopkinton*

The dam was inspected in 2010 and DEM issued an NOV to the owner in 2013 for the unsafe condition. The owner did not request a hearing on the NOV and removed some of the vegetation in 2014. DEM discussed the outstanding vegetation with the owner in late 2015.

*Dam number 216 (Wyoming Upper) in Hopkinton/Richmond*

The dam was inspected in 2011. DEM owns the dam and the DEM (Planning & Development) was notified of the unsafe conditions in 2013. In late 2015, the process of addressing the unsafe conditions at the dam began.

*Dam number 575 (Jamestown Lower) in Jamestown*

The dam was inspected 2012 and DEM issued an NOV to the owner in 2013 for the unsafe conditions. The owner did not request a hearing on the NOV and has hired an engineer to develop plans to rehabilitate the dam. A repair application was submitted to the Coastal Resources Management Council (CRMC) in 2015.

*Dam number 168 (Oak Swamp) in Johnston*

The dam was inspected in 2008 and DEM issued an NOV to the owner in 2010 for the unsafe conditions. The owner requested a hearing on the NOV. In 2013, DEM and the owner entered a Consent Agreement to resolve the NOV. The Consent Agreement provides a schedule to return the dam to a safe condition. In 2014, the owner continued to work toward compliance. In 2015, a repair application was submitted to and approved by DEM and the work was completed, returning the dam to a safe condition.

*Dam number 169 (Almy) in Johnston*

The dam was inspected and DEM issued an NOV to the owner in 2010 for the unsafe conditions. The owner requested a hearing on the NOV. In 2013, DEM and the owner entered a Consent Agreement to resolve the NOV. The Consent Agreement provides a schedule to return the dam to a safe condition.

*Dam number 170 (Simmons Upper) in Johnston*

The dam was inspected and DEM issued an NOV to the owner in 2010 for the unsafe conditions. The owner requested a hearing on the NOV. In 2013, DEM and the owner entered a Consent Agreement to resolve the NOV. The Consent Agreement provides a schedule to return the dam to a safe condition.

*Dam number 171 (Simmons Lower) in Johnston*

The dam was inspected and DEM issued an NOV to the owner in 2010 for the unsafe conditions. The owner requested a hearing on the NOV. In 2013, DEM and the owner entered a Consent Agreement to resolve the NOV. The Consent Agreement provides a schedule to return the dam to a safe condition.

*Dam number 313 (Hughesdale Upper) in Johnston*

The dam was inspected in 2011 and DEM issued an NOV to the owner in 2013 for the unsafe conditions. The owner requested a hearing on the NOV. In 2015, the owner raised the low section of the embankment.

*Dam number 070 (Woonsocket #1) in Lincoln/North Smithfield*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2014 for the unsafe condition. The owner requested a hearing on the NOV. In 2015, the owner removed the vegetation and submitted an inspection report of the area, revealing no issues and returning the dam to a safe condition.

*Dam number 097 (Butterfly) in Lincoln*

The dam was inspected in 2010 and DEM issued an NOV to the owner in 2011 for the unsafe condition. The owner requested a hearing on the NOV. In 2012, DEM and the owner entered a Consent Agreement to resolve the NOV. The Consent Agreement provides a schedule to return the dam to a safe condition. In 2014, DEM approved an application to repair the low level outlet and in late 2015 the repair work was initiated and expected to be completed in early 2016.

*Dam number 104 (Bleachery) in Lincoln*

The dam was inspected in 2010 and DEM issued an NOV to the owner in 2011 for the unsafe condition. The owner requested a hearing on the NOV and later entered a Consent Agreement with DEM in 2013, which resolved the NOV. The Consent Agreement provides a schedule by which the dam will be returned to a safe condition. Subsequently, the dam was transferred to a new owner. DEM approved an application to repair the dam in late 2015, at which time work began.



*Bleachery Pond Dam (No. 104) in Lincoln, undergoing repair without lowering the pond*

*Dam number 424 (Rod & Gun Club) in New Shoreham*

In 2012 the dam was inspected and DEM issued an NOV to the owner in 2014 for the unsafe conditions. The owner requested a hearing on the NOV and also hired an engineer and appears to be working toward resolution.

