

**PROPOSED REGULATION FOR VIRGINIA SOIL AND WATER CONSERVATION BOARD CONSIDERATION – NOT APPROVED**

**Version: Thursday, November 9, 2006**

**VIRGINIA IMPOUNDING STRUCTURE REGULATIONS (§ 4 VAC 50-20)**

**Part I: General**

**4VAC50-20-10. Authority.**

This chapter is promulgated by the Virginia Soil and Water Conservation Board in accordance with the provisions of the Dam Safety Act, Article 2, Chapter 6, Title 10.1 (§10.1-604 et seq.), of the Code of Virginia.

**4VAC50-20-20. General provisions.**

A. This chapter provides for the proper and safe design, construction, operation and maintenance of impounding structures to protect public safety. This chapter shall not be construed or interpreted to relieve the owner or operator of any impoundment or impounding structure of any legal duties, obligations or liabilities incident to ownership, design, construction, operation or maintenance.

B. Approval by the ~~board~~ Board of proposals for an impounding structure shall in no manner be construed or interpreted as approval to capture or store waters. For information concerning approval to capture or store waters, see Chapter 8 (§62.1-107) of Title 62.1 of the Code of Virginia, and other provisions of law as may be applicable.

C. In promulgating this chapter, the ~~board~~ Board recognizes that no impounding structure can ever be completely "fail-safe," because of incomplete understanding of or uncertainties associated with natural (earthquakes and floods) and manmade (sabotage) destructive forces; with material behavior and response to those forces; and with quality control during construction.

D. ~~Any~~ All engineering ~~analysis~~ analyses required by this chapter, ~~such as including but not limited to,~~ plans, specifications, hydrology, hydraulics and inspections shall be conducted or overseen by and bear the seal of a professional engineer licensed to practice in Virginia.

E. Design, inspection and maintenance of impounding structures shall be conducted utilizing competent, experienced, engineering judgment that takes into consideration factors including but not limited to local topography and meteorological conditions.

~~E~~ F. The ~~official~~ forms as called for ~~by~~ in this chapter are available from the Department director at the Department's website.

**4VAC50-20-30. Definitions.**

The following words and terms when used in this chapter shall have the following meanings unless the context clearly indicates otherwise:

"Acre-foot" means a unit of volume equal to 43,560 cubic feet or 325,853 gallons (equivalent to one foot of depth over one acre of area.)

"Agricultural purpose dams" means dams which are less than 25 feet in height or which create a maximum impoundment smaller than 100 acre-feet, ~~and certified by the owner on official forms as constructed, maintained or operated~~ primarily for agricultural purposes.

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42 “Alteration” means changes to an impounding structure that could alter or affect its  
43 structural integrity. Alterations include, but are not limited to, changing the height or otherwise  
44 enlarging the dam, increasing normal pool or principal spillway elevation or physical  
45 dimensions, changing the elevation or physical dimensions of the emergency spillway,  
46 conducting necessary structural repairs or structural maintenance, or removing the impounding  
47 structure.

48 ~~“Alteration permit” means a permit required for changes any alteration to an impounding~~  
49 ~~structure that could alter or affect its structural integrity. Alterations requiring a permit include,~~  
50 ~~but are not limited to: changing the height, increasing the normal pool or principal spillway~~  
51 ~~elevation, changing the elevation or physical dimensions of the emergency spillway or removing~~  
52 ~~the impounding structure.~~

53 "Board" means the Virginia Soil and Water Conservation Board.

54 ~~“Conditional operation and maintenance certificate” means a certificate required for~~  
55 ~~impounding structures with deficiencies.~~ Operation and Maintenance  
56 Certificate” means a certificate required for impounding structures with deficiencies.

57 “Construction” means the construction of a new impounding structure.

58 "Construction permit" means a permit required for the construction of a new impounding  
59 structure.

60 “Dam break inundation zone” means the area downstream of a dam that would be  
61 inundated or otherwise directly affected by the failure of a dam.

62 “Department” means the Virginia Department of Conservation and Recreation.

63 "Design flood" means the calculated volume of runoff and the resulting peak discharge  
64 utilized in the evaluation, design, construction, operation and maintenance of the impounding  
65 structure.

66 ~~“Design freeboard” means the vertical distance between the maximum elevation of the~~  
67 ~~design flood and the top of the impounding structure.~~

68 "Director" means the Director of the Department of Conservation and Recreation or his  
69 designee.

70 “Drill” means a type of emergency action plan exercise that tests, develops, or maintains  
71 skills in an emergency response procedure. During a drill, participants perform an in-house  
72 exercise to verify telephone numbers and other means of communication along with the owner’s  
73 response. A drill is considered a necessary part of ongoing training.

74 “Emergency Action Plan or EAP” means a formal document that recognizes potential  
75 impounding structure emergency conditions and specifies preplanned actions to be followed to  
76 minimize loss of life and property damage. The EAP specifies actions the owner must take to  
77 minimize or alleviate emergency conditions at the impounding structure. It contains procedures  
78 and information to assist the owner in issuing early warning and notification messages to  
79 responsible emergency management authorities. It shall also contain dam break inundation zone  
80 maps as required to show emergency management authorities the critical areas for action in case  
81 of emergency.

82 “Emergency Action Plan Exercise” means an activity designed to promote emergency  
83 preparedness; test or evaluate EAPs, procedures, or facilities; train personnel in emergency  
84 management duties; and demonstrate operational capability. In response to a simulated event,

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84 exercises should consist of the performance of duties, tasks, or operations very similar to the way  
85 they would be performed in a real emergency. An exercise may include but not be limited to  
86 drills and tabletop exercises.

87 “Emergency Preparedness Plan” means a formal document prepared for Low Hazard  
88 dams that provides maps and procedures for notifying owners of downstream property that may  
89 be impacted by an emergency situation at an impounding structure.

90 “Freeboard” means the vertical distance between the maximum water surface elevation  
91 associated with the spillway design flood and the top of the impounding structure.

92 "Height" means the ~~structural~~ hydraulic height of an impounding structure. If the  
93 impounding structure spans a stream or watercourse, height means the vertical distance from the  
94 natural bed of the stream or watercourse measured at the downstream toe of the impounding  
95 structure to the top of the impounding structure. If the impounding structure does not span a  
96 stream or watercourse, height means the vertical distance from the lowest elevation of the  
97 ~~outside~~ downstream limit of the barrier to the top of the impounding structure.

98 "Impounding structure" means a man-made ~~device~~ structure, whether a dam across a  
99 watercourse or ~~other~~ structure outside a watercourse, used or to be used to retain or store waters  
100 or other materials. The term includes: (i) all dams that are 25 feet or greater in height and that  
101 create an impoundment capacity of 15 acre-feet or greater, and (ii) all dams that are six feet or  
102 greater in height and that create an impoundment capacity of 50 acre-feet or greater. The term  
103 "impounding structure" shall not include: (a) dams licensed by the State Corporation  
104 Commission that are subject to a safety inspection program; (b) dams owned or licensed by the  
105 United States government; (c) dams ~~constructed, maintained or~~ operated primarily for  
106 agricultural purposes which are less than 25 feet in height or which create a maximum  
107 impoundment capacity smaller than 100 acre-feet; (d) water or silt retaining dams approved  
108 pursuant to §45.1-222 or §45.1-225.1 of the Code of Virginia; or (e) obstructions in a canal used  
109 to raise or lower water.

110 "Impoundment" means a body of water or other materials the storage of which is caused  
111 by any impounding structure.

112 ~~"Inundation zone" means an area that could be inundated as a result of impounding~~  
113 ~~structure failure and that would not otherwise be inundated to that elevation.~~

114 "Life of the impounding structure" and "life of the project" mean that period of time for  
115 which the impounding structure is designed and planned to perform effectively, including the  
116 time required to remove the structure when it is no longer capable of functioning as planned and  
117 designed.

118 "Maximum impounding capacity" means the volume of water or other materials in acre-  
119 feet that is capable of being impounded at the top of the impounding structure.

120 "Normal impounding capacity" means the volume of water or other materials in acre-feet  
121 that is capable of being impounded at the elevation of the crest of the lowest ungated outlet from  
122 the impoundment.

123 "Operation and ~~maintenance~~ Maintenance certificate Certificate" means a certificate  
124 required for the operation and maintenance of all impounding structures.

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125 "Owner" means the owner of the land on which an impounding structure is situated, the  
126 holder of an easement permitting the construction of an impounding structure and any person or  
127 entity agreeing to maintain an impounding structure. The term "owner" ~~may includes~~ include the  
128 Commonwealth or any of its political subdivisions, including but not limited to sanitation district  
129 commissions and authorities, ~~Also included are~~ any public or private institutions, corporations,  
130 associations, firms or companies organized or existing under the laws of this Commonwealth or  
131 any other state or country, as well as any person or group of persons acting individually or as a  
132 group.

133 "Spillway" means a structure to provide for the controlled release of flows from the  
134 impounding structure into a downstream area.

135 "Stage I Condition" means a flood watch or heavy continuous rain or excessive flow of  
136 water from ice or snow melt.

137 "Stage II Condition" means a flood watch or emergency spillway activation or dam  
138 overtopping where a breach may be possible.

139 "Stage III Condition" means an emergency spillway activation or dam overtopping where  
140 imminent failure is probable.

141 "Sunny Day Dam Failure" means the breaching of an impounding structure with the  
142 initial water level at the normal reservoir level, usually at the lowest ungated principal spillway  
143 elevation or the typical operating water level.

144 "Tabletop Exercise" means a type of emergency action plan exercise that involves a  
145 meeting of the impounding structure owner and the state and local emergency management  
146 officials in a conference room environment. The format is usually informal with minimum stress  
147 involved. The exercise begins with the description of a simulated event and proceeds with  
148 discussions by the participants to evaluate the EAP and response procedures and to resolve  
149 concerns regarding coordination and responsibilities.

150 "Top of the impounding structure" means the lowest point of the nonoverflow section of  
151 the impounding structure.

152 "Watercourse" means a natural channel having a well-defined bed and banks and in  
153 which water normally flows ~~when it normally does flow~~.

154

155 **4VAC50-20-40. Hazard Potential Classifications Classes of impounding structures.**

156 A. Impounding structures shall be classified in one of ~~four~~ three hazard classifications  
157 categories according to size and hazard potential, as defined in subsection B of this section and  
158 Table 1. ~~Size classification shall be determined either by maximum impounding capacity or~~  
159 height, whichever gives the larger size classification.

160 B. For the purpose of this chapter, hazards pertain to potential loss of human life or  
161 property damage to the property of others downstream from the impounding structure in event of  
162 failure or faulty operation of the impounding structure or appurtenant facilities. Hazard potential  
163 classifications of dams are as follows.

164 1. ~~Impounding structures in the Class I hazard potential category are located where~~ High  
165 Hazard Potential is defined where an impounding structure failure will cause probable loss of life  
166 or serious economic damage to. Economic damage may occur to, but not be limited to,

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167 building(s), industrial or commercial facilities, ~~important~~ primary public utilities, main  
168 highway(s) or major public roadways, railroad(s) railroads, personal property, and agricultural  
169 interests.

170 2. ~~Impounding structures in the Class II hazard potential category are located where~~  
171 Significant Hazard Potential is defined where an impounding structure failure could may cause  
172 possible the loss of life or appreciable economic damage. Economic damage may occur to, but  
173 not be limited to, building(s), industrial or commercial facilities, secondary public utilities,  
174 secondary public roadways, railroads, personal property, and agricultural interests highway(s) or  
175 railroad(s) or cause interruption of use or service of relatively important public utilities.

176 3. ~~Impounding structures in Class III hazard potential category are located where Low~~  
177 Hazard Potential is defined where an impounding structure failure would result in no expected  
178 loss of life and would cause no more than minimal economic damage. Economic damage may  
179 occur to, but not be limited to, building(s), industrial or commercial facilities, secondary public  
180 utilities, secondary public roadways, railroads or personal property, and agricultural interests  
181 may cause minimal property damage to others. No loss of life is expected.

182 4. ~~Impounding structures in Class IV hazard potential category are located where the~~  
183 failure of the impounding structure would cause no property damage to others. No loss of life is  
184 expected.

185 5C. ~~Such size and~~ The hazard potential classification and size classifications category for  
186 the given hazard classification shall be proposed by the owner and shall be subject to approval by  
187 the director Board. To support the appropriate hazard potential classification, dam break  
188 analysis shall be conducted by the owner's engineer. Present and projected development of  
189 planned land-use in the dam break inundation zones downstream from the impounding structure  
190 shall be considered in determining the classification.

191 6 D. Impounding structures shall be subject to reclassification by the Board as necessary.

192

193 **4VAC50-20-50. Performance standards required for impounding structures.**

194 A. In accordance with the definitions provided by Virginia Code § 10.1-604 and  
195 4VAC50-20-30, an impounding structure shall be regulated if the dam is 25 feet or greater in  
196 height and creates a maximum impounding capacity of 15 acre-feet or greater, or the dam is six  
197 feet or greater in height and creates a maximum impounding capacity of 50 acre-feet or greater  
198 and is not otherwise exempt from regulation by the Code of Virginia. Impounding structures  
199 exempted from this chapter are those that are:

200 1. Licensed by the State Corporation Commission that are subject to a safety inspection  
201 program;

202 2. Owned or licensed by the United States government;

203 3. Operated primarily for agricultural purposes which are less than 25 feet in height or  
204 which create a maximum impoundment capacity smaller than 100 acre-feet;

205 4. Water or silt retaining dams approved pursuant to §45.1-222 or §45.1-225.1 of the  
206 Code of Virginia; or

207 5. Obstructions in a canal used to raise or lower water.

