



COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

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December 20, 2013

The Honorable Beverly J. Sherwood
The Honorable Edward T. Scott
The Honorable Emmett W. Hanger, Jr.
The Honorable Robert Creigh Deeds

SUBJECT: Department of Conservation and Recreation's Study of Impounding Structure Flow Releases (In Response to Senate Bill 884)

Dear Delegate Sherwood, Delegate Scott, Senator Hanger, and Senator Deeds:

In a letter to the Department dated February 13, 2013, Delegate Sherwood, Chairwoman of the House Agriculture, Chesapeake and Natural Resources Committee, requested assistance regarding Senator Deeds' request to her Committee "that with the tabling of SB 884, [that] the Department of Conservation and Recreation's Dam Safety Division [be asked to] study the issues presented in the legislation". SB 884 was introduced by Senator Deeds to address a local resident's concern regarding periodic unannounced releases of water that impacted property from an upstream impounding structure.

As the issue potentially had statewide public safety implications, a bill was drafted (See Senate Substitute: Attachment A) that prohibited an owner of a high hazard potential impounding structure from increasing the flow of water in a manner that increases water depths below the structure by more than two feet without notifying downstream property owners and emergency services. However, the bill did allow for specified releases of water, such as those due to certain rain events or emergencies. The bill also included penalty provisions.

Overview:

The dangers and impacts of sudden or unannounced downstream releases have been documented although most are associated with large hydro-power dams, few of which are found in Virginia and those that are often are not state regulated. Public notification procedures often exist to govern such releases when public safety may be at risk. News releases in the on-line literature show examples of public notices posted for special non-emergency releases that note the dates, times, and anticipated rate of release for such dams. The largest dams are also outfitted with horns, strobe lights, warning signs, and electronic spillway signs to warn the public

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of impending changes in water conditions, such as swirling water, strong surface and underwater currents, rapidly rising water, and sudden water surges.

Most downstream releases are scheduled and appropriately noticed. However, periodically a need arises to release water from dams in order to prepare for new inflows; therefore protocols for such releases are typically outlined in the dam's emergency action plan. In their public information material, owners of the larger dams urge that those who recreate downstream of such dams wear approved personal flotation equipment at all times while on the river as a risk mitigation factor and warn against alcohol beverage consumption as unimpaired judgment is important for those who recreate.

Current Laws and Regulations:

Public safety is a fundamental responsibility for all dam owners. The Dam Safety Act (§10.1- 604 et seq. of the Code of Virginia) includes the following statutory requirements:

§10.1-607. Safety Inspections. No one shall maintain a dam which unreasonably threatens the life or property of another.

§10.1-613.4. Liability of owner or operator. ...The owner shall be responsible for liability for damage to the property of others or injury to persons, including, but not limited to, loss of life resulting from the operation or failure of a dam. ...

Based on these sections of the Dam Safety Act, the dam owner is responsible for any damage, injury, or loss of life from the operation of a dam; including those associated with the increase in flow of water from a dam. In the normal operation of most dams, water level in the lake is maintained by balancing water releases from the dam to account for water flow into the lake, evaporation, and seepage through the dam. Releases of water from most dams are automatic and continual based on the principal spillway design. The quantity of water released also varies based on the size of the rainfall event flowing into the lake. For flood control dams, the water level may be lowered prior to a storm, automatically based on design, or manually to allow for additional capacity in the lake for the storm, reducing downstream flooding and reducing the risk of a dam failure from a large storm. As long as water releases, in the normal operation of a dam, are not a hazard to downstream residents, no notification is required.

However, if a downstream hazard is created by an increase in water flow in the operation of a dam, then notification of downstream residents is required under Virginia law according to requirements set out in 4VAC50-20-175 of the Impounding structure Regulations titled Emergency Action Plan (EAP) for High and Significant Hazard Potential Impounding structures (See Attachment B). The EAP is required to include procedures for timely and reliable detection, evaluation, and classification of emergency situations considered to be relevant to the project setting and impounding features. Emergency situations should include those that are imminent or in progress, where the potential for impounding structure failure is rapidly

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developing, and where the threat is slowly developing. Additionally, the EAP is required to include preparedness actions to be taken both before and following development of emergency conditions.

It also should be noted that failure of a dam owner to comply with the existing law and regulations that require notification of a downstream hazard to downstream residents and others as specified in the emergency action plan, may subject the dam owner to enforcement under §10.1-613 of the Code of Virginia.

In addition to public safety considerations, if an environmental impact is occurring downstream, the Department of Environmental Quality has purview over water quality issues and has issued permits to dams to control water releases to protect water quality.