*Dam number 553 (Belleville) in North Kingstown*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2013 for the unsafe conditions. The owner did not request a hearing on the NOV. In late 2015, the owner's engineer submitted a report to address the unsafe conditions at the dam, which DEM must review.

*Dam number 710 (Slocum Upper) in North Kingstown*

The dam was inspected 2010 and DEM issued and NOV to the owners in 2012 for the unsafe conditions. The owners did not request a hearing on the NOV and cut some of the vegetation in 2013. In late 2015, additional vegetation was cut; DEM agreed to inspect the areas.

*Dam number 084 (Wenscott) in North Providence*

The dam was inspected in 2009 and DEM issued an NOV to the owner in 2010 for the unsafe condition. The owner requested a hearing on the NOV and in 2012, DEM and the owner entered a Consent Agreement to resolve the NOV. The Consent Agreement provides a schedule to return the dam to a safe condition. In 2015, DEM approved an application to repair the low level outlet. Repairs are expected in 2016.

*Dam number 067 (Todd's) in North Smithfield*

The dam was inspected in 2010 and DEM issued an NOV to the owner in 2012 for the unsafe conditions. The owner requested a hearing on the NOV and also submitted documents attempting to show that the dam is incorrectly classified as a significant hazard and should be downgraded to a low hazard. Through 2014, DEM, the dam owner and the owner of the downstream property that would be affected by failure of the dam were reviewing the documents. In 2015, the downstream property owner indicated that changes will be made to the topography of the property to make it more flood resistant. Following these changes, which are expected in 2016, DEM will reassess the dam's hazard classification.

*Dam number 068 (Woonsocket #3) in North Smithfield/Smithfield*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2014 for the unsafe condition. The owner requested a hearing on the NOV and in 2014 was working to resolve the unsafe condition. In 2015, the owner returned the dam to a safe condition.

*Dam number 761 (Melville #1) in Portsmouth*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2013 for the unsafe conditions. The owner requested a hearing on the NOV. In 2014, the owner submitted documents to DEM to prove that a low level outlet was not present at the dam. DEM subsequently agreed and removed the requirement that a low level outlet be placed into proper operation. In 2015, vegetation was removed from the dam and a visual inspection report submitted to DEM. The report did not reveal any unsafe conditions and the NOV was resolved.

*Dam number 093 (Canada Upper) in Providence*

The dam was inspected in 2011 and DEM issued an NOV to the owner in 2012 for the unsafe condition. The owner requested a hearing on the NOV and entered a Consent Agreement with DEM in 2014. The Consent Agreement provides a schedule by which the dam will be returned to a safe condition. DEM approved an application to repair the low level outlet in 2015. Subsequent to obtaining bid costs to complete the work, the owner decided to investigate removal of the dam, and the Consent Agreement was amended to reflect this.

*Dam number 109 (Stillwater) in Smithfield*

The dam was inspected in 2010 and DEM issued an NOV to the owner in 2011 for the unsafe conditions. The owner did not request a hearing on the NOV and the case is eligible for action in Superior Court, provided that a review by the DEM's Office of Legal Services supports this opinion.

*Dam number 123 (Hawkins) in Smithfield*

The dam was inspected in 2011 and DEM issued an NOV to the owner in 2013 to address the unsafe conditions. The owner requested a hearing on the NOV. In 2015, the owner submitted a visual inspection report of the vegetated area, which did not reveal any unsafe conditions. The owner also notified DEM that the dam is also owned by another entity. DEM subsequently released the NOV and will reissue it for the inoperable low level outlet when the other owner is determined.

*Dam number 425 (Wakefield) in South Kingstown*

The dam was inspected in 2010 and DEM issued an NOV to the owner in 2011 for the unsafe conditions. The owner requested a hearing on the NOV and has been working to resolve the unsafe conditions. The vegetation issue was resolved when the owner submitted an inspection report to DEM in 2012. The owner worked with federal and state agencies, which were designing a replacement fish ladder for the dam, to incorporate a low level outlet into the design. Installation of the low level outlet was ongoing through 2015 and expected to be completed in early 2016.