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208 Impounding structures of regulated size and not exempted shall be constructed, operated  
 209 and maintained such that they perform in accordance with their design and purpose throughout  
 210 the life of the project. For ~~new~~ impounding structures, the spillway(s) capacity shall perform at a  
 211 minimum to safely pass the appropriate spillway design flood as determined in Table 1. For the  
 212 purposes of utilizing Table 1, Maximum Impounding Capacity and Height shall be determined in  
 213 accordance with the definitions provided in 4 VAC 50-20-30 and Hazard Potential Classification  
 214 shall be determined in accordance with 4VAC 50-20-40.  
 215

216 **TABLE 1--Impounding Structure Regulations**

217

Class of Dam	Hazard Potential If Impounding Structure Fails	SIZE CLASSIFICATION		Spillway Design Flood (SDF) <sup>b</sup>
		Maximum Capacity (Ac Ft) <sup>a</sup>	Height (Ft) <sup>a</sup>	
I	Probable Loss of Life; Excessive Economic Loss	Large $\geq 50,000$	$\geq 100$	PMF <sup>e</sup>
		Medium $\geq 1,000$ & $< 50,000$	$\geq 40$ & $< 100$	PMF
		Small $\geq 50$ & $< 1,000$	$\geq 25$ & $< 40$	1/2 PMF to PMF
II	Possible Loss of Life; Appreciable Economic Loss	Large $\geq 50,000$	$\geq 100$	PMF <sup>d</sup>
		Medium $\geq 1,000$ & $< 50,000$	$\geq 40$ & $< 100$	1/2 PMF to PMF
		Small $\geq 50$ & $< 1,000$	$\geq 25$ & $< 40$	100-YR to 1/2 PMF
III	No Loss of Life Expected; Minimal Economic Loss	Large $\geq 50,000$	$\geq 100$	1/2 PMF to PMF
		Medium $\geq 1,000$ & $< 50,000$	$\geq 40$ & $< 100$	100-YR to 1/2 PMF
		Small $\geq 50$ & $< 1,000$	$\geq 25$ & $< 40$	50-YR <sup>d</sup> to 100-YR <sup>e</sup>
IV	No Loss of Life Expected; No Economic Loss to Others	$\geq 50$ -(non-agricultural) $\geq 100$ -(agricultural)	$\geq 25$ (both)	50-YR to 100-YR

218

219

Hazard Potential Class of Dam	SIZE CATEGORIES <sup>B</sup>		Spillway Design Flood (SDF) <sup>C</sup>	Minimum Threshold for Incremental Damage Assessment
	Maximum Impounding Capacity (Ac-Ft)	Height (Ft)		
HIGH	All <sup>B</sup>	All <sup>B</sup>	PMF <sup>D</sup>	.50 PMF
SIGNIFICANT	Large $\geq 50,000$	$\geq 100$	PMF <sup>D</sup>	.50 PMF
	Medium $> 1,000$ & $< 50,000$	$> 40$ & $< 100$	.75 PMF	100-YR <sup>E</sup>
	Small $\geq 15$ & $< 1,000$	$\geq 6$ & $< 40$	.50 PMF	100-YR <sup>E</sup>
LOW	Large $\geq 50,000$	$\geq 100$	.50 PMF	100-YR <sup>E</sup>

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<u>Medium ≥ 1,000 &amp; &lt;50,000</u>	<u>≥ 40 &amp; &lt; 100</u>	<u>100-YR<sup>E</sup></u>	<u>50-YR<sup>E</sup></u>
<u>Small ≥ 15 &amp; &lt; 1,000</u>	<u>≥ 6 &amp; &lt; 40</u>	<u>100-YR<sup>E</sup></u>	<u>50-YR<sup>E</sup></u>

220 ~~a-B.~~ The factor determining the largest size classification shall govern. The appropriate  
 221 size category is determined by the largest size associated with the maximum impounding  
 222 capacity and height of the impounding structure.

223 ~~b-C.~~ The spillway design flood (SDF) represents the largest flood that need be considered  
 224 in the evaluation of the performance for a given project. The impounding structure shall perform  
 225 so as to safely pass the appropriate SDF. Where a range of SDF is indicated, the magnitude that  
 226 most closely relates to the involved risk should be selected. Reductions in the established SDF  
 227 may be evaluated through the use of incremental damage assessment pursuant to 4 VAC 50-20-  
 228 52. The SDF established for an impounding structure shall not be less than those standards  
 229 established elsewhere by state law or regulations, including but not limited to the Virginia  
 230 Stormwater Management Program (VSMP) Permit Regulations (4VAC50-60-10 et seq.). The  
 231 establishment in this chapter of rigid design flood criteria or standards is not intended. Safety  
 232 must be evaluated in the light of peculiarities and local conditions for each impounding structure  
 233 and in recognition of the many factors involved, some of which may not be precisely known.  
 234 Such can only be done by competent, experienced engineering judgment, which the values in  
 235 Table 1 are intended to supplement, not supplant.

236 ~~e-D.~~ PMF: Probable maximum Maximum-flood Flood. This means is the flood that might  
 237 be expected from the most severe combination of critical meteorologic and hydrologic conditions  
 238 that are reasonably possible in the region. The PMF is derived from the current probable  
 239 maximum precipitation (PMP) available from the National Weather Service, NOAA. In some  
 240 eases local topography or meteorological conditions will cause changes from the generalized  
 241 PMP values; therefore, it is advisable to contact local, state or federal agencies to obtain the  
 242 prevailing practice in specific cases. Any deviation in the application of established  
 243 developmental procedures must be explained and justified by the owner’s engineer. The owner’s  
 244 engineer must develop PMF hydrographs for 6, 12, and 24 hour durations. The hydrograph that  
 245 creates the largest peak outflow is to be used to determine capacity for non-failure and failure  
 246 analysis. Present and planned land-use conditions shall be considered in determining the runoff  
 247 characteristics of the drainage area.

248 E. 100-Yr: 100-year flood represents the flood magnitude expected to be equaled or  
 249 exceeded on the average of once in 100 years. It may also be expressed as an exceedence  
 250 probability with a 1.0% chance of being equaled or exceeded in any given year. Present and  
 251 planned land-use conditions shall be considered in determining the runoff characteristics of the  
 252 drainage area.

253 ~~d-F.~~ 50-Yr: 50-year flood. This means represents the flood magnitude expected to be  
 254 equaled or exceeded on the average of once in 50 years. It may also be expressed as an  
 255 exceedence probability with a 2.0% chance of being equaled or exceeded in any given year.  
 256 Present and planned land-use conditions shall be considered in determining the runoff  
 257 characteristics of the drainage area.

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~~e. 100-Yr: 100-year flood. This means the flood magnitude expected to be equaled or exceeded on the average of once in 100 years. It may also be expressed as an exceedence probability with a 1.0% chance of being equaled or exceeded in any given year.~~

**4VAC50-20-52. Incremental damage assessment.**

A. When appropriate, the spillway design flood requirement may be reduced by the Board in accordance with this section.

B. Prior to qualifying for a spillway design flood reduction, certain maintenance conditions must be adequately addressed including, but not limited to, the following:

1. Operation and maintenance is determined by the Director to be satisfactory and up to date;

2. The impounding structure is not in need of other alteration related to the integrity of the structure;

3. Emergency Action Plan requirements set out in 4 VAC50-20-175 or Emergency Preparedness requirements set out in 4VAC50-20-177 have been satisfied;

4. Inspection report requirements have been met and are considered satisfactory by the Director;

5. The applicant demonstrates in accordance with the current design procedures and references of 4VAC50-20-320 to the satisfaction of the Board that the impounding structure as designed, constructed, operated and maintained does not pose an unreasonable hazard to life and property;

6. The owner satisfies all special requirements imposed by the Board; and

7. Certification by the owner that these conditions will continue to be met.

C. After meeting the criteria set out in 4VAC50-20-52B, the owner’s engineer may proceed with an incremental damage analysis. Once the owner’s engineer has determined the required spillway design flood through application of Table 1, further analysis may be performed to evaluate the limiting flood condition for incremental damages. This assessment may be used to lower the spillway design flood. In no situation shall the allowable reduction be less than the level at which the incremental increase in water surface elevation downstream due to failure of a dam is no longer considered to present an unacceptable additional downstream threat. This engineering analysis will need to present water surface elevations at each structure that may be impacted downstream of the dam. Water depths greater than two feet and overbank flow velocities greater than three feet per second shall be used to define conditions for unacceptable additional downstream threat to persons or property.

D. The spillway design flood shall not be reduced below the minimum threshold values as determined by Table 1.

**4VAC50-20-54. Dam break inundation zone mapping**

Dam break inundation zone maps shall be provided to the Department to meet the requirements set out in Hazard Potential Classifications of Impounding Structures (4VAC50-20-40), Emergency Action Plan for High and Significant Potential Hazard Dams (4VAC50-20-175), and Emergency Preparedness for Low Hazard Potential Dams (4VAC50-20-177), as applicable.



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300 A. The location of the end of the inundation mapping should be indicated where the water  
301 surface elevation of the dam break inundation zone and the water surface elevation of the  
302 spillway design flood during a non-dam failure event converge to within one foot of each other.  
303 This would demonstrate a level where failure of the dam does not further constitute a hazard to  
304 downstream life or property. The inundation maps shall be supplemented with water surface  
305 profiles and cross-sections at critical areas showing the peak water surface elevation prior to  
306 failure and the peak water surface elevation after failure.

307 B. All inundation zone map(s), except those utilized in meeting the requirements of  
308 Emergency Preparedness for Low Hazard Potential Dams (4VAC50-20-177), shall be signed and  
309 sealed by a licensed professional engineer.

310 C. For determining the hazard potential classification, a minimum of the following shall  
311 be provided to the Department:

312 1. A sunny-day dam break analysis utilizing the volume retained at the normal or typical  
313 water surface elevation of the impounding structure;

314 2. A dam break analysis utilizing a probable maximum flood with a dam failure; and

315 3. A dam break analysis utilizing a probable maximum flood without a dam failure.

316 D. To meet the requirements of Emergency Preparedness set out in 4VAC50-20-177, all  
317 Low Hazard Potential impounding structures shall provide a simple map, acceptable to the  
318 Department, demonstrating the general inundation that would result from a dam failure. Such  
319 maps do not require preparation by a professional licensed engineer, however, it is preferred that  
320 the maps be prepared by a licensed professional engineer.

321 E. To meet the Emergency Action Plan requirements set out in 4VAC50-20-175, all  
322 owners of High and Significant Hazard Potential impounding structures shall provide dam break  
323 inundation map(s) representing the impacts that would occur with both a sunny-day dam failure  
324 and a spillway design flood dam failure.

325 1. The map(s) shall be developed at a scale sufficient to graphically display downstream  
326 inhabited areas and structures, roads, and other pertinent structures within the identified  
327 inundation area. In coordination with the local organization for emergency management, a list of  
328 downstream inundation zone property owners and occupants, including telephone numbers may  
329 be plotted on the map or may be provided with the map for reference during an emergency.

330 2. A note shall be included on each map to state: “Mapping of flooded areas and flood  
331 wave travel times are approximate. Timing and extent of actual inundation may differ from  
332 information presented on this map”.

333

334 **4VAC50-20-58. Local government notifications.**

335 For each certificate issued, the impounding structure owner shall send a copy of the  
336 certificate to the appropriate local government(s) with planning and zoning responsibilities. A  
337 project description and the map(s) required under 4VAC50-20-54 showing the area that could be  
338 affected by the impounding structure breach shall be submitted with the certificate. The  
339 Department will provide a standard form cover letter for forwarding the certificate copy and  
340 accompanying materials.

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**Part II: Permit Requirements**

343

**4VAC50-20-60. Required permits.**

345 A. No person or entity shall construct or begin to construct an impounding structure until  
346 the ~~board~~ Board has issued a construction permit.

347 B. No person or entity shall alter or begin to alter an existing impounding structure ~~in a~~  
348 ~~manner which would potentially affect its structural integrity~~ until the ~~board~~ Board has issued an  
349 alteration permit, ~~or in the case of an emergency, authorization obtained from the director.~~ If an  
350 owner or the owner's engineer has determined that circumstances are impacting the integrity of  
351 the impounding structure which could result in the imminent failure of the impounding structure,  
352 temporary repairs may be initiated prior to approval from the Board. The owner shall notify the  
353 Department within 24 hours of identifying the circumstances impacting the integrity of the  
354 impounding structure. The permit requirement may be waived if the director determines that the  
355 alteration of improvement will not substantially alter or affect the structural integrity of the  
356 impounding structure. Alteration does not mean normal operation and maintenance. Such  
357 emergency notification shall not relieve the owner of the need to obtain an alteration permit as  
358 soon as may be practicable, nor shall the owner take action beyond that necessary to address the  
359 emergency situation.

360 C. When the ~~board receives~~ owner submits an application to the Board for any permit to  
361 construct or alter an impounding structure, the ~~director~~ the owner shall also inform the local  
362 government of any jurisdiction or jurisdictions which might be affected by the permit  
363 application.

364 D. In evaluating construction and alteration permit applications the ~~director~~ Director shall  
365 use the ~~most current~~ design criteria and standards referenced in 4VAC50-20-320 of this chapter.

**4VAC50-20-70. Construction permits.**

366 A. Prior to preparing the complete design report for a construction permit, applicants ~~are~~  
367 ~~encouraged to seek approval from the director~~ may submit a preliminary design report to the  
368 Department to determine if the project concept is acceptable to the Department. For this purpose  
369 ~~the applicant should submit a~~ The preliminary design report should contain, at a minimum, a  
370 general description of subdivisions items 1 through 412 of subsection B of this section and  
371 subdivisions 1 and 2 of this subsection:

372 1. Proposed design criteria and a description of the size of the impounding structure,  
373 ground cover conditions, extent of current upstream development of within the watershed, and  
374 the hydraulic, hydrological and structural features, geologic conditions and the geotechnical  
375 engineering assumptions used to determine the foundations foundation, impoundment rim  
376 stability and materials to be used.

377 2. Preliminary drawings of a general nature, including cross sections, plans and profiles  
378 of the impounding structure, proposed pool levels and types of spillway(s).

379 B. An applicant for a construction permit shall submit a design report ~~on official forms.~~  
380 A form for the design report will be available from the Department (Design Report for the  
381

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383 Construction or Alteration of Virginia Regulated Impounding Structures). The design report  
384 shall be prepared in accordance with 4VAC50-20-240 and shall include the following  
385 information. The design report is a required element of a complete application for a  
386 construction permit and shall include the following information:

387 1. Project Information including a description of the proposed construction, name of the  
388 impounding structure, inventory number if available, name of the reservoir, and the purpose of  
389 the reservoir.

390 2. The proposed Hazard Potential classification in conformance with Table 1 of this  
391 chapter.