Other States:

Through the Association of State Dam Safety Officials, comments on SB884 (Amendment in the Nature of a Substitute version) were requested from other state and federal dam safety programs. The inquiry sought information on what other states require for notification of downstream property owners for releases from dams. The inquiry was circulated to forty-nine State Dam Safety Programs. Twelve responded, with ten indicating no requirement for downstream notification and two indicating some type of requirements or expectations to notify landowners for out of bank flows caused by a release.

Iowa - Iowa dam safety officials noted that they have a similar requirement to that suggested in the Virginia legislation, but it is setup a little different. They require the dam owner to obtain approval for any change in impoundment levels unless it is part of an approved operations plan. Part of this approval is ensuring that the release will not exceed the capacity of the downstream channel. There is also a public notification requirement. Iowa requirements are as follows:

567—73.2 Raising or lowering of impoundment levels.

73.2(1) *When approval required.* A separate approval is required to temporarily or permanently raise or lower the level of water impounded by a dam which exceeds the thresholds of rule 567—71.3 unless the raising and lowering has been authorized as part of an approved operating plan. Such approval shall be in the form of a letter authorizing the lowering or raising and may be conditioned upon various requirements.

73.2(2) *Procedure for approval of raising or lowering impoundment water levels.* Review procedure shall be as provided for operating plans in subrule 73.1(2) except that the applicant shall submit the following additional information:

a. The date raising or lowering will be initiated, the level to which the impoundment will be raised or lowered, and, if temporary, the anticipated date when the normal water level will be restored.

b. Evidence that during raising of the water level the required minimum downstream release rate will be maintained.

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c. Evidence that the discharge rate during lowering will not exceed the capacity of the stream channel below the dam.

73.2(3) Criteria for approval of raising or lowering impoundment water levels. The criteria for approval are the statutory criteria for approval of operating plans identified in subrule 73.1(3). In addition, as a condition of approving temporary or permanent raising or lowering of water levels, the applicant may be required to give prior notice to the director of the local county conservation board or local enforcement officer for the department and publicize the lowering locally in order to notify downstream users, persons who have boats or docks on the impoundment and other persons whose use of the impoundment might be affected.

567—73.1 Operating plan for dams with movable structures.

73.1(1) When approval of operating plan required. An operating plan approved by the department shall be required for any dam exceeding the thresholds established in rule 567—71.3 if the dam has movable structures which must operate during floods or to release a minimum downstream flow, or the impoundment water level is raised or lowered regularly or periodically.

73.1(2) Procedures for approval of operating plan.

a. *Form of review.* Requests for approval of an operating plan shall be submitted and reviewed in the following manner:

(1) *Where operating plan is related to proposed construction.* If an operating plan is required for a proposed new dam or because of proposed structural modification of an existing dam, the operating plan will be reviewed as part of the department review of construction plans which are required by 567—Chapters 70 to 72. Approval of the proposed operating plan will be made a part of the department permit, which approves the construction plans.

(2) *Where operating plan is not related to proposed construction.* If an operating plan is required because of a change in use of a dam and is not related to proposed structural modification of the dam, the proposed operating plan should be submitted to the department in writing together with department application Form 36, described in rule 567—70.3. The applicant should indicate on Form 36 that structural modification of the dam is not proposed.

(3) *General review procedures.* Applications shall be reviewed in accordance with the procedures in 567—Chapter 70.

b. *Information required for review.* An application for approval of an operating plan shall be supported by written information identifying personnel responsible for operation of the dam, the circumstance under which gates or other movable structures must operate, the method of operation, and the method of discharge measurement. These requirements are more fully described in department Bulletin No.16.

73.1(3) Criteria for approval.

a. *Required findings.* The department will approve a proposed operating plan only after the following findings are made:

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(1) The proposed operating plan complies with the statutory criteria set forth in Iowa Code section 455B.275, considering the purposes of regulation set forth in Iowa Code section 455B.262 and the effects to be considered under Iowa Code section 455B.264.

(2) The proposed operating plan complies with the criteria in chapter IX of department Bulletin No.16.

b. Anticipation of changed circumstances. In applying the approval criteria in paragraph “a” of this subrule, consideration shall be given to both existing conditions and potential future conditions which can reasonably be anticipated at the time the application is reviewed.

Colorado – Colorado dam safety officials noted that they do not have a requirement codified in statute or regulation to notify downstream landowners of releases from reservoirs. However, in emergency scenarios when the EAP is activated and it is known that the outlet capacity of the reservoir exceeds downstream channel capacity, they do expect the dam owner to notify downstream property owners and emergency managers. Additionally, they do have requirements that must be followed when reservoir releases are expected to discharge a significant amount of sediment to the downstream waterway.