*Dam number 742 (Creamer) in Tiverton*

The dam was inspected in 2010 and DEM issued an NOV to the owners in 2011 for the unsafe condition. The owners did not request a hearing on the NOV. In 2013, DEM filed a lawsuit against the owners. Concurrently, DEM's Office of Legal Services completed additional research that identified 27 property owners whose recorded deeds include language that required them to form the Daniel T. Church Estate Homeowners' Association and maintain the dam. These property owners were formally informed of their responsibilities by DEM in 2013. In 2014, the homeowners' association was formed and much of the vegetation was removed. In 2015, DEM identified additional dam owners and began the registration process (*Registration*, page 22).

*Dam number 479 (Warren Lower) in Warren*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2014 for the unsafe conditions. The owner requested a hearing on the NOV. In 2014, the owner's engineer submitted a report to satisfactorily address the vegetation issue. In 2015, the owner provided proof that the low level outlet operated properly and the NOV was closed.

*Dam number 480 (Warren Upper) in Warren*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2014 to address the unsafe conditions. The owner requested a hearing on the NOV and appears to be working to resolve the violations.

*Dam number 455 (Bouchar Farm) in West Warwick*

The dam was inspected in 2011 and DEM issued an NOV to the owners in 2014. Both owners requested a hearing on the NOV.

*Dam number 073 (Harris) in Woonsocket*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2014 to address the unsafe conditions. The owner requested a hearing on the NOV. The owner also submitted an engineering report that provided inspection findings of some of the vegetated areas of the dam, which were previously cleared, and verified proper operation of the low level outlet. The report also indicated that an area of excessive vegetation still remained that prohibited proper inspection.

**COMPLIANCE INSPECTIONS**

The Dam Safety Regulations (page 4) require visual inspection of high hazard dams every 2 years and significant hazard dams every 5 years. Inspections are completed by DEM, or by engineering consultants hired by DEM using a FEMA grant (page 22) or hired by the dam owner.

**High Hazard Dam Inspections**

11 high hazard dams were inspected in 2015, as indicated in the table below.

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>
Burrillville	016	Pascoag Reservoir Upper
Burrillville	572	Wilbur Pond
Coventry	176	Coventry Reservoir
Cranston	320	Stone Pond
Glocester	556	Clarkville Pond
Hopkinton	262	Locustville Pond
Lincoln / North Smithfield	070	Woonsocket Reservoir # 1
North Providence	760	Louisquisset Flood Control
North Smithfield	048	Forestdale Pond
North Smithfield / Smithfield	068	Woonsocket Reservoir # 3
Smithfield	120	Sprague Upper Reservoir

### Significant Hazard Dam Inspections

1 significant hazard dam was inspected in 2015, as indicated in the table below.

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>
Smithfield	123	Hawkins Pond

As indicated in *Inspection Program* (page 6), the Dam Safety Regulations require visual inspection of 48 high hazard dams and 16 significant hazard dams each year. As indicated above, 11 high hazard dams and 1 significant hazard dam were inspected in 2015.

If a dam owner is actively working on a dam, either in response to an NOV or as an owner-initiated dam repair, then DEM may temporarily suspend the visual inspection requirement until the work is complete. The shortfall in 2015 inspections was for this reason and an error in determining the number of dams that required inspection.

### Requested Inspections

DEM investigates complaints for any high or significant hazard dam upon request by any person who has cause to believe the dam is unsafe. In 2015, DEM did not receive any such requests.

### REPAIR APPROVALS

Repairs of the following high and significant hazard dams were approved by DEM in 2015:

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>	<b>HAZARD CLASS</b>	<b>REPAIR</b>
Coventry	167	Flat River Reservoir	High	Low Level Outlets
Coventry	175	Quidnick Reservoir	Significant	Embankment & Toe Drain
Coventry	645	Centre Of New England #1	Significant	Embankment & Spillway
Johnston	168	Oak Swamp Reservoir	High	Low Level Outlet & Erosion
Lincoln	104	Bleachery Pond	High	Low Level Outlet
North Providence	084	Wenscott Reservoir	High	Low Level Outlet
North Smithfield/ Smithfield	068	Woonsocket Reservoir # 3	High	Spillway & Vegetation Removal
Providence	093	Canada Upper Pond	Significant	Low Level Outlet
Warren	480	Warren Reservoir Upper	Significant	Vegetation Removal