392 3. Location of the impounding structure including the City or County, number of feet or  
393 miles upstream or downstream of a highway and the highway number, name of the river or the  
394 stream, and the latitude and longitude.

395 4. Owner’s name or representative if corporation, mailing address, residential and  
396 business telephone numbers, and other means of communication.

397 5. Owner’s engineer’s name, firm, professional engineer Virginia number, mailing  
398 address, and business telephone number.

399 6. Impounding structure data including type of material (earth, concrete, masonry or  
400 other) and the following design configurations:

401 a. Top of dam (elevation);

402 b. Downstream toe – lowest (elevation);

403 c. Height of dam (feet);

404 d. Crest length – exclusive of spillway (feet);

405 e. Crest width (feet);

406 f. Upstream slope (horizontal and vertical); and

407 g. Downstream slope (horizontal and vertical).

408 7. Reservoir data including the following:

409 a. Maximum capacity (acre-feet);

410 b. Maximum pool (elevation);

411 c. Maximum pool surface area (acres);

412 d. Normal capacity (acre-feet);

413 e. Normal pool (elevation);

414 f. Normal pool surface area (acres); and

415 g. Freeboard – normal pool to top of dam (feet).

416 8. Spillway data including the type, construction material, design configuration, and  
417 invert elevation for the low level drain, the principal spillway, and the emergency spillway.

418 9. Watershed data including drainage area (square miles); type and extent of watershed  
419 development; time of concentration (hours); routing procedure; spillway design flood used and  
420 state source; design inflow hydrograph volume (acre-feet), peak inflow (cfs), and rainfall  
421 duration (hours); and freeboard during passage of the spillway design flood (feet).

422 1. A description of the impounding structure and appurtenances and a proposed  
423 classification conforming with this chapter. The description shall include a statement of the  
424 purposes for which the impoundment and impounding structure are to be used.

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425            ~~2~~10. A description of properties located in the dam break inundation zone downstream  
426 from the site of the proposed impounding structure, including the location and number of  
427 ~~residential~~ structures, buildings, roads, utilities and other property that would be endangered  
428 should the impounding structure fail.

429            ~~3~~11. ~~A statement from the governing body of the local political subdivision or other~~  
430 ~~evidence confirming that body is aware of the proposal to build an impounding structure and that~~  
431 ~~of the land use classifications applicable to the inundation zone.~~ Evidence that the local  
432 government or governments have been notified of the proposal by the owner to build an  
433 impounding structure.

434            ~~4~~12. Maps showing the location of the proposed impounding structure that include: the  
435 county or city in which the proposed impounding structure would be located, the location of  
436 roads, and access to the site, and the outline of the impoundment. Existing aerial photographs or  
437 existing topographic maps may be used for this purpose.

438            ~~5~~13. A report of the geotechnical investigations of the foundation soils, ~~or~~ bedrock, or  
439 both and of the materials to be used to construct the impounding structure.

440            ~~6~~14. Design assumptions and analyses sufficient to indicate that the impounding structure  
441 will be stable during its construction and during the life of the impounding structure under all  
442 conditions of ~~reservoir~~ impoundment operations, including rapid filling, flood surcharge, seismic  
443 loadings, and rapid drawdown of the impoundment.

444            ~~7~~15. Evaluation of the stability of the ~~reservoir~~ impoundment rim area ~~in order~~ to  
445 safeguard against ~~reservoir~~ impoundment rim slides of such magnitude as to create waves  
446 capable of overtopping the impounding structure and ~~confirmation~~ evaluation of rim stability  
447 during seismic activity.

448            ~~8~~16. Design assumptions and analyses sufficient to indicate that seepage in, around,  
449 through or under the impounding structure, foundation and abutments will be reasonably and  
450 practically controlled so that internal or external forces or results thereof will not endanger the  
451 stability and integrity of the impounding structure. The design report shall also include  
452 information on graded filter design.

453            ~~9~~17. Calculations and assumptions relative to hydraulic and structural design of the  
454 spillway or spillways and energy dissipater or dissipaters. Spillway capacity shall conform to the  
455 criteria of Table 1 and 4VAC50-20-52.

456            ~~10~~18. Provisions to ensure that the impounding structure and appurtenances will be  
457 protected against unacceptable deterioration or erosion due to freezing and thawing, wind, wave  
458 action, and rain or any combination thereof.

459            ~~11~~19. Other pertinent design data, assumptions and analyses commensurate with the  
460 nature of the particular impounding structure and specific site conditions, including when  
461 required by ~~the director~~ this chapter, a plan and profile of the dam break inundation zones.

462            ~~12. Erosion and sediment control plans to minimize soil erosion and sedimentation during~~  
463 ~~all phases of construction, operation and maintenance. Projects shall be in compliance with local~~  
464 ~~erosion and sediment control ordinances.~~

465            ~~13~~20. A description of the techniques to be used to divert stream flow during construction  
466 so as to prevent hazard to life, health and property, including a detailed plan and procedures to

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467 maintain a stable impounding structure during storm events, a drawing showing temporary  
468 diversion devices, and a description of the potential impoundment during the construction. Such  
469 diversion plans shall also be in accordance with applicable environmental laws.

470 ~~1421. A plan of for project construction monitoring and quality control testing to confirm~~  
471 ~~that construction materials and methods performance standards meet the design requirements set~~  
472 ~~forth in the specifications.~~

473 ~~15. A proposed schedule indicating construction sequence and time to completion.~~

474 ~~1622. Plans and specifications as required by 4VAC50-20-310.~~

475 ~~17. An emergency action plan on official forms and evidence that a copy of such plan has~~  
476 ~~been filed with, the local organization for emergency management and the State Department of~~  
477 ~~Emergency Management. The plan shall include a method of providing notification and warning~~  
478 ~~to persons downstream, other affected persons or property owners and local authorities in the~~  
479 ~~event of a flood hazard or the impending failure of the impounding structure.~~

480 ~~18. A proposed impoundment and impounding structure operation and maintenance plan~~  
481 ~~on official forms certified by a professional engineer. This plan shall include a safety inspection~~  
482 ~~schedule and shall place particular emphasis on operating and maintaining the impounding~~  
483 ~~structure in keeping with the project design, so as to maintain its structural integrity and safety~~  
484 ~~during both normal and abnormal conditions which may reasonably be expected to occur during~~  
485 ~~its planned life.~~

486 ~~23. Certification by the owner's engineer that the information provided pursuant to this~~  
487 ~~subsection is true and correct in their professional judgment. Such certification shall include the~~  
488 ~~engineer's signature, printed name, Virginia number, date, and the engineer's Virginia seal.~~

489 ~~24. Owners signature certifying receipt of the information provided pursuant to this~~  
490 ~~subsection.~~

491 ~~C. The director or the applicant may request a conference to facilitate review of the~~  
492 ~~applicant's proposal.~~

493 ~~C. A plan of construction is a required element of a complete permit application for a~~  
494 ~~construction permit and shall include:~~

495 ~~1. A construction sequence with milestones.~~

496 ~~2. Elements of the work plan that should be considered include, but are not limited to,~~  
497 ~~foundation and abutment treatment, stream or river diversion, excavation and material fill~~  
498 ~~processes, phased fill and compaction, testing and control procedures, construction of permanent~~  
499 ~~spillway and drainage devices.~~

500 ~~3. The erosion and sediment control plan, as approved by the local government, which~~  
501 ~~minimizes soil erosion and sedimentation during all phases of construction.~~

502 ~~4. The stormwater management plan or stormwater management facility plan, as~~  
503 ~~approved by the local government, if the impounding structure is a stormwater management best~~  
504 ~~management practice.~~

505 ~~D. The owner shall certify in writing that the operation and maintenance plan as approved~~  
506 ~~by the board will be adhered to during the life of the project except in cases of unanticipated~~  
507 ~~emergency requiring departure therefrom in order to mitigate hazard to life and property. At such~~  
508 ~~time, the owner's engineer and the director shall be notified.~~

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509 D. A Temporary Emergency Action Plan is a required element of a complete application  
510 for a construction permit and shall include:

- 511 1. A notification list of state and local emergency response agencies;  
512 2. Provisions for notification of potentially affected residences and structures;  
513 3. Construction site evacuation routes, and  
514 4. Any other special notes particular to the project.

515 ~~E. If the submission is not acceptable, the director shall inform the applicant within 60~~  
516 ~~days and shall explain what changes are required for an acceptable submission.~~

517 E. Within 120 days of receipt of a complete construction permit application the Board  
518 shall act on the application. If the application is not acceptable, the Director shall inform the  
519 applicant within 60 days of receipt and shall explain what changes are required for an acceptable  
520 application. A complete construction permit application consists of the following:

521 1. A final design report, submitted on the Department form (Design Report for the  
522 Construction or Alteration of Virginia Regulated Impounding Structures), with attachments as  
523 needed, and certified by the owner and the owner's engineer;

524 2. A plan of construction which meets the requirements of subsection C above; and

525 3. A Temporary Emergency Action Plan which meets the requirements of subsection D  
526 above.

527 ~~F. Within 120 days of receipt of an acceptable design report the board shall act on the~~  
528 ~~application.~~

529 ~~G.F.~~ Prior to and during construction the owner shall ~~notify~~ provide the ~~director~~ Director  
530 of ~~with~~ any proposed changes from the approved design, plans, specifications, or ~~operation and~~  
531 ~~maintenance~~ plan of construction. Approval shall be obtained from the ~~director~~ Director prior to  
532 the construction or installation of any changes that will affect the ~~stability~~ integrity or  
533 impounding capacity of the impounding structure.

534 ~~H.G.~~ The construction permit shall be valid for the ~~plan of construction schedule~~  
535 specified in the ~~approved design report~~ construction permit application. The construction  
536 schedule may be amended by the director for good cause at the request of the applicant.

537 ~~I.H.~~ Construction must commence within two years after the permit is issued. If  
538 construction does not commence within two years after the permit is issued, the permit shall  
539 expire, except that the applicant may petition the ~~board~~ Board for extension of the two-year  
540 period and the ~~board~~ Board may extend such period for good cause ~~with an appropriately~~  
541 updated plan of construction and temporary emergency action plan.

542 ~~J.I.~~ The director may revoke a construction permit if any of the permit terms are violated,  
543 or if construction is conducted in a manner hazardous to downstream life or property. The  
544 director may order the owner to eliminate such hazardous conditions within a period of time  
545 limited by the order. Such corrective measures shall be at the owner's expense. The applicant  
546 may petition the board to reissue the permit with such modifications as the board determines to  
547 be necessary. The Board, the Director, or both may take any necessary action consistent with the  
548 Dam Safety Act (§10.1-604 et seq. of the Code of Virginia) if any terms of this section or of the  
549 permit are violated, if the activities of the owner are not in accordance with the approved plans

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550 and specifications, if construction is conducted in a manner hazardous to downstream life or  
551 property, or for other cause as described in the Act.

552 ~~K. The owner's professional engineer shall advise the director when the impounding~~  
553 ~~structure may safely impound water. The director shall acknowledge this statement within 10~~  
554 ~~days after which the impoundment may be filled under the engineer's supervision. The director's~~  
555 ~~acknowledgement shall act as a temporary operation and maintenance certificate until an~~  
556 ~~operation and maintenance certificate has been applied for and issued in accordance with~~  
557 ~~4VAC50-20-110.~~

558 J. Within 90 days after completion of the construction of an impounding structure, the  
559 owner shall submit:

560 1. A complete set of record drawings signed and sealed by a licensed professional  
561 engineer and signed by the owner:

562 2. A complete Record Report (Record Report for Virginia Regulated Impounding  
563 Structures) signed and sealed by a licensed professional engineer and signed by the owner that  
564 includes:

565 a. Project information including the name and inventory number of the structure, name of  
566 the reservoir, and whether the report is associated with a new or old structure;

567 b. Location of the impounding structure including the City or County, number of feet or  
568 miles upstream or downstream of a highway and the highway number, name of the river or the  
569 stream, and the latitude and longitude;

570 c. Owner's name or representative if corporation, mailing address, residential and  
571 business telephone numbers, and other means of communication;

572 d. Information on the design report, including who it was prepared by, the date of design  
573 report preparation, whether it was for new construction or for an alteration, and the permit  
574 issuance date;

575 e. Owner's engineer's name, firm, professional engineer Virginia number, mailing  
576 address, and business telephone number;

577 f. Impounding structure data including type of material (earth, concrete, masonry or  
578 other) and the following configurations:

579 (1). Top of dam (elevation);

580 (2). Downstream toe – lowest (elevation);

581 (3). Height of dam (feet);

582 (4). Crest length – exclusive of spillway (feet);

583 (5). Crest width (feet);

584 (6). Upstream slope (horizontal and vertical); and

585 (7). Downstream slope (horizontal and vertical).

586 g. Reservoir data including the following:

587 (1). Maximum capacity (acre-feet);

588 (2). Maximum pool (elevation);

589 (3). Maximum pool surface area (acres);

590 (4). Normal capacity (acre-feet);

591 (5). Normal pool (elevation);

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- 592 (6). Normal pool surface area (acres); and  
593 (7). Freeboard – normal pool to top of dam (feet).  
594 h. Spillway data including the type, construction material, design configuration, and  
595 invert elevation for the low level drain, the principal spillway, and the emergency spillway; a  
596 description of the low level drain and principal spillway including dimensions, trash guard  
597 information, and orientation of intake and discharge to dam if looking downstream; and a  
598 description of the emergency spillway including dimensions and orientation to dam if looking  
599 downstream;  
600 i. Watershed data including drainage area (square miles); type and extent of watershed  
601 development; time of concentration (hours); routing procedure; spillway design flood used and  
602 state source; design inflow hydrograph volume (acre-feet), peak inflow (cfs), and rainfall  
603 duration (hours); freeboard during passage of the spillway design flood (feet); and confirmation  
604 as to whether the impounding structure has ever been overtopped;  
605 j. Impounding structure history including the date construction was completed, who it  
606 was designed by and the date, who it was built by and the date, who performed inspections and  
607 dates, description of repairs, and confirmation as to whether the impounding structure has ever  
608 been overtopped;  
609 k. A narrative describing the impounding structure procedures for operation,  
610 maintenance, filling, emergency action plan implementation, and structure evaluation;  
611 l. A narrative describing the hydraulic and hydrologic data on the spillway design flood,  
612 hydrologic records, flood experience, flood potential, reservoir regulation, and comments or  
613 recommendations regarding these attributes;  
614 m. A narrative describing stability of the foundation and abutments, embankment  
615 materials, and a written evaluation of each;  
616 n. A complete set of record drawings signed and sealed by a licensed professional  
617 engineer and signed by the owner;  
618 o. Certification by the owner’s engineer that the information provided pursuant to  
619 subsection J2 is true and correct in their professional judgment. Such certification shall include  
620 the engineer’s signature, printed name, Virginia number, date, and the engineer’s Virginia seal;  
621 and  
622 p. Owners signature certifying receipt of the information provided pursuant to subsection  
623 J2.  
624 3. Certification from the licensed professional engineer who has monitored construction  
625 of the impounding structure during construction that, to the best of the engineer’s judgment,  
626 knowledge and belief, the impounding structure and its appurtenances were constructed in  
627 conformance with the plans, specifications, drawings and other requirements approved by the  
628 Board;  
629 4.Operation and Maintenance Certificate Application (Operation and Maintenance  
630 Certificate Application for Virginia Regulated Impounding Structures) in accordance with  
631 4VAC50-20-105; and  
632 5. Emergency Action Plan or Emergency Preparedness Plan in accordance with 4VAC50-  
633 20-175 or 4VAC50-20-177.