Of additional note was Idaho’s response. They suggested that instead of placing the onus on the dam owner, some of the responsibility should be placed on the homeowner; especially in situations of hazard creep. They suggested that the property deed should include warning information:

SAID PROPERTY IS SITUATED WITHIN THE INUNATION ZONE OF AN EXISTING DAM LOCATED ____ MILES UPSTREAM. RIVER LEVELS MAY FLUCUATE WITHOUT PRIOR NOTICE DUE TO NORMAL OPERATIONAL RELEASES FROM THE RESERVOIR. HOWEVER UNLIKELY, FLOODING OF DOWNSTREAM PROPERTIES IS POSSIBLE DUE TO ONE OR MORE OF THE FOLLOWING:

- EXTREME WEATHER AND RUNOFF
- TERRORIST ACTIVITY OR VANDALISM
- EQUIPMENT MALFUNCTION
- SEISMIC ACTIVITY OR OTHER NATURAL PHENOMONA

Conclusions:

Based on §10.1-607 and §10.1-613.4, the dam owner shall be responsible for liability for damage to the property of others or injury to persons, including, but not limited to, loss of life resulting from the operation or failure of a dam. Therefore, if an increase in the flow from the dam presents a potential hazard downstream from the operation of the dam, the owner is responsible for notification as required in the Emergency Action Plan as defined in the Regulations, 4VAC50-20-175. It therefore remains the impounding structure owner's

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responsibility to develop, maintain, exercise, and implement a site-specific EAP. Should the dam that was initially the subject of SB884, not contain suitable preparedness and notification procedures, then the EAP should be amended to address such identified concerns. Safety concerns by downstream residents should be handled on an individual basis between the downstream resident, the Department of Conservation and Recreation's Division of Dam Safety and Floodplain Management, and the dam owner by incorporating any special requirements in the Emergency Action Plan for the specific dam. This action requires no additional statutory or regulatory authority to implement.

The Department of Conservation remains committed to protecting the Commonwealth's citizenry through the continued implementation of a sound but reasonably balanced dam safety program. We trust that this report is satisfactory for the review requested.

Respectfully submitted,



David A. Johnson

Attachments

cc: Marty Farber, Division of Legislative Services

2013 SESSION

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SENATE BILL NO. 884

AMENDMENT IN THE NATURE OF A SUBSTITUTE

(Proposed by the Senate Committee on Agriculture, Conservation and Natural Resources
on January 31, 2013)

(Patron Prior to Substitute—Senator Deeds)

A BILL to amend and reenact § 10.1-613.5 of the Code of Virginia and to amend the Code of Virginia by adding a section numbered 10.1-609.3, relating to impoundment structures and notice of an increase in the flow of water; penalty.

Be it enacted by the General Assembly of Virginia:

1. That § 10.1-613.5 of the Code of Virginia is amended and reenacted and that the Code of Virginia is amended by adding a section numbered 10.1-609.3 as follows:

§ 10.1-609.3. Notice of increase in flow of water; penalty.

A. Except as provided in subsection B, no owner of a high hazard potential impounding structure shall increase the flow of water in a manner that increases water depths greater than two feet measured below the impounding structure until at least 24 hours and no more than two months have passed after notifying (i) all known owners of occupied or developed riparian property identified within the dam break inundation zone and (ii) the police, fire, and rescue services, or equivalent emergency services organizations that are identified in the dam safety emergency action plan and that serve the localities in which the landowners described in clause (i) are located.

B. This section does not apply to a release from an impounding structure's outlet works due to a rain event, except where manual controls are used, unless used in case of the risk of imminent impounding structure failure. This section does not apply to an emergency release to prevent imminent impounding structure failure in accordance with § 10.1-608, to potential emergency conditions managed pursuant to a dam safety emergency action plan submitted pursuant to subsection D of § 10.1-606.2, or to a release from an impounding structure with operable 24/7 automatic gate controls unless such gates are being manually controlled.

C. A dam owner that fails to provide sufficient notice in accordance with this section shall be subject to civil penalties pursuant to § 10.1-613.2. Civil penalties assessed under this section shall be paid into the Dam Safety Administrative Fund, established pursuant to § 10.1-613.5, and shall be used for the administration of the dam safety program.

§ 10.1-613.5. Program administration fees; establishment of Dam Safety Administrative Fund.

A. The Board is authorized to establish and collect application fees from any applicant to be deposited into the Dam Safety Administrative Fund established pursuant to subsection B. Permit applications shall not be reviewed without a full payment of the required fee. Virginia Soil and Water Conservation Districts shall be exempt from all fees established pursuant to this section.

B. There is hereby created in the state treasury a special nonreverting fund to be known as the Dam Safety Administrative Fund, hereafter referred to as "the Fund." The Fund shall be established on the books of the Comptroller. The Fund shall consist of permit application fees authorized under subsection A and civil penalties authorized under subsection C of § 10.1-609.3 and shall be used for the administration of the dam safety program, including actions taken in accordance with §§ 10.1-608, 10.1-609, and 10.1-613. All such funds shall be paid into the state treasury and credited to the Fund. Interest earned on moneys in the Fund shall remain in the Fund and be credited to it. Any moneys remaining in the Fund, including interest thereon, at the end of each fiscal year shall not revert to the general fund but shall remain in the Fund. Expenditures and disbursements from the Fund shall be made by the State Treasurer on warrants issued by the Comptroller upon written request signed by the Director.