Fabrication of new low level outlet gates for the Flat River Reservoir Dam (No. 167) in Coventry

**OWNER / CONTACT INFORMATION**

DEM's records for the owners of dams that were previously classified as high hazard or significant hazard are fairly accurate; however, many dams that were previously classified as low hazard and were reclassified to significant or high hazard have questionable owner information. DEM legal counsel has been researching ownership of these dams as time allows.

**Orphan Dams**

DEM has identified 49 dams for which an owner has not been identified (or ownership is questionable). Most dams still require DEM research to identify owners, which is completed by DEM legal counsel, with the priority on unsafe dams as they are discovered. DEM refers to these dams as orphan dams and they are listed in the table below.

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>	<b>HAZARD CLASS</b>
Burrillville	015	Union Mill Pond	Significant
Burrillville	016	Pascoag Reservoir Upper	High
Burrillville	039	Spring Lake	Significant
Burrillville	051	Nichols Pond	Significant
Charlestown	758	Cross Mills	Significant
Charlestown / Richmond	249	Horseshoe Falls	Significant
Coventry	152	Mill Pond	Significant
Coventry	176	Coventry Reservoir	High
Coventry	177	Tiogue Lake	High
Coventry	185	Black Rock Reservoir	High

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>	<b>HAZARD CLASS</b>
Coventry	371	Pearce Pond	High
Coventry	498	Hopkins Farm Pond	Significant
East Greenwich	432	Gale Farm Pond Upper	Significant
Exeter	240	Yorker Mill Pond	High
Foster	349	Spear Pond	High
Foster	526	Gorham, N. Farm Pond	Significant
Glocester	021	Cherry Valley Pond	Significant
Glocester	032	Snakeskin Pond	Significant
Glocester	381	Sucker Brook Bridge Pond	Significant
Glocester	401	Lake Washington	High
Hopkinton	227	Ashville Pond	Significant
Hopkinton	229	Blue Pond	Significant
Hopkinton / Richmond	247	Alton Pond	Significant
Johnston	323	Caesarville Pond	Significant
Johnston	504	Dexter Farm Pond	Significant
Lincoln	099	Moffett Pond	High
Lincoln	104	Bleachery Pond	High
Lincoln	649	Bridlewood Upper End	High
Little Compton	746	Adamsville Pond	Significant
Narragansett	733	Sprague Pond	Significant
North Kingstown	550	Hamilton Reservoir	Significant
North Kingstown	704	Secret Lake	Significant
North Providence	760	Louisquisset Flood Control	High
North Smithfield	048	Forestdale Pond	High
Richmond	261	White's Pond	High
Richmond	273	Wood River Junction	Significant
Scituate	160	Hope	Significant
Smithfield	116	Hopkins Pond	High
Smithfield	121	Sprague Lower Reservoir	High
Smithfield	123	Hawkins Pond	Significant
South Kingstown	426	Peace Dale Pond	High
South Kingstown	525	Hefler Farm Pond	High
South Kingstown	579	Rocky Brook Reservoir	Significant
Tiverton	467	Mill Pond	Significant
Tiverton	742	Creamer	High
Warwick	669	Dave's Marketplace	Significant
Warwick	764	Grist Mill Apartments	High
West Warwick	145	Natick Pond	High
West Warwick	149	Centerville Pond	High

## REMOVALS

One low hazard dam was removed in 2015, as indicated below:

<u>TOWN</u>	<u>DAM NO.</u>	<u>DAM NAME</u>	<u>HAZARD CLASS</u>
Westerly	255	White Rock	Low

## REGISTRATION

In 2008 DEM began registering dams. The process involves mailing a registration form to each owner of a high hazard or significant hazard dam and formally notifying the owner of the dam's hazard classification. The owner then has a specific time period to return a completed registration form or to appeal ownership and/or the hazard classification. There is no fee to register a dam and the main purpose of the registration form is to obtain up-to-date contact information on the dam owner.