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634 K. Upon completion of construction, the impoundment may be filled upon Board  
635 issuance of an Operation and Maintenance Certificate.

636

637 **4VAC50-20-80. Alterations permits.**

638 ~~A. Application for a permit to alter an impounding structure in ways which would~~  
639 ~~potentially affect its structural integrity shall be made on official forms. The application shall~~  
640 ~~clearly describe the proposed work with appropriately detailed plans and specifications.~~

641 ~~B.A. Alterations which would potentially affect the structural integrity of an impounding~~  
642 ~~structure include, but are not limited to, changing its the height or otherwise enlarging the dam,~~  
643 ~~increasing ~~the~~ normal pool or principal spillway elevation or physical dimensions, changing the~~  
644 ~~elevation or physical dimensions of the emergency spillway, conducting necessary repairs or~~  
645 ~~structural maintenance, or removing the impounding structure.~~

646 B. An applicant for an alteration permit shall submit a design report. A form for the  
647 design report will be available form the Department (Design Report for the Construction or  
648 Alteration of Virginia Regulated Impounding Structures). The design report shall be prepared in  
649 accordance with 4VAC50-20-240. The design report shall include, but not be limited to, the  
650 following information:

651 1. Project Information including a description and benefits of the proposed alteration,  
652 name of the impounding structure, inventory number if available, name of the reservoir, and the  
653 purpose of the reservoir.

654 2. The hazard potential classification in conformance with Table 1 of this chapter.

655 3. Location of the impounding structure including the City or County, number of feet or  
656 miles upstream or downstream of a highway and the highway number, name of the river or the  
657 stream, and the latitude and longitude.

658 4. Owner's name or representative if corporation, mailing address, residential and  
659 business telephone numbers, and other means of communication.

660 5. Owner's engineer's name, firm, professional engineer Virginia number, mailing  
661 address, and business telephone number.

662 6. Impounding structure data including type of material (earth, concrete, masonry or  
663 other) and the following configurations (note both existing and design configurations for each):

664 a. Top of dam (elevation);

665 b. Downstream toe – lowest (elevation);

666 c. Height of dam (feet);

667 d. Crest length – exclusive of spillway (feet);

668 e. Crest width (feet);

669 f. Upstream slope (horizontal and vertical); and

670 g. Downstream slope (horizontal and vertical).

671 7. Reservoir data including the following (note both existing and design configurations  
672 for each):

673 a. Maximum capacity (acre-feet);

674 b. Maximum pool (elevation);

675 c. Maximum pool surface area (acres);

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- 676 d. Normal capacity (acre-feet);  
677 e. Normal pool (elevation);  
678 f. Normal pool surface area (acres); and  
679 g. Freeboard – normal pool to top of dam (feet).  
680 8. Spillway data including the type, construction material, design configuration, and  
681 invert elevation for the low level drain, the principal spillway, and the emergency spillway.  
682 9. Watershed data including drainage area (square miles); type and extent of watershed  
683 development; time of concentration (hours); routing procedure; spillway design flood used and  
684 state source; design inflow hydrograph volume (acre-feet), peak inflow (cfs), and rainfall  
685 duration (hours); and freeboard during passage of the spillway design flood (feet).  
686 10. Evidence that the local government has been notified of the alteration and repair plan.  
687 11. Plans and specifications as required by 4VAC50-20-310. The plan view of the dam  
688 site should represent all significant structures and improvements that illustrate the location of all  
689 proposed work.  
690 12. A report of the geotechnical investigations of the foundation soils, bedrock, or both in  
691 the areas affected by the proposed alterations and of the materials to be used to alter the  
692 impounding structure.  
693 13. Design assumptions and analyses sufficient to indicate that the impounding structure  
694 will be stable during the alteration of the impounding structure under all conditions of reservoir  
695 operations.  
696 14. Calculations and assumptions relative to design of the improved spillway or  
697 spillways, if applicable.  
698 15. Provisions to ensure that the impounding structure and appurtenances during the  
699 alteration will be protected against unacceptable deterioration or erosion due to freezing and  
700 thawing, wind, wave action and rain or any combination thereof.  
701 16. Other pertinent design data, assumptions and analyses commensurate with the nature  
702 of the particular impounding structure and specific site conditions, including when required by  
703 this chapter, a plan and profile of the dam break inundation zones.  
704 17. If applicable, a description of the techniques to be used to divert stream flow during  
705 alteration work so as to prevent hazard to life, health and property, including a detailed plan and  
706 procedures to maintain a stable impounding structure during storm events, a drawing showing  
707 temporary diversion devices, and a description of the potential impoundment during the  
708 alteration. Such diversion plans shall be in accordance with the applicable environmental laws.  
709 18. A plan for project construction monitoring and quality control testing to confirm that  
710 materials used in the alteration work and that performance standards meet the design  
711 requirements set forth in the specifications.  
712 19. Certification by the owner’s engineer that the information provided pursuant to this  
713 subsection is true and correct in their professional judgment. Such certification shall include the  
714 engineer’s signature, printed name, Virginia number, date, and the engineer’s Virginia seal.  
715 20. Owners signature certifying receipt of the information provided pursuant to this  
716 subsection.

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717 ~~C. Where feasible an application for an alteration permit shall also include plans and~~  
718 ~~specifications for a device to allow for draining the impoundment if such does not exist.~~

719 C. A plan of construction is a required element of complete permit application and shall  
720 include:

721 1. A construction sequence with milestones.

722 2. Elements of the work plan that should be considered include, but are not limited to,  
723 foundation and abutment treatment, excavation and material fill processes, phased fill and  
724 compaction, testing and control procedures, construction of permanent spillway and drainage  
725 devices, if applicable.

726 3. The erosion and sediment control plan, as approved by the local government, which  
727 minimizes soil erosion and sedimentation during all phases of construction.

728 ~~D. If the submission is not acceptable, the director shall inform the applicant within 60~~  
729 ~~days and shall explain what changes are required for an acceptable submission.~~

730 D. Within 120 days of receipt of a complete alteration permit application, the Board shall  
731 act on the application. If the application is not acceptable, the Director shall inform the applicant  
732 within 60 days of receipt and shall explain what changes are required for an acceptable  
733 application. A complete alteration permit application consists of the following:

734 1. A final design report with attachments as needed, and certified by the owner;

735 2. A plan of construction which meets the requirements of subsection C above,

736 3. Any necessary interim provisions to the current Emergency Action Plan or Emergency  
737 Preparedness Plan. Interim provisions shall be submitted to the local organization for emergency  
738 management, the Virginia Department of Emergency Management, and the Department; and

739 4. If the owner is requesting the deregulation of an impounding structure, the application  
740 shall specify whether the impounding structure is to be removed so that the impounding structure  
741 is incapable of storing water, either temporarily or permanently; or whether the impounding  
742 structure is to be altered in such a manner that either the height or storage capacity of the  
743 impounding structure causes the impounding structure to be of less than regulated size.

744 ~~E. Within 120 days of receipt of an acceptable application, the board shall act on the~~  
745 ~~application.~~

746 E. During the alteration work, the owner shall provide the Director with any proposed  
747 changes from the approved design, plans, specifications, or a plan of construction. Approval  
748 shall be obtained from the Director prior to the alteration or installation of any changes that will  
749 affect the integrity or impounding capacity of the impounding structure.

750 F. The Alteration Permit shall be valid for the construction sequence with milestones  
751 specified in the approved alteration permit application.

752 G. Work identified in the Alteration Permit must commence within the time frame  
753 identified in the Alteration Permit. If work does not commence within the prescribed time  
754 frame, the permit shall expire, except that the applicant may petition the Board for extension of  
755 the prescribed time frame and the Board may extend such period for good cause with an updated  
756 construction sequence with milestones.

757 H. The Board, the Director, or both may take any necessary action consistent with the  
758 Dam Safety Act (§10.1-604 et seq. of the Code of Virginia) if any terms of this section or of the

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759 permit are violated, if the activities of the owner are not in accordance with the approved plans  
760 and specifications, if the alteration is conducted in a manner hazardous to downstream life or  
761 property, or for other cause as described in the Act.

762 I. Within 90 days after completion of the alteration of an impounding structure, the owner  
763 shall submit a complete Record Report. A form for the Record Report will be available from the  
764 Department (Record Report for Virginia Regulated Impounding Structures). The Record Report  
765 signed and sealed by a licensed professional engineer and signed by the owner to the Department  
766 indicating the modifications made to the structural features of the impounding structure. This  
767 Report is not required when the alteration permit has been issued for the removal of an  
768 impounding structure. The Record Report shall include the following:

769 a. Project information including the name and inventory number of the structure, name of  
770 the reservoir, and whether the report is associated with a new or old structure;

771 b. Location of the impounding structure including the City or County, number of feet or  
772 miles upstream or downstream of a highway and the highway number, name of the river or the  
773 stream, and the latitude and longitude;

774 c. Owner's name or representative if corporation, mailing address, residential and  
775 business telephone numbers, and other means of communication;

776 d. Information on the design report, including who it was prepared by, the date of design  
777 report preparation, whether it was for new construction or for an alteration, and the permit  
778 issuance date;

779 e. Owner's engineer's name, firm, professional engineer Virginia number, mailing  
780 address, and business telephone number;

781 f. Impounding structure data including type of material (earth, concrete, masonry or  
782 other) and the following configurations:

783 (1). Top of dam (elevation);

784 (2). Downstream toe – lowest (elevation);

785 (3). Height of dam (feet);

786 (4). Crest length – exclusive of spillway (feet);

787 (5). Crest width (feet);

788 (6). Upstream slope (horizontal and vertical); and

789 (7). Downstream slope (horizontal and vertical).

790 g. Reservoir data including the following:

791 (1). Maximum capacity (acre-feet);

792 (2). Maximum pool (elevation);

793 (3). Maximum pool surface area (acres);

794 (4). Normal capacity (acre-feet);

795 (5). Normal pool (elevation);

796 (6). Normal pool surface area (acres); and

797 (7). Freeboard – normal pool to top of dam (feet).

798 h. Spillway data including the type, construction material, design configuration, and  
799 invert elevation for the low level drain, the principal spillway, and the emergency spillway; a  
800 description of the low level drain and principal spillway including dimensions, trash guard

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- 801 information, and orientation of intake and discharge to dam if looking downstream; and a  
802 description of the emergency spillway including dimensions and orientation to dam if looking  
803 downstream;  
804 i. Watershed data including drainage area (square miles); type and extent of watershed  
805 development; time of concentration (hours); routing procedure; spillway design flood used and  
806 state source; design inflow hydrograph volume (acre-feet), peak inflow (cfs), and rainfall  
807 duration (hours); and freeboard during passage of the spillway design flood (feet);  
808 j. Impounding structure history including the date construction was completed, who it  
809 was designed by and the date, who it was built by and the date, who performed inspections and  
810 dates, description of repairs, and confirmation as to whether the impounding structure has ever  
811 been overtopped;  
812 k. A narrative describing the impounding structure procedures for operation,  
813 maintenance, emergency action plan implementation, and structure evaluation;  
814 l. A narrative describing the hydraulic and hydrologic data on the spillway design flood,  
815 hydrologic records, flood experience, flood potential, reservoir regulation, and comments or  
816 recommendations regarding these attributes;  
817 m. A narrative describing stability of the foundation and abutments, embankment  
818 materials, and a written evaluation of each;  
819 n. A complete set of record drawings signed and sealed by a licensed professional  
820 engineer and signed by the owner;  
821 o. Certification by the owner’s engineer that the information provided pursuant to  
822 subsection I2 is true and correct in their professional judgment. Such certification shall include  
823 the engineer’s signature, printed name, Virginia number, date, and the engineer’s Virginia seal;  
824 and  
825 p. Owners signature certifying receipt of the information provided pursuant to subsection  
826 I2.  
827 J. For altered impounding structures, a certification from a licensed professional engineer  
828 who has monitored the alteration of the impounding structure that, to the best of the engineer’s  
829 judgment, knowledge, and belief, the impounding structure and its appurtenances were altered in  
830 conformance with the plans, specifications, drawings and other requirements approved by the  
831 Board.