2. That the Department of Conservation and Recreation shall promulgate appropriate guidance to facilitate the efficient and effective implementation of the provisions of § 10.1-609.3 as added by this act, including the avoidance of any disruption in the operation of essential public services such as public stormwater or water utility facilities or electric generation facilities and associated infrastructure, upon the written request by any owner of such facilities to the Director of the Department of Conservation and Recreation.

Attachment B: 4VAC50-20-175. Emergency Action Plan (EAP) for High and Significant Hazard Potential Impounding structures.

4VAC50-20-175. Emergency Action Plan (EAP) for High and Significant Hazard Potential Impounding structures.

A. In order to protect life during potential emergency conditions at an impounding structure, and to ensure effective, timely action is taken should an impounding structure emergency occur, an EAP shall be required for each High and Significant Hazard Potential impounding structure. The EAP shall be coordinated with the Department of Emergency Management in accordance with § 44-146.18 of the Code of Virginia. The EAP required by these regulations shall be incorporated into local and interjurisdictional emergency plans pursuant to § 44-146.19 of the Code of Virginia.

B. It is the impounding structure owner's responsibility to develop, maintain, exercise, and implement a site-specific EAP.

C. An EAP shall be submitted every six years. The EAP shall be submitted with the owner's submittal of their Regular Operation and Maintenance Certificate application (Operation and Maintenance Certificate Application for Virginia Regulated Impounding Structures).

D. The owner shall update and resubmit the EAP immediately upon becoming aware of necessary changes to keep the EAP workable. Should an impounding structure be reclassified, an EAP in accordance with this section shall be submitted.

G. An EAP shall contain the following seven basic elements unless otherwise specified in this subsection.

1. Notification chart. A notification chart shall be included for all classes of impounding structures that shows who is to be notified, by whom, and in what priority. The notification chart shall include contact information providing 24-hour telephone coverage for all responsible parties including, but not limited to, the impounding structure operator or manager, state and local emergency management officials, local police or sheriffs' departments, and the owner's engineer. The notification chart shall also identify the process by which downstream property owners will be notified, and what party or parties will be responsible for making such notifications.

2. Emergency Detection, Evaluation, and Classification. The EAP shall include a discussion of the procedures for timely and reliable detection, evaluation, and classification of emergency situations considered to be relevant to the project setting and impounding features. Each relevant emergency situation is to be documented to provide an appropriate course of action based on the urgency of the situation. Where appropriate, situations should address impounding structure failures that are imminent or in progress, a situation where the potential for impounding structure failure is rapidly developing, and a situation where the threat is slowly developing.

3. Responsibilities. The EAP shall specify responsibilities for EAP-related tasks. The EAP shall also clearly designate the responsible party for making the decision that an emergency condition no longer exists at the impounding structure. The EAP shall include procedures and the responsible parties for notifying to the extent possible any known local occupants, owners, or lessees of downstream properties potentially impacted by the impounding structure's failure.

4. Preparedness. The EAP shall include a section that describes preparedness actions to be taken both before and following development of emergency conditions.

5. Dam Break Inundation Maps. The EAP shall include dam break inundation maps developed in accordance with 4VAC50-20-54.

6. Appendices. The appendices shall contain information that supports and supplements the material used in the development and maintenance of the EAP such as analyses of impounding structure failure floods; plans for training, exercising, updating, and posting the EAP; and other site-specific concerns.

7. Certification. The EAP shall include a section that identifies all parties with assigned responsibilities in the EAP pursuant to subdivision 3 of this subsection. This will include certification

Attachment B: 4VAC50-20-175. Emergency Action Plan (EAP) for High and Significant Hazard Potential Impounding structures.

that the EAP has been received by these parties. The preparer's name, title, and contact information shall be printed in this section. The preparer's signature shall also be included in the certification section. The local organization for emergency management shall provide the owner and the department with any deficiencies they may note.

H. The development of the EAP shall be coordinated with all entities, jurisdictions, and agencies that would be affected by an impounding structure failure or that have statutory responsibilities for warning, evacuation, and postflood actions. Consultation with state and local emergency management officials at appropriate levels of management responsible for warning and evacuation of the public shall occur to ensure that there is awareness of their individual and group responsibilities. The owner shall also coordinate with the local organization for emergency management to identify properties that upon failure of the impounding structure would result in economic impacts.

I. The EAP, or any updates to an existing EAP, shall be submitted to the department, the local organization for emergency management, and the Virginia Department of Emergency Management. Two copies shall be provided to the department.