Through 2015, DEM has received 102 completed registration forms.

## GRANTS TO DEM

From 2000 through 2015, DEM received grants totaling \$746,664 from the Federal Emergency Management Agency (FEMA), National Dam Safety Program.

The 2015 grant was awarded in July 2015 for \$58,407 to fund the following:

\$33,768	dam visual inspections
\$19,500	high hazard dam hydrologic & stability analyses
\$2,100	cell phone service
\$1,570	ASDSO dues and annual conference
\$1,440	wireless modem service

Previous grants were used for engineering services to complete hazard classification of about 200 dams and to visually inspect high and significant hazard dams, and to purchase vehicles, computers, tablets, cell phones, file cabinets and aerial photos, all of which assisted with the operation of the dam safety program.

## INTERAGENCY COORDINATION

Since 2010, DEM and the Rhode Island Emergency Management Agency (RIEMA) have met on an as-needed basis to improve communication and response to dam safety emergencies. Coordination also includes a DEM review of specific sections of emergency action plans for which RIEMA requested assistance, such as a dam-specific condition that describes when the plan should go into effect (*Emergency Action Plans*, page 23).

## MEETING/SEMINAR ATTENDANCE

One dam safety staff person attended the ASDSO Annual Conference & Dam Owner workshop held in New Orleans in September 2015.

### STATE OWNED DAMS

The following high and significant hazard dams are owned by the state and maintained by either DEM or the Department of Transportation (DOT):

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>	<b>HAZARD CLASS</b>	<b>OWNER</b>	<b>STATUS</b>	<b>REPAIR PRIORITY</b>
Cranston	166	Curran Upper	High	DEM	Not Unsafe	Completed 2015
Cranston	198	Curran Lower	High	DEM	Unsafe	1
Cranston	340	Meshanticut Park	Significant	DEM	Not Unsafe	
Exeter	221	Browning Mill	High	DEM	Unsafe	3
Glocester	018	Burlingame Upper	High	DEM	Not Unsafe	
Glocester	566	Bowdish	High	DEM	Not Unsafe	Completed 2002
Glocester	499	Durfee Hill Wildlife Marsh #2	Significant	DEM	Not Unsafe	
Hopkinton	440	Hoxie Farm	Significant	DOT	Unsafe	Ongoing
Hopkinton/ Richmond	216	Wyoming Upper	High	DEM	Unsafe	2
Hopkinton/ Richmond	215	Barberville	Significant	DEM	Not Unsafe	
Lincoln	102	Olney	High	DEM	Not Unsafe	Completed 1999
Little Compton	474	Simmons	Significant	DEM	Not Unsafe	
North Kingstown	444	Silver Spring	High	DEM	Unsafe	2
Richmond	261	White's	High	DEM	Not Unsafe	
Smithfield	108	Stillwater	High	DEM	Not Unsafe	Completed 2005

A summary of each DEM owned dam being addressed in 2015 follows:

#### *Dam number 166 (Curran Upper) in Cranston*

In 2008, an engineering consultant was selected to develop the final design for the project. Development of the final design plans continued through 2009. In 2010 and 2011, negotiations proceeded with an adjacent property owner to acquire property to allow the downstream spillway channel to be reconfigured to move flow away from the dam. In October 2012, proposed repair plans were forwarded to the Dam Safety Program for review and an approval was issued in April 2013. The majority of the work occurred in 2014 and was completed in 2015.

#### *Dam number 198 (Curran Lower) in Cranston*

Due to lack of public access infrastructure associated with this dam, DEM is investigating removal of the dam.

### EMERGENCY ACTION PLANS

Rhode Island General Laws Section 46-19-9 requires a city or town in which a high hazard or significant hazard dam is located, and a state agency that owns a high hazard or significant hazard dam, to complete by July 1, 2008, an Emergency Action Plan (EAP) for the dam (*Statutes*, page 3). An EAP is a formal document that identifies potential emergency conditions at a dam and specifies pre-planned actions to be followed to minimize loss of life and property damage. The law mandates that the Rhode Island Emergency Management Agency (RIEMA) coordinate development of the EAPs and give final approval for an EAP to be considered complete. The law also requires that DEM and the Rhode Island League of Cities and Towns cooperate with RIEMA.