832  
833 **4VAC50-20-90. Transfer of permits.**

- 834 A. Prior to the transfer of ownership of a permitted impounding structure the permittee  
835 shall notify the ~~director~~ Director in writing and the new owner shall file a ~~transfer application~~  
836 transfer notification with the Department ~~on official forms~~. A form for the transfer notification  
837 will be available from the Department (Transfer of Impounding Structure Notification from Past  
838 Owner to New Owner). The new owner shall amend the existing permit application as necessary  
839 and shall certify to the ~~director~~ Director that he is aware of and will comply with all of the  
840 requirements and conditions of the permit.  
841 B. The Transfer Notification shall include the following required information:

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- 842 1. Project information including the name and inventory number of the structure, name of  
843 the reservoir, and impoundment hazard classification;  
844 2. Location of the impounding structure including the City or County, number of feet or  
845 miles upstream or downstream of a highway and the highway number, name of the river or the  
846 stream, and the latitude and longitude;  
847 3. Type of certificates and permits to be transferred including effective date and  
848 expiration date of all certificates and permits;  
849 4. Past owner’s name, mailing address, and residential and business telephone numbers;  
850 5. New owner’s name, mailing address, and residential and business telephone numbers;  
851 6. Request to transfer certification statement signed and dated by the past owner;  
852 7. Certification of compliance with permit or certificate with all said terms and conditions  
853 signed and dated by the new owner; and  
854 8. Contact information updates for Emergency Action Plan or Emergency Preparedness  
855 Plan provided by the new owner. Such updates shall include the name, mailing address, and  
856 residential and business telephone numbers for the dam owner, dam operator, rainfall and staff  
857 gage observer, and alternate observer.  
858

**Part III: Certificate Requirements**

**4VAC50-20-100. Repealed**

**~~4VAC50-20-100. Regular Operation and Maintenance Certificates.~~**

- 864 ~~A. A Class I Operation and Maintenance Certificate is required for a Class I Hazard~~  
865 ~~potential impounding structure. The certificate shall be for a term of six years. It shall be~~  
866 ~~updated based upon the filing of a new reinspection report certified by a professional engineer~~  
867 ~~every two years.~~  
868 ~~B. A Class II Operation and Maintenance Certificate is required for a Class II Hazard~~  
869 ~~potential impounding structure. The certificate shall be for a term of six years. It shall be~~  
870 ~~updated based upon the filing of a new reinspection report certified by a professional engineer~~  
871 ~~every three years.~~  
872 ~~C. A Class III Operation and Maintenance Certificate is required for a Class III Hazard~~  
873 ~~potential impounding structure. The certificate shall be for a term of six years.~~  
874 ~~D. The owner of a Class I, II or III impounding structure shall provide the director an~~  
875 ~~annual owner's inspection report on official forms in years when no professional reinspection is~~  
876 ~~required and may be done by the owner or his representative.~~  
877 ~~E. If an Operation and Maintenance Certificate is not updated as required, the board shall~~  
878 ~~take appropriate enforcement action.~~  
879 ~~F. The owner of a Class I, II or III impounding structure shall apply for the renewal of the~~  
880 ~~six year operation and maintenance certificate 90 days prior to its expiration in accordance with~~  
881 ~~4VAC50-20-120 of this chapter.~~

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882 ~~G. A Class IV impounding structure will not require an operation and maintenance~~  
883 ~~certificate. An inventory report is to be prepared as provided in 4VAC50-20-120 B and filed by~~  
884 ~~the owner on a six-year interval, and an owners inspection report filed annually.~~

885 ~~H. The owner of any impounding structure, regardless of its hazard classification, shall~~  
886 ~~notify the board immediately of any change in either cultural features downstream from the~~  
887 ~~impounding structure or of any change in the use of the area downstream that would present~~  
888 ~~hazard to life or property in the event of failure.~~  
889

890 **4VAC50-20-105. Regular Operation and Maintenance Certificates.**

891 A. A Regular Operation and Maintenance Certificate is required for an impounding  
892 structure. Such six-year certificates shall include the following based on hazard classification:

- 893 1. High Hazard Potential Regular Operation and Maintenance Certificate;  
894 2. Significant Hazard Potential Regular Operation and Maintenance Certificate; or  
895 3. Low Hazard Potential Regular Operation and Maintenance Certificate.

896 B. The owner of an impounding structure shall apply for the renewal of the six-year  
897 Regular Operation and Maintenance Certificate 90 days prior to its expiration. If a Regular  
898 Operation and Maintenance Certificate is not renewed as required, the Board shall take  
899 appropriate enforcement action.

900 C. Any owner of an impounding structure that does not have a Regular Operation and  
901 Maintenance Certificate or any owner renewing a Regular Operation and Maintenance  
902 Certificate shall file an Operation and Maintenance Certificate Application. A form for the  
903 Application will be available from the Department (Operation and Maintenance Certificate  
904 Application for Virginia Regulated Impounding Structures). Such application shall be signed by  
905 the owner and signed and sealed by a licensed professional engineer. The following information  
906 shall be submitted on or with the application:

907 1. The application shall include the following required information:

908 a. The name of structure and inventory number;

909 b. The proposed hazard potential classification;

910 c. Owner's name or representative if corporation, mailing address, residential and  
911 business telephone numbers, and other means of communication;

912 d. An operating plan and schedule including a narrative on the operation of control gates  
913 and spillways and the impoundment drain;

914 e. For earthen embankment dams, a maintenance plan and schedule for the embankment,  
915 principal spillway, emergency spillway, low-level outlet, impoundment area, downstream  
916 channel, and staff gages;

917 f. For concrete dams, a maintenance plan and schedule for the upstream face, downstream  
918 face, crest of dam, galleries, tunnels, abutments, spillways, gates and outlets, and staff gages;

919 g. An inspection schedule for operator inspection, maintenance inspection, technical  
920 safety inspection, and overtopping situations;

921 f. A schedule including the rainfall amounts, emergency spillway flow levels or storm  
922 event that initiates the Emergency Action or Preparedness Plan and the frequency of  
923 observations;

**PROPOSED REGULATION FOR VIRGINIA SOIL AND WATER CONSERVATION BOARD CONSIDERATION – NOT APPROVED**

924 g. A statement as to whether or not the current hazard potential classification for the dam  
925 is appropriate and whether or not additional work is needed to make an appropriate hazard  
926 potential designation;

927 h. For newly constructed or recently altered impounding structures, a certification from a  
928 licensed professional engineer who has monitored the construction or alteration of the  
929 impounding structure that, to the best of the engineer’s judgment, knowledge, and belief, the  
930 impounding structure and its appurtenances were constructed or altered in conformance with the  
931 plans, specifications, drawings and other requirements approved by the Board;

932 i. Certification by the owner’s engineer that the Operation and Maintenance Certificate  
933 Application information provided pursuant to subsection C1 is true and correct in their  
934 professional judgment. Such certification shall include the engineer’s signature, printed name,  
935 Virginia number, date, and the engineer’s Virginia seal; and

936 j. Owners signature certifying the Operation and Maintenance Certificate Application  
937 information provided pursuant to subsection C1 and that the operation and maintenance plan and  
938 schedule shall be conducted in accordance with this chapter.

939 2. An Inspection Report (Annual Inspection Report for Virginia Regulated Impounding  
940 Structures) in accordance with subsection E;

941 3. An Emergency Action Plan in accordance with 4VAC50-20-175 or an Emergency  
942 Preparedness Plan in accordance with 4VAC50-20-177 and evidence that the required copies of  
943 such plan have been submitted to the local organization for emergency management and the  
944 State Department of Emergency Management; and

945 4. Any additional analysis determined necessary by the Director, the Board or the  
946 owner’s engineer to address public safety concerns. Such additional analysis may include, but  
947 not be limited to, seismic stability, earthen spillway integrity, adequate freeboard allowance,  
948 stability assessment of the impoundment’s foundation, potential liquefaction of the embankment,  
949 overturning or sliding of a concrete structure and other structural stress issues.

950 D. If the Operation and Maintenance Certificate Application submittal is found to be not  
951 complete, the Director shall inform the applicant within 30 days and shall explain what changes  
952 are required for an acceptable submission. Within 60 days of receipt of a complete application  
953 the Board shall act upon the application. Upon finding that the impounding structure as currently  
954 operating is in compliance with this chapter, the Board shall issue a Regular Operation and  
955 Maintenance Certificate. Should the Board find that the impounding structure as currently  
956 operating is not in compliance with this chapter, the Board may deny the permit application or  
957 issue a Conditional Operation and Maintenance Certificate in accordance with 4VAC50-20-150.

958 E. Inspections shall be performed on an impounding structure annually.

959 1. Inspection Reports (Annual Inspection Report for Virginia Regulated Impounding  
960 Structures) signed and sealed by a licensed professional engineer shall be submitted to the  
961 Department in accordance with the following schedule:

962 a. For a High Hazard Potential impounding structure, every two years

963 b. For a Significant Hazard Potential impounding structure, every three years

964 c. For a Low Hazard Potential impounding structure, every six years.



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BOARD CONSIDERATION – NOT APPROVED**

- 965 In years when an Inspection Report signed and sealed by a licensed professional engineer  
966 is not required, an owner shall submit the Annual Inspection Report for Virginia Regulated  
967 Impounding Structures.
- 968 2. The Inspection Report shall include the following required information:
- 969 a. Project Information including the name and inventory number of structure, name of the  
970 reservoir, and purpose of the reservoir;
- 971 b. City or County where the impounding structure is located;
- 972 c. Owner's name or representative if corporation, mailing address, residential and  
973 business telephone numbers, and other means of communication;
- 974 d. Owner's engineer's name, firm, professional engineer Virginia number, mailing  
975 address, and business telephone number;
- 976 e. Inspection observation of the impounding structure including the following:
- 977 (1) Earthen embankment information including any embankment alterations; erosion;  
978 settlement, misalignments or cracks; seepage and seepage flow rate and location;
- 979 (2) Upstream slope information including notes on woody vegetation removed, rodent  
980 burrows discovered, and remedial work performed;
- 981 (3) Intake structure information including notes on deterioration of concrete structures,  
982 exposure of rebar reinforcement, need to repair or replace trash rack, any problems with debris in  
983 the reservoir, and whether the drawdown valve operated;
- 984 (4) Abutment contacts including notes on seepage and seepage flow rate and location;
- 985 (5) Earthen emergency spillway including notes on obstructions to flow and plans to  
986 correct, rodent burrows discovered, and deterioration in the approach or discharge channel;
- 987 (6) Concrete emergency spillway including notes on the deterioration of the concrete,  
988 exposure of rebar reinforcement, any leakage below concrete spillway, and obstructions to flow  
989 and plans to correct;
- 990 (7) Downstream slope information including notes on woody vegetation removed, rodent  
991 burrows discovered, whether seepage drains are working, and any seepage or wet areas;
- 992 (8) Outlet pipe information including notes on any water flowing outside of discharge  
993 pipe through the dam and a description of any reflection or damage to the pipe;
- 994 (9) Stilling basin information including notes on the deterioration of the concrete,  
995 exposure of rebar reinforcement, deterioration of the earthen basin slopes, repairs made, and any  
996 obstruction to flow;
- 997 (10) Gates information including notes on gate malfunctions or repairs, corrosion or  
998 damage, and whether any gates were operated and if so how often and to what extreme;
- 999 (11) Reservoir information including notes on new developments upstream of the dam,  
1000 slides or erosion of lake banks, and general comments to include silt, algae, or other influence  
1001 factors;
- 1002 (12) Instruments information including any reading of instruments and any installation of  
1003 new instruments; and
- 1004 (13) General information including notes on new development in the downstream  
1005 floodplain that would impact hazard classification, the maximum stormwater discharge or peak

**PROPOSED REGULATION FOR VIRGINIA SOIL AND WATER CONSERVATION BOARD CONSIDERATION – NOT APPROVED**

1006 elevation during the previous year, whether general maintenance was performed and when, and  
1007 actions that need to be completed before the next inspection.

1008 f. Evaluation rating of the dam and appurtenances (excellent, good, or poor), general  
1009 comments, and recommendations;

1010 g. Certification by the owner and date of inspection; and

1011 h. Certification and seal by the owner’s engineer and date of inspection, as applicable.

1012 F. The owner of an impounding structure shall notify the Department immediately of any  
1013 change in the use of the area downstream that would impose hazard to life or property in the  
1014 event of failure.

1015

1016 **4VAC50-20-110. Repealed**

1017

1018 **~~4VAC50-20-110. Operation and maintenance certificate Maintenance Certificate for newly~~**  
1019 **~~constructed impounding structures.~~**

1020 ~~A. Within 180 days after completion of the construction of an impounding structure, the~~  
1021 ~~owner shall submit:~~

1022 ~~1. A complete set of as-built drawings certified by a professional engineer and an as-built~~  
1023 ~~report on official forms.~~

1024 ~~2. A copy of a certificate from the professional engineer who has inspected the~~  
1025 ~~impounding structure during construction certifying that, to the best of his judgment, knowledge~~  
1026 ~~and belief, the impounding structure and its appurtenances were constructed in conformance with~~  
1027 ~~the plans, specifications, drawings and other requirements approved by the board.~~

1028 ~~3. A copy of the operation and maintenance plan and emergency action plan submitted~~  
1029 ~~with the design report including any changes required by the director.~~

1030 ~~B. If the director finds that the operation and maintenance plan or emergency action plan~~  
1031 ~~is deficient, he shall return it to the owner within 60 days with suggestions for revision.~~

1032 ~~C. Within 60 days of receipt of the items listed in subsection A above, if the board finds~~  
1033 ~~that adequate provision has been made for the safe operation and maintenance of the impounding~~  
1034 ~~structure, the board shall issue an operation and maintenance certificate.~~

1035

1036 **4VAC50-20-120. Repealed.**

1037

1038 **~~4VAC50-20-120. Operation and maintenance certificates for existing impounding~~**  
1039 **~~structures.~~**

1040 ~~A. Any owner of an impounding structure other than a Class IV impounding structure~~  
1041 ~~which has already filed an inventory report that does not have an operation and maintenance~~  
1042 ~~certificate or any owner renewing an operation and maintenance certificate shall file an~~  
1043 ~~application with the board.~~

1044 ~~B. The application for an operation and maintenance certificate shall be on official forms~~  
1045 ~~and shall include:~~

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1046 1. ~~A reinspection report for Class I and II impounding structures. The reinspection report~~  
1047 ~~shall include an update of conditions of the impounding structure based on a previous safety~~  
1048 ~~inspection as required by the board, a previous reinspection report or an as-built report.~~

1049 2. ~~An inventory report for Class III impounding structures. The inventory report shall~~  
1050 ~~include:~~

1051 a. ~~The name and location of the impounding structure and the name of the owner.~~

1052 b. ~~The description and dimensions of the impounding structure, the spillways, the~~  
1053 ~~reservoir and the drainage area.~~

1054 c. ~~The history of the impounding structure which shall include the design, construction,~~  
1055 ~~repairs, inspections and whether the structure has been overtopped.~~

1056 d. ~~Observations of the condition of the impounding structure, reservoir, and upstream and~~  
1057 ~~downstream areas.~~

1058 e. ~~Any changes in the impounding structure, reservoir, and upstream and downstream~~  
1059 ~~areas.~~

1060 f. ~~Recommendations for remedial work.~~

1061 3. ~~An impoundment and impounding structure operation and maintenance plan certified~~  
1062 ~~by a professional engineer. This plan shall place particular emphasis on operating and~~  
1063 ~~maintaining the impounding structure in keeping with the project design in such manner as to~~  
1064 ~~maintain its structural integrity and safety during both normal and abnormal conditions which~~  
1065 ~~may reasonably be expected to occur during its planned life. The safety inspection report~~  
1066 ~~required by the board should be sufficient to serve as the basis for the operation and maintenance~~  
1067 ~~plan for a Class I and II impounding structure. For a Class III impounding structure, the~~  
1068 ~~operation and maintenance plan shall be based on the data provided in the inventory report.~~

1069 4. ~~An emergency action plan and evidence that a copy of such plan has been filed with~~  
1070 ~~the local organization for emergency management and the State Department of Emergency~~  
1071 ~~Management. The plan shall include a method of providing notification and warning to persons~~  
1072 ~~downstream, other affected persons or property owners and local authorities in the event of a~~  
1073 ~~flood hazard or the impending failure of the impounding structure.~~

1074 C. ~~The owner shall certify in writing that the operation and maintenance plan approved~~  
1075 ~~by the board will be adhered to during the life of the project except in cases of emergency~~  
1076 ~~requiring departure therefrom in order to mitigate hazard to life and property, at which time the~~  
1077 ~~owner's engineer, and the director shall be notified.~~

1078 D. ~~If the director finds that the operation and maintenance plan or emergency action plan~~  
1079 ~~is deficient, he shall return it to the owner within 60 days with suggestions for revision.~~

1080 E. ~~Within 60 days of receipt of an acceptable application if the board finds that adequate~~  
1081 ~~provision has been made for the safe operation and maintenance of the impounding structure, the~~  
1082 ~~board shall issue an operation and maintenance certificate.~~

1083  
1084 **4VAC50-20-125. Delayed effective date for Spillway Design Flood requirements for**  
1085 **impounding structures.**

1086 A. If an impounding structure has been determined to have an adequate spillway capacity  
1087 prior to the effective date of these regulations and is currently operating under a Regular

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1088 Operation and Maintenance Certificate, but will now require spillway modifications due to  
1089 changes in these regulations, the owner shall submit to the Board an Alteration Permit  
1090 Application in accordance with 4VAC 50-20-80 to address spillway capacity at the time of the  
1091 expiration of their Regular Operation and Maintenance Certificate or within 3 years of the  
1092 effective date of these regulations, whichever is later. The Alteration Permit Application shall  
1093 contain a construction sequence with milestones for completing the necessary improvements  
1094 within 5 years of Alteration Permit issuance. The Board may approve an extension of the  
1095 prescribed time frame for good cause. Should the owner be able to demonstrate that no spillway  
1096 capacity change is necessary, the impounding structure may be found to be in compliance with  
1097 this chapter.

1098 B. In accordance with 4VAC50-20-105, the owner shall submit the Operation and  
1099 Maintenance Certificate Application (Operation and Maintenance Certificate Application for  
1100 Virginia Regulated Impounding Structures), the Emergency Action Plan or Emergency  
1101 Preparedness Plan, and the Inspection Report (Annual Inspection Report for Virginia Regulated  
1102 Impounding Structures) 90 days prior to the expiration of the Regular Operation and  
1103 Maintenance Certificate.

1104 C. If circumstances warrant more immediate repairs to the impounding structure, the  
1105 Board may direct alterations to the spillway to be completed sooner.

1106 D. During this delay period, owners are required to address other deficiencies that may  
1107 exist that are not related to the SDF.

1108  
1109 **4VAC50-20-130. Repealed.**

1110  
1111 **4VAC50-20-130. Existing impounding structures constructed prior to July 1, 1982.**

1112 ~~A. Many existing impoundment structures were designed and constructed prior to the~~  
1113 ~~enactment of the Dam Safety Act, and may not satisfy current criteria for new construction. The~~  
1114 ~~board may issue an operation and maintenance certificate for such structures provided that:~~

1115 ~~1. Operation and maintenance is determined by the director to be satisfactory and up to~~  
1116 ~~date;~~

1117 ~~2. Annual owner's inspection reports have been filed with and are considered satisfactory~~  
1118 ~~by the director;~~

1119 ~~3. The applicant proves in accordance with the current design procedures and references~~  
1120 ~~of 4VAC50-20-320 to the satisfaction of the board that the impounding structure as designed,~~  
1121 ~~constructed, operated and maintained does not pose an unreasonable hazard to life and property;~~  
1122 ~~and~~

1123 ~~4. The owner satisfies all special requirements imposed by the board.~~

1124 ~~B. When appropriate with existing impounding structures only, the spillway design flood~~  
1125 ~~requirement may be reduced by the board to the spillway discharge at which dam failure will not~~  
1126 ~~significantly increase the downstream hazard existing just prior to dam failure provided that the~~  
1127 ~~conditions of 4VAC50-20-130 A have been met.~~

1128  
1129 **4VAC50-20-140. Repealed.**

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~~**4VAC50-20-140. Existing impounding structures constructed after July 1, 1982.**~~

~~The board may issue an operation and maintenance certificate for an impounding structure having a construction permit issued after July 1, 1982, and shall not require upgrading to meet new more stringent criteria unless the board determines that the new criteria must be applied to prevent an unreasonable hazard to life or property.~~

**4VAC50-20-150. Conditional operation and maintenance certificate.**

A. During the review of any ~~operation~~ Operation and ~~maintenance~~ Maintenance Certificate application Application (Operation and Maintenance Certificate Application for Virginia Regulated Impounding Structures) completed in accordance with 4VAC50-20-105 should the ~~director~~ Director determine that the impounding structure has non-imminent deficiencies of a ~~nonimminent danger~~ category, the ~~director~~ Director may recommend that the ~~board~~ Board issue a ~~conditional~~ Conditional-operation Operation and ~~maintenance~~ Maintenance certificate Certificate.

B. The ~~Conditional-operation~~ Operation and ~~maintenance~~ Maintenance certificate Certificate for Class I, II and III High, Significant, and Low Hazard Potential impounding structures shall be for a maximum term of two years. This certificate will allow the owner to continue normal operation and maintenance of the impounding structure, and shall require that the owner correct the deficiencies on a schedule determined by the ~~director~~ Board.

C. A ~~conditional~~ Conditional-certificate Certificate may be ~~renewed~~ extended in accordance with the procedures of ~~4VAC50-20-120~~ 4VAC50-20-135 provided that ~~annual owner inspection~~ Inspection reports Reports (Annual Inspection Report for Virginia Regulated Impounding Structures) are on file, and the ~~board~~ Board determines that the owner is proceeding with the necessary corrective actions.

D. Once the deficiencies are corrected, the ~~board~~ Board shall issue ~~an a~~ a Regular ~~operation~~ Operation and ~~maintenance~~ Maintenance certificate Certificate based upon ~~any required revisions to the original application~~ the impounding structure's meeting the requirements of 4VAC 50-20-100 4VAC50-20-105.

**4VAC50-20-155. Extension of Operation and Maintenance Certificates.**

The Board may extend an Operation and Maintenance Certificate for impounding structures provided that the owner submits a written request justifying an extension, the amount of time needed to comply with the requirements set out in the current Operation and Maintenance Certificate, and any required fees. The owner must have demonstrated substantial and continual progress towards meeting the requirements.

**4VAC50-20-160. Additional operation and maintenance requirements.**

A. The owner of an impounding structure shall not, through action or inaction, cause or allow such structure to impound water following receipt of a written report from the owner's engineer that the impounding structure will not safely impound water.

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1171 B. In accordance with § 10.1-609.2 of the Code of Virginia, dam owners shall not permit  
1172 the growth of trees and other woody vegetation and shall remove any such vegetation from the  
1173 slopes and crest of embankments and the emergency spillway area, and within a distance of 25  
1174 feet from the toe of the embankment and abutments of the dam.

1175  
1176 **4VAC50-20-165. Agricultural Exemption.**

1177 A. Impounding structures operated primarily for agricultural purposes which are less than  
1178 25 feet in height or which create a maximum impoundment capacity smaller than 100 acre-feet  
1179 are exempt from the Impounding Structure Regulations.

1180 B. An owner covered by an agricultural exemption pursuant to §10.1-604 and 4VAC50-  
1181 20-30 may validate such exemption by submitting an Agricultural Exemption Report  
1182 (Agricultural Exemption Report for Impounding Structures). The Agricultural Exemption  
1183 Report shall include the following information:

1184 1. Project information including the name and inventory number of the structure and  
1185 name of the reservoir;

1186 2. Location of the impounding structure including the City or County, number of feet or  
1187 miles upstream or downstream of a highway and the highway number, name of the river or the  
1188 stream, and the latitude and longitude;

1189 3. Owner's name or representative if corporation, mailing address, residential and  
1190 business telephone numbers, and other means of communication;

1191 4. The impounding structure height in feet and the maximum impounding capacity in  
1192 acre-feet;

1193 5. A list of the agricultural functions for which the impoundment supplies water;

1194 6. The date of validation; and

1195 7. The owner's signature validating that the impoundment is operated primarily for  
1196 agricultural purposes and is exempt from the regulations.

1197 C. The Agricultural Exemption Report may be verified by the Department through a  
1198 possible site visit.

1199  
1200 **4VAC50-20-170. Transfer of certificates.**

1201 A. Prior to the transfer of ownership of an impounding structure the certificate holder  
1202 shall notify the ~~director~~ Director in writing and the new owner shall file a ~~transfer application~~  
1203 transfer notification with the Department ~~on official forms~~. A form for the transfer notification  
1204 will be available from the Department (Transfer of Impounding Structure Notification from Past  
1205 Owner to New Owner). The new owner may elect to continue the ~~current existing~~ operation and  
1206 maintenance certificate for the remaining term or he may apply for a new certificate in  
1207 accordance with ~~4VAC50-20-120~~ 4VAC50-20-105. If the owner elects to continue the existing  
1208 certificate, he ~~shall amend the existing certificate application as necessary~~ and shall certify to the  
1209 ~~director~~ Director that he is aware of and will comply with all of the requirements and conditions  
1210 of the certificate.

1211 B. The Transfer Notification shall include the following required information:

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- 1212 1. Project information including the name and inventory number of the structure, name of  
1213 the reservoir, and impoundment hazard classification;  
1214 2. Location of the impounding structure including the City or County, number of feet or  
1215 miles upstream or downstream of a highway and the highway number, name of the river or the  
1216 stream, and the latitude and longitude;  
1217 3. Type of certificates and permits to be transferred including effective date and  
1218 expiration date of all certificates and permits;  
1219 4. Past owner’s name, mailing address, and residential and business telephone numbers;  
1220 5. New owner’s name, mailing address, and residential and business telephone numbers;  
1221 6. Request to transfer certification statement signed and dated by the past owner;  
1222 7. Certification of compliance with permit or certificate with all said terms and conditions  
1223 signed and dated by the new owner; and  
1224 8. Contact information updates for Emergency Action Plan or Emergency Preparedness  
1225 Plan provided by the new owner. Such updates shall include the name, mailing address, and  
1226 residential and business telephone numbers for the dam owner, dam operator, rainfall and staff  
1227 gauge observer, and alternate observer.  
1228

1229 **4VAC50-20-175. Emergency Action Plan (EAP) for High and Significant Hazard Potential**  
1230 **Dams.**

- 1231 A. In order to protect life during potential emergency conditions at a dam, and to ensure  
1232 effective, timely action is taken should a dam emergency occur, an EAP shall be required for  
1233 each High and Significant Hazard Potential impounding structure. The EAP shall be coordinated  
1234 with the Department of Emergency Management in accordance with §44-146.18. The EAP  
1235 required by these regulations shall be incorporated into local and inter-jurisdictional emergency  
1236 plans pursuant to §44-146.19.  
1237 B. It is the dam owner’s responsibility to develop, maintain, exercise, and implement a  
1238 site-specific EAP.  
1239 C. An EAP shall be submitted every six years. The EAP shall be submitted with the  
1240 owner’s submittal of their Regular Operation and Maintenance Certificate application (Operation  
1241 and Maintenance Certificate Application for Virginia Regulated Impounding Structures).  
1242 D. The owner shall update the EAP immediately upon becoming aware of necessary  
1243 changes to keep the EAP workable. Should a dam be reclassified, an EAP in accordance with  
1244 this section shall be submitted.  
1245 E. A drill shall be conducted annually for each High or Significant hazard impounding  
1246 structure. To the extent practicable, the drill should include a face-to-face meeting with the local  
1247 emergency management agencies responsible for any necessary evacuations to review the EAP  
1248 and ensure the local emergency management agencies understand the actions required during an  
1249 emergency. A table-top exercise shall be conducted once every 3 years. Owners shall certify to  
1250 the Department annually that a drill, a table-top exercise, or both has been completed, provide a  
1251 critique of the exercise or exercises and any revisions or updates to the EAP or a statement that  
1252 no revisions or updates are needed.

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1253 F. Dam owners shall test existing monitoring, sensing, and warning equipment at remote  
1254 or unattended dams at least twice per year and maintain a record of such tests.

1255 G. An EAP shall contain the following seven basic elements unless otherwise specified in  
1256 this subsection.

1257 1. Notification chart - A notification chart shall be included for all classes of dams that  
1258 shows who is to be notified, by whom, and in what priority. The notification chart shall include  
1259 contact information providing 24-hour telephone coverage for all responsible parties.

1260 2. Emergency Detection, Evaluation, and Classification - The EAP shall include a  
1261 discussion of the procedures for timely and reliable detection, evaluation, and classification of  
1262 emergency situations considered to be relevant to the project setting and impounding features.  
1263 Each relevant emergency situation is to be documented to provide an appropriate course of  
1264 action based on the urgency of the situation. Where appropriate, situations should address dam  
1265 breaks that are imminent or in progress, a situation where the potential for dam failure is rapidly  
1266 developing, and a situation where the threat is slowly developing.