Through 2015, RIEMA has received about 47 EAPs which have been submitted for review and approval. 24 EAPs have been approved by RIEMA, as indicated below:

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>	<b>HAZARD CLASS</b>
Burrillville	001	Wallum Lake	Significant
Burrillville	003	Wilson Reservoir	High
Burrillville	008	Harrisville Pond	High
Burrillville	015	Union Mill Pond	Significant
Burrillville	027	Sucker Pond	Significant
Burrillville	039	Spring Lake	Significant
Burrillville	051	Nichols Pond	Significant
Burrillville	565	Ross Pond	Significant
Burrillville	572	Wilbur Pond	High
Cranston	166	Curran Upper Reservoir	High
Cranston	198	Curran Lower Reservoir	High
Cranston	340	Meshanticut Park Pond	Significant
Exeter	221	Browning Mill Pond	High
Glocester	018	Burlingame Reservoir Upper	High
Glocester	499	Durfee Hill Wildlife Marsh #2	Significant
Glocester	566	Bowdish Reservoir	High
Hopkinton / Richmond	215	Barberville Pond	Significant
Hopkinton / Richmond	216	Wyoming Upper	High
Lincoln	102	Olney Pond	High
Little Compton	474	Simmons Pond	Significant
Narragansett	733	Sprague Pond	Significant
North Kingstown	444	Silver Spring Lake	High
Richmond	261	White's Pond	High
Smithfield	108	Stillwater Reservoir	High

### DAM MANAGEMENT DISTRICTS

Rhode Island General Laws Chapter 45-62 authorizes cities and towns to create dam management districts for the maintenance and repair of dams within their boundaries. The following two districts are currently in operation:

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>	<b>HAZARD CLASS</b>
Burrillville	016	Pascoag Upper	High
Exeter	219	Boone	High

In 2008 the Town of Exeter created a district for the *Boone Lake Dam (No. 219)*, which is a privately owned, high hazard dam.

In 2009 the Towns of Burrillville and Glocester created a district for the *Pascoag Reservoir Upper Dam (No. 16)*. The dam is a privately owned, high hazard dam. The dam is located in Burrillville and the impoundment continues into Glocester.

### PROFESSIONAL ASSOCIATIONS

Rhode Island has been a member of Association of State Dam Safety Officials (ASDSO) since its inception in Denver, Colorado in 1984. ASDSO membership consists of state representatives along with corporate and individual members representing dam owners and professional engineering firms. ASDSO was formed to serve these initial functions:

- Improve efficiency and effectiveness of state dam safety programs;
- Foster public awareness;
- Facilitate inter-organizational, intergovernmental and interstate cooperation;
- Assist the dam safety community and provide a forum for the exchange of information;
- Provide representation of dam safety interests before state legislatures and before Congress; and
- Manage the association effectively through internal policies and procedures.

ASDSO has helped to improve dam safety in Rhode Island mainly through its sponsorship of regional dam safety workshops and its national annual conferences.

## **PROGRAM LIMITATIONS**

### **UNCLEAR OWNERSHIP & ORPHAN DAMS**

While a final number is not yet known, DEM expects that there will be a substantial number of high hazard dams and significant hazard dams with unclear ownership or no legal owner. DEM does not have the staff or the financial resources to conduct timely title searches to determine ownership of these dams, to routinely monitor these dams and to maintain them in a safe condition. Without identifying ownership, DEM has no way of issuing orders to correct unsafe conditions at these dams. If the cities and towns and/or the property owners who benefit from the ponds/lakes that are created by these dams are unable or unwilling to assume responsibility for the upkeep of these dams, these dams will continue to pose an increased risk of failure.

### **CONSTRUCTION OF BUILDINGS WITHIN INUNDATION AREAS BELOW DAMS**

New structures that are built within inundation areas below dams increase the number of high hazard dams and significant hazard dams and increase the risk to life and property. At present there is no statute that allows an evaluation of the risk posed by new structures within these inundation areas.