1267 3. Responsibilities – The EAP shall specify responsibilities for EAP-related tasks. The  
1268 EAP shall also clearly designate the responsible party for making the decision that an emergency  
1269 condition no longer exists at the dam. The EAP shall include procedures and the responsible  
1270 parties for notifying to the extent possible any known local occupants, owners, or lessees of  
1271 downstream properties potentially impacted by the dam’s failure;

1272 4. Preparedness – The EAP shall include a section that describes preparedness actions to  
1273 be taken both before and following development of emergency conditions.

1274 5. Dam Break Inundation Maps – The EAP shall include dam break inundation maps  
1275 developed in accordance with 4VAC50-20-54.

1276 6. Appendices - The appendices shall contain information that supports and supplements  
1277 the material used in the development and maintenance of the EAP such as analyses of dam break  
1278 floods; plans for training, exercising, updating, and posting the EAP; and other site-specific  
1279 concerns.

1280 7. Certification – The EAP shall include a section that is signed by all parties with  
1281 assigned responsibilities in the EAP pursuant to subsection G3, where they indicate their receipt  
1282 of the EAP. The preparer’s name, title, and contact information shall be printed in this section.  
1283 The preparer’s signature shall also be included in the certification section. The local  
1284 organization for emergency management shall provide the owner and the Department with any  
1285 deficiencies they may note.

1286 H. The development of the EAP shall be coordinated with all entities, jurisdictions, and  
1287 agencies that would be affected by a dam failure or that have statutory responsibilities for  
1288 warning, evacuation, and post-flood actions. Consultation with state and local emergency  
1289 management officials at appropriate levels of management responsible for warning and  
1290 evacuation of the public shall occur to ensure that there is awareness of their individual and  
1291 group responsibilities. The owner shall also coordinate with the local organization for  
1292 emergency management to identify properties that upon failure of the impounding structure  
1293 would result in economic impacts.



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1294 I. The EAP, or any updates to an existing EAP, shall be submitted to the Department, the  
1295 local organization for emergency management, and the State Department of Emergency  
1296 Management. Two copies shall be provided to the Department.

1297 J. The following format shall be used as necessary to address the requirements of this  
1298 section.

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1318

1319 **4VAC50-20-177. Emergency Preparedness Plan for Low Hazard Dams.**

1320 A. Low Hazard Dams shall provide information for emergency preparedness to the  
1321 Department, the local organization for emergency management and the Virginia Department of  
1322 Emergency Management. A form for the submission will be available from the Department  
1323 (Emergency Preparedness Plan for Low Hazard Virginia Regulated Impounding Structures).  
1324 The information shall include, but not be limited, to the following:

1325 1. Name of the impounding structure, inventory number, City or County, latitude, and  
1326 longitude;

1327 2. Owner's name, mailing address, residential and business telephone numbers, and other  
1328 means of communication. Contact information shall provide for 24-hour telephone contact  
1329 capability;

1330 3. Dam operator's name, mailing address, residential and business telephone numbers,  
1331 and other means of communication. Contact information shall provide for 24-hour telephone  
1332 contact capability;

1333 4. Rainfall and staff gage observer's name, mailing address, residential and business  
1334 telephone numbers, and other means of communication. Contact information shall provide for  
1335 24-hour telephone contact capability;

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- 1336 5. Contact information for alternate operator and alternate rainfall and staff gage  
1337 observer, if applicable;  
1338 6. Contact information for the local dispatch center nearest dam including address and  
1339 24-hour telephone number;  
1340 7. City or County Emergency Services Coordinator’s name, mailing address, residential  
1341 and business telephone numbers, and other means of communication;  
1342 8. A procedure and the responsible parties for notifying to the extent possible any known  
1343 local occupants, owners, or lessees of downstream properties potentially impacted by the dam’s  
1344 failure;  
1345 9. A discussion of the procedures for timely and reliable detection, evaluation, and  
1346 classification of emergency situations considered to be relevant to the project setting and  
1347 impounding features. Each relevant emergency situation is to be documented to provide an  
1348 appropriate course of action based on the urgency of the situation;  
1349 10. A simple dam break inundation map acceptable to the Director, demonstrating the  
1350 general inundation that would result from a dam failure. Such maps required pursuant to this  
1351 section do not require preparation by a professional licensed engineer; however, maps prepared  
1352 by a licensed professional engineer are preferred;  
1353 11. Identification of public roads downstream noting the highway number and distance  
1354 below the dam. If roads exist, contact information for the resident Virginia Department of  
1355 Transportation engineer or City or County engineer including address and 24-hour telephone  
1356 numbers;  
1357 12. Amount of rainfall that will initiate a Stage II Condition in inches per 6 hours, inches  
1358 per 12 hours, and inches per 24 hours and a Stage III Condition in inches per 6 hours, inches per  
1359 12 hours, and inches per 24 hours;  
1360 13. Amount of flow in the emergency spillway that will initiate a Stage II Condition in  
1361 feet (depth of flow) and a Stage III Condition in feet (depth of flow);  
1362 14. Staff gage location and description; the frequency of observations by the rainfall or  
1363 staff gage observer under a Stage I Condition, and Stage II Condition, and a Stage III Condition;  
1364 and a clear description of an access route and means of travel during flood conditions to the dam;  
1365 15. Evacuation procedures including notification, monitoring, evacuation, and reporting  
1366 processes and responsibilities;  
1367 16. Evidence that the required copies of such plan have been submitted to the local  
1368 organization for emergency management and the State Department of Emergency Management;  
1369 and  
1370 17. Certification of the plan by the owner.  
1371

**Part IV: Procedures**

**4VAC50-20-180. Inspections.**

A. ~~The director~~ Director may make inspections during construction, alteration or operation and maintenance as deemed necessary to ensure that the impounding structure is being

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1377 constructed, altered or operated and maintained in compliance with the permit or certificate  
1378 issued by the ~~board~~ Board. The ~~director~~ Director shall provide the owner a copy of the findings  
1379 of these inspections. ~~This~~ The Department's inspection does not relieve the owner from the  
1380 responsibility of providing adequate inspection during construction, alteration, or operation and  
1381 maintenance. During the maintenance, construction, or alteration of any dam or reservoir, the  
1382 Director shall require the owner to perform, at the owner's expense, such work or tests as  
1383 necessary to obtain information sufficient to enable the Director to determine whether  
1384 conformity with the plans and specifications approved by the certificate is being secured.

1385 B. Periodic inspections during construction or alteration shall be conducted under the  
1386 supervision ~~direction~~ of a licensed professional engineer who shall ~~propose the frequency and~~  
1387 ~~nature of the inspections subject to approval by the director~~ provide for full-time monitoring,  
1388 review of contractor submittals, and appropriate confirmatory testing of all facets of construction  
1389 affecting the safety of the impounding structure in accordance with the construction or alteration  
1390 permit issued by the Board.

1391 C. Periodic Required inspections during operation and maintenance shall be conducted  
1392 under the supervision of a licensed professional engineer at an ~~interval~~ intervals ~~not greater than~~  
1393 ~~that designated under 4VAC50-20-105~~ required to update the operation and maintenance  
1394 certificate. At a minimum, an annual owner's inspection shall be conducted when a professional  
1395 inspection is not required.

1396 D. Every owner shall provide for an inspection by a licensed professional engineer after  
1397 overtopping of the impounding structure or after flows cause damage to the emergency spillway.  
1398 A copy of the findings of each inspection with the engineer's recommendations shall be filed  
1399 with the ~~board~~ Board within a reasonable period of time not to exceed 30 days subsequent to  
1400 completion of the inspection.

1401  
1402 **4VAC50-20-190. Right to hearing.**

1403 Any owner aggrieved by an action taken by the ~~director~~ Director or by the ~~board~~ Board  
1404 without hearing, or by inaction of the ~~director~~ Director or the ~~board~~ Board, under the provisions  
1405 of this chapter, may demand in writing a formal hearing.

1406  
1407 **4VAC50-20-200. Enforcement.**

1408 Any owner ~~refusing to obey any order of the board or the director pursuant to this chapter~~  
1409 ~~may be compelled to obey and comply with such provisions by injunction or other appropriate~~  
1410 ~~remedy obtained in a court proceeding. Such proceeding shall be instituted by the board or in the~~  
1411 ~~case of an emergency, by the director in the court which granted approval to the owner to~~  
1412 ~~impound waters or, if such approval has not been granted, the proceeding shall be instituted in~~  
1413 ~~any appropriate court. The provisions of this chapter may be enforced by the Board, the~~  
1414 Director, or both in any manner consistent with the provisions of the Dam Safety Act (§ 10.1-604  
1415 et seq. of the Code of Virginia).

1416  
1417 **4VAC50-20-210. Consulting ~~boards~~ committee.**

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1418 A. When the ~~board~~ Board needs to satisfy questions of safety regarding plans and  
1419 specifications, construction, alteration, or operation and maintenance, or when requested by the  
1420 owner, the ~~board~~ Board may appoint a consulting ~~board~~ committee to report to it with respect to  
1421 those questions of the impounding structure's safety of an impounding structure. Such a ~~board~~  
1422 committee shall consist of two or more consultants, none of whom have been associated with the  
1423 impounding structure.

1424 B. The costs and expenses incurred by the consulting ~~board~~ committee, if appointed at the  
1425 request of an owner, shall be paid by the owner.

1426 C. The costs and expenses incurred by the consulting ~~board~~ committee, if initiated by the  
1427 ~~board~~ Board, shall be paid by the ~~board~~ Board.

1428

1429 **4VAC50-20-220. Unsafe conditions.**

1430 A. No owner shall ~~have the right to maintain an unsafe impounding structure which~~  
1431 ~~unreasonably threatens the life or property of another person. The owner of any impounding~~  
1432 ~~structure found to have deficiencies which could threaten life or property if uncorrected shall~~  
1433 ~~take the corrective actions needed to remove such deficiencies within a reasonable period of~~  
1434 ~~time. Designation of an impounding structure as unsafe shall be made in accordance with §~~  
1435 ~~10.1-607.1 of the Code of Virginia.~~

1436 B. Imminent danger.

1437 1. If an owner or the owner's engineer has determined that circumstances are impacting  
1438 the integrity of the impounding structure which could result in the imminent failure of the  
1439 impounding structure, temporary repairs may be initiated prior to approval from the Board. The  
1440 owner shall notify the Department within 24 hours of identifying the circumstances impacting  
1441 the integrity of the impounding structure. Such emergency notification shall not relieve the  
1442 owner of the need to obtain an alteration permit as soon as may be practicable, nor shall the  
1443 owner take action beyond that necessary to address the emergency situation.

1444 2. When the ~~director~~ Director finds that an impounding structure is unsafe and constitutes  
1445 an imminent danger to life or property, he shall immediately notify the State Virginia  
1446 Department of Emergency Management and confer with the owner who shall activate the  
1447 Emergency Action Plan or Emergency Preparedness Plan if appropriate to do so. The owner of  
1448 an impounding structure found to constitute an imminent danger to life or property shall take  
1449 immediate corrective action to remove the imminent danger as required by §10.1-608 of the  
1450 Code of Virginia.

1451 C. Nonimminent danger. The owner of an impounding structure who has been issued a  
1452 ~~report by the board containing findings and recommendations, by the Board,~~ for the correction of  
1453 deficiencies which may threaten life or property if not corrected, shall undertake to implement  
1454 the recommendations for correction of deficiencies according to a schedule of implementation  
1455 contained in that report as required by §10.1-609 of the Code of Virginia.

1456

1457 **4VAC50-20-230. Complaints.**

1458 A. Upon receipt of a complaint alleging that the person or property of the complainant is  
1459 endangered by the construction, alteration, maintenance or operation of an impounding structure,

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1460 the ~~director~~ Director shall cause an inspection of the structure, unless the data, records and  
1461 inspection reports on file with the ~~board~~ Board are found adequate to determine if the complaint  
1462 is valid.

1463 B. If the ~~director~~ Director finds that an unsafe condition exists, the ~~director~~ Director shall  
1464 proceed under the provisions of §§10.1-608 and 10.1-609 of the Code of Virginia to render the  
1465 extant condition safe.

1466

1467 **Part V: Design Requirements**

1468

1469 **4VAC50-20-240. Design of structures.**

1470 A. The owner shall complete all necessary investigations prior to submitting the design  
1471 report (Design Report for the Construction or Alteration of Virginia Regulated Impounding  
1472 Structures). The design report shall contain those components outlined in 4VAC50-20-70 for  
1473 construction activities and or those outlined in 4VAC50-20-70 for alteration activities. The  
1474 scope and degree of precision required is a matter of engineering judgment based on the  
1475 complexities of the site and the hazard potential classification of the proposed structure.

1476 B. Surveys shall be made with sufficient accuracy to locate the proposed construction site  
1477 and to define the total volume of storage in the impoundment. Locations of center lines and  
1478 other horizontal and vertical controls shall be shown on a map of the site. The area downstream  
1479 and upstream from the proposed impounding structure shall be investigated in order to delineate  
1480 the areas and extent of potential damage in case of failure or backwater due to flooding.

1481 C. The drainage area shall be determined. ~~Present, projected and potential future and~~  
1482 planned land-use conditions shall be considered in determining the runoff characteristics of the  
1483 drainage area. The most severe of these conditions shall be included in the design calculations  
1484 which shall be submitted as part of the design report.

1485 D. The geotechnical engineering investigation shall consist of borings, test pits and other  
1486 subsurface explorations necessary to adequately define the existing conditions. The  
1487 investigations shall be performed so as to appropriately define the soil, rock and ground water  
1488 conditions.

1489 E. All construction materials shall be adequately researched and selected so as to ensure  
1490 that their ~~properties meet as constructed behavior will reasonably conform to~~ design criteria. If  
1491 on-site materials are to be utilized, they shall be located and determined to be adequate in  
1492 quantity and quality.