### **LACK OF FUNDING TO REPAIR OR REMOVE PRIVATELY OWNED DAMS**

About 35% of the high hazard and significant hazard dams in Rhode Island are privately owned. The cost to repair these dams can range from the tens of thousands of dollars to the hundreds of thousands of dollars, which far exceeds the financial ability of most private owners. For high hazard dams and significant hazard dams that are determined to be unsafe, this poses a risk to all residents in the State. DEM currently has the authority to issue orders to owners for unsafe dams and if the owner fails to comply with the order, DEM has the authority to repair the dam and assess the cost of the repairs to the dam owner, including the use of deed restrictions. However, DEM does not have a funding source to implement the authority.

### **INADEQUATE SPILLWAY CAPACITIES AND ENGINEERING ANALYSES**

By law, DEM is required to cause to be inspected all the dams in the state. However, the visual inspections performed by DEM do not involve full engineering analyses of the structural integrity of dams. DEM does not have the staff or the financial resources to ensure that such detailed inspections are completed. Although a visual inspection can provide indicators of underlying problems, an engineering analysis is sometimes needed to more fully assess the condition of the dam.

Climate scientists predict that we will experience more severe storms and heavy rainfall. A report entitled *Climate Change in Rhode Island: What's Happening Now & What You Can Do* states that bridges and roads will be more susceptible to damage because of more severe storms and heavy rainfall. A link to the report can be found at [http://oceanservice.noaa.gov/education/pd/climate/teachingclimate/climate\\_change\\_in\\_rhode\\_island.pdf](http://oceanservice.noaa.gov/education/pd/climate/teachingclimate/climate_change_in_rhode_island.pdf).

The same is true of dams. In the March 2010 floods 5 dams failed in Rhode Island (2 significant hazard dams and 3 low hazard dams). DEM believes that many of the high hazard dams and the significant hazard dams are unable to safely pass the amount of water that will be generated from these storms, causing the dams to overtop. Overtopping is the primary cause of dam failures. Engineering analyses of the spillway capacities of each of the 177 high hazard dams and significant hazard dams is required to determine the amount of water these dams can safely pass without overtopping. DEM does not have the staff or the financial resources to perform these analyses.

#### LACK OF EMERGENCY ACTION PLANS

EAPs identify what actions will be taken in case of an emergency at a dam, including notification and evacuation. DEM and RIEMA have been working to get Emergency Action Plans (EAPs) in place for all high hazard dams and significant hazard dams. Under current law, cities and towns were required to submit EAPs to RIEMA by July 1, 2008. As indicated in *Emergency Action Plans* on page 23, it has been more than 7 years since the EAPs were required and only 24 dams have approved EAPs. Responding to an emergency at a dam without an EAP increases the risk to life and property.

#### INADEQUATE STAFFING

Currently, the Dam Safety Program has 2.15 full time equivalents (FTEs), consisting of 2.0 FTEs (engineers/inspectors), 0.1 FTE (management) and 0.05 FTE (administrative/clerical). To successfully meet the requirements of the current statute and the Dam Safety Regulations, DEM needs an additional 1 FTE (engineer/inspector) and an additional 0.5 FTE (administrative/clerical).

#### INTENSE RAINSTORMS

On August 14, 2014 a storm hit Islip, Long Island with 13.5 inches of rain in 24 hours. Islip is 86 miles from Rhode Island. The National Oceanic and Atmospheric Administration (NOAA) modeled the impact to RI dams if that storm had struck us and their conclusion was that the storm would have caused record floods on pretty much all of the major rivers in the state. Because this storm developed so quickly, our current response capabilities would be ineffective for this type of storm.

Establishment of a notification system for dams is needed. The system could be along the lines of that used by the National Weather Service for severe weather, including a dam advisory, a dam watch and a dam warning. The intent of the system would be to coordinate the actions of officials at the Federal, State and local levels.

This completes the annual report on dam safety and the activities performed by DEM in 2015. For further information on the Dam Safety Program please contact David Chopy at (401) 222-1360, extension 7400.