1493

1494 **4VAC50-20-250 Repealed**

1495

1496 **~~4VAC50-20-250. Design flood.~~**

1497 ~~The minimum design flood to be utilized in impounding structure evaluation, design,~~  
1498 ~~construction, operation and maintenance shall be commensurate with the size and hazard~~  
1499 ~~potential of the particular impounding structure as determined in 4VAC50-20-50 and Table 1.~~

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1500 ~~Competent, experienced, professional engineering judgment shall be used in applying those~~  
1501 ~~design and evaluation procedures referenced in 4VAC50-20-320 of this chapter.~~  
1502

1503 **4VAC50-20-260. Emergency spillway Spillway design.**

1504 A. Every impounding structure shall have a spillway system with adequate capacity to  
1505 discharge the design flood without endangering the safety of the impounding structure.

1506 ~~B. An emergency spillway shall be required.~~

1507 ~~C.~~ B. Vegetated earth or an unlined emergency spillway may be approved when the  
1508 applicant demonstrates that it will pass the spillway design flood without jeopardizing the safety  
1509 of the impounding structure. In no case shall dam owners permit the growth of trees and other  
1510 woody vegetation in the emergency spillway area.

1511 ~~D.~~ C. Lined emergency spillways shall include design criteria calculations, plans and  
1512 specifications for suitable energy dissipators and for ~~open channel, drop, ogee and chute~~  
1513 ~~spillways that include crest control structures, chutes, walls, panel lining, sills, blocks, and~~  
1514 ~~miscellaneous details. All joints shall be reasonably water-tight and placed on a foundation~~  
1515 ~~capable of sustaining applied loads without undue deformation. Provision shall be made for~~  
1516 ~~handling leakage from the channel or under seepage and uplift pressures from the foundation~~  
1517 ~~which might adversely affect the structural integrity and structural stability of the impounding~~  
1518 ~~structure.~~

1519  
1520 **4VAC50-20-270. Principal spillways and outlet works.**

1521 A. It will be assumed that principal spillways and regulating outlets provided for special  
1522 functions will operate to normal design discharge capabilities during the spillway design flood,  
1523 provided appropriate analyses show:

1524 1. That control gates and structures are suitably designed to operate reliably under  
1525 maximum heads for durations likely to be involved and risks of blockage by debris are minimal;

1526 2. That access roads and passages to gate regulating controls would be safely passable by  
1527 operating personnel under spillway design flood conditions; and

1528 3. That there are no ~~other~~ substantial reasons for concluding that outlets would not  
1529 operate safely to ~~fill~~ full design capacity during the spillway design flood.

1530 B. If there are reasons to doubt that any of the above basic requirements might not be  
1531 adequately met under spillway design flood conditions, the "dependable" discharge capabilities  
1532 of regulating outlets shall be assumed to be less than 100% of design ~~capabilities~~ capacities,  
1533 generally as outlined in the following subsections C through G of this section.

1534 C. Any limitations in safe operating heads, maximum velocities to be permitted through  
1535 structures or approach channels, or other design limitations shall be observed in establishing  
1536 "dependable" discharge rating curves to be used in routing the spillway design flood hydrograph  
1537 through the reservoir.

1538 D. If intakes to regulating outlets are likely to be exposed to ~~dangerous~~ significant  
1539 quantities of floating ~~drift~~ debris, sediment depositions or ice hazards prior to or during major  
1540 floods, the dependable discharge capability during the spillway design flood shall be assumed to  
1541 be zero.

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1542 E. If access roads or structural passages to operating towers or controls are likely to be  
1543 flooded or otherwise unusable during the spillway design flood, the dependable discharge  
1544 capability of regulating outlets will be assumed to be zero for ~~those period~~ the periods of time  
1545 during which such conditions might exist.

1546 F. Any deficiencies in discharge performance likely to result from delays in the operation  
1547 of gates before attendants could be reasonably expected to reach the control ~~for in~~ must be taken  
1548 into account when estimating "dependable" discharge capabilities ~~to be assumed~~ assumptions in  
1549 routing the spillway design flood through ~~reservoir~~ impoundment. Reports on design studies  
1550 shall indicate the allowances made for possible delays in initiating gate operations. Normally,  
1551 for projects located in small basins, where critical spillway design flood inflows may occur  
1552 within several hours after intense precipitation, outflows through any regulating outlets that must  
1553 be opened after the flood begins shall be assumed to be zero for an appropriate period of time  
1554 subsequent to the beginning of intense rainfall.

1555 G. All gates, valves, conduits and concrete channel outlets shall be designed and  
1556 constructed to prevent significant erosion or damage to the impounding structure or to the  
1557 downstream outlet or channel.

1558

1559 **4VAC50-20-280. Drain requirements.**

1560 All new impounding structures regardless of their hazard potential classification, shall  
1561 include a device to permit draining of the impoundment within a reasonable period of time as  
1562 determined by the owner's licensed professional engineer, subject to approval by the ~~director~~  
1563 Director.

1564

1565 **4VAC50-20-290. Life of the impounding structure.**

1566 Components of the impounding structure, ~~the impoundment~~, the outlet works, drain  
1567 system and appurtenances shall be durable or replaced in keeping with the design and planned  
1568 life of the impounding structure.

1569

1570 **4VAC50-20-300. Additional design requirements.**

1571 A. Flood routings shall start at or above the elevation of the crest of the lowest ungated  
1572 outlet. Freeboard determination and justification must be addressed by the owner's engineer.

1573 B. All elements of the impounding structure ~~and impoundments~~ shall conform to sound  
1574 engineering practice. Safety factors, design standards and design references that are used shall  
1575 be included with the design report.

1576 C. Inspection devices may be required by the ~~director~~ Director for use by inspectors,  
1577 owners or the ~~director~~ Director in conducting inspections in the interest of structural integrity  
1578 during and after completion of construction and during the life of the impounding structure.

1579

1580 **4VAC50-20-310. Plans and specifications.**

1581 The plans and specifications for a proposed impounding structure required in 4VAC50-  
1582 20-70 for construction activities and in 4VAC50-20-70 for alteration activities shall consist of a  
1583 detailed engineering design report (Design Report for the Construction or Alteration of Virginia

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1584 Regulated Impounding structures) that includes and engineering drawings and specifications,  
1585 with the following as a minimum:

1586 1. The name of the project; the name of the owner; classification of the impounding  
1587 structure as set forth in this chapter; designated access to the project and the location with respect  
1588 to highways, roads, streams and existing impounding structures and impoundments that would  
1589 affect or be affected by the proposed impounding structure.

1590 2. Cross-sections, plans, profiles, logs of test borings, laboratory and in situ test data,  
1591 drawings of principal and emergency spillways, impounding structures, outlet works, drain  
1592 system and appurtenances, and other additional drawings project components in sufficient detail  
1593 to indicate clearly the extent and complexity of the work to be performed.

1594 3. Contract drawings should include, but not be limited to, foundation and abutment  
1595 treatment, stream or river diversion, excavation and material fill processes, phased fill and  
1596 compaction and drainage devices.

1597 4. The erosion and sediment control plan, as approved by the local government, which  
1598 minimizes soil erosion and sedimentation during all phases of construction or alteration.

1599 ~~35. The technical~~ Technical provisions specifications, as may be required to describe the  
1600 materials, performance, and methods of the construction and construction quality control for the  
1601 project.

1602 4. ~~Special provisions, as may be required to describe technical provisions needed to~~  
1603 ~~ensure that the impounding structure is constructed according to the approved plans and~~  
1604 ~~specifications.~~

1605

1606 **4VAC50-20-320. Acceptable design procedures and references.**

1607 To ensure consistency of approach, within the major engineering disciplines of  
1608 hydrology, hydraulics, soils and foundations, structures, and general civil design, criteria and  
1609 approaches from multiple sources shall not be mixed for developing the design of a given feature  
1610 or facility without approval of the Director. In all cases the owner's engineer shall identify the  
1611 source of the criteria. The following are acceptable as design procedures and references:

1612 1. The design procedures, manuals and criteria used by the United States Army Corps of  
1613 Engineers.

1614 2. The design procedures, manuals and criteria used by the United States Department of  
1615 Agriculture, Natural Resources Conservation Service.

1616 3. The design procedures, manuals and criteria used by the United States Department of  
1617 the Interior, Bureau of Reclamation.

1618 4. The design procedures, manuals and criteria used by the United States Department of  
1619 Commerce, National Weather Service.

1620 5. The design procedures, manuals and criteria used by the United States Federal Energy  
1621 Regulatory Commission.

1622 ~~56.~~ Other design procedures, manuals and criteria that are accepted as current, sound  
1623 engineering practices, as approved by the ~~director~~ Director prior to the design of the impounding  
1624 structure.

1625



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1626 **4VAC50-20-330. Other applicable dam safety references.**

1627 Manuals, Guidance, and Criteria used by the Federal Emergency Management Agency,  
1628 including the following:

1629 1. Federal Guidelines for Dam Safety: Emergency Action Planning for Dam Owners,  
1630 U.S. Department of Homeland Security, Federal Emergency Management Agency, October  
1631 1998, Reprinted January 2004; FEMA 64 or as revised.

1632 2. Federal Guidelines for Dam Safety: Selecting and Accommodating Inflow Design  
1633 Floods for Dams, U.S. Department of Homeland Security, Federal Emergency Management  
1634 Agency, October 1998, Reprinted April 2004; FEMA 94 or as revised.

1635  
1636 **Part VI: Fees**

1637  
1638 **4VAC 50-20-340 Authority to establish fees**

1639 Under the Code of Virginia, § 10.1-613.5, the Board is authorized to establish and collect  
1640 application fees for the administration of the dam safety program, administrative review,  
1641 certifications, and the repair and maintenance of dams. The fees will be deposited into the Dam  
1642 Safety, Flood Prevention and Protection Assistance Fund.

1643  
1644 **4VAC 50-20-350 Fee Submittal Procedures**

1645 A. Upon the effective date of these regulations, fees for all application submittals  
1646 required pursuant to 4VAC 50-20-370 through 4 VAC 50-20-390 are due prior to issuance of a  
1647 certificate or permit. No application for an Operation and Maintenance Certificate or a  
1648 Construction Permit will be acted upon by the Board without full payment of the required fee per  
1649 § 10.1-613.5.

1650 B. Fees shall be paid by check, draft or postal money order payable to the Treasurer of  
1651 Virginia, or submitted electronically (if available), and must be in U.S. currency, except that  
1652 agencies and institutions of the Commonwealth of Virginia may submit Interagency Transfers  
1653 for the amount of the fee. All fees shall be sent to the following address (or submitted  
1654 electronically, if available): Virginia Department of Conservation and Recreation, Dam Safety  
1655 Receipts Control, P.O. Box 10150, Richmond, Virginia 23240.

1656 C. All fee payments shall be accompanied by the following information:

1657 1. Applicant name, address and daytime phone number.

1658 2. The name of the dam, and the dam location.

1659 3. The type of application or report submitted.

1660 4. Whether the submittal is for a new permit or certificate issuance or permit or certificate  
1661 reissuance.

1662 5. The amount of fee submitted.

1663 6. Dam identification number, if applicable.

1664 F. No permit fees remitted to the Department shall be subject to refund except as credits  
1665 provided for in 4 VAC 50-20-390 D.

1666  
1667 **4VAC 50-20-360 Fee Exemptions**

**PROPOSED REGULATION FOR VIRGINIA SOIL AND WATER CONSERVATION BOARD CONSIDERATION – NOT APPROVED**

1668 Impounding structures owned by Virginia Soil and Water Conservation Districts shall be  
1669 exempt from all fees associated with Part VI in accordance with § 10.1-613.5. There will be no  
1670 fee assessed for the decommissioning of an impounding structure.

1671

1672 **4VAC 50-20-370 Construction Permit Application Fees**

1673 A. Any application form submitted pursuant to 4VAC 50-20-70 for permitting a proposed  
1674 impounding structure construction after the effective date of these regulations shall be  
1675 accompanied by a payment as determined in subsection B.

1676 B. Fees shall be as follows:

1677 1. \$2,500 for High or Significant Hazard Potential impounding structures

1678 2. \$1,000 for Low Hazard Potential impounding structures

1679

1680 **4VAC 50-20-380 Regular Operation and Maintenance Certificate Application Fees**

1681 A. Any application for a 6-year Regular Operation and Maintenance Certificate after the  
1682 effective date of these regulations, except as otherwise exempted, shall be accompanied by a  
1683 payment as determined in subsection B.

1684 B. Fees for High, Significant, or Low Hazard Potential impounding structures shall be as  
1685 follows:

1686 1. \$1,500 for High Hazard Potential

1687 2. \$1,000 for Significant Hazard Potential

1688 3. \$600 for Low Hazard Potential

1689

1690 **4VAC 50-20-390 Conditional Operation and Maintenance Certificate Application Fee**

1691 A. Fees for a Conditional Operation and Maintenance Certificate or for the extension of a  
1692 Conditional Operation and Maintenance Certificate for High or Significant Hazard Potential  
1693 impounding structures shall be as follows:

1694 1. For a 2-year Certificate: \$1000

1695 2. For a 1.5-year Certificate: \$750

1696 3. For a 1-year Certificate: \$500

1697 4. For a 6-month Certificate: \$250

1698 B. Fees for a Conditional Operation and Maintenance Certificate or for the extension of a  
1699 Conditional Operation and Maintenance Certificate for Low Hazard Potential impounding  
1700 structures shall be as follows:

1701 1. For a 2-year Certificate: \$500

1702 2. For a 1.5-year Certificate: \$375

1703 3. For a 1-year Certificate: \$250

1704 4. For a 6-month Certificate: \$125

1705 C. Fees for a Conditional Operation and Maintenance Certificate or for the extension of a  
1706 Conditional Operation and Maintenance Certificate for any impounding structure that requires a  
1707 modification in spillway capacity due to changes in the regulations and that is eligible for a  
1708 delayed effective date pursuant to 4VAC50-20-125 shall be as follows:

1709 1. For a 2-year Certificate: \$200

**PROPOSED REGULATION FOR VIRGINIA SOIL AND WATER CONSERVATION  
BOARD CONSIDERATION – NOT APPROVED**

- 1710            2. For a 1.5-year Certificate: \$150
- 1711            3. For a 1-year Certificate: \$100
- 1712            4. For a 6-month Certificate: \$50
- 1713            D. The Board may allow a partial credit towards the Regular Operation and Maintenance
- 1714 Certificate fee if the owner of the impounding structure has completed, to the Director's
- 1715 satisfaction, the conditions of the Conditional Certificate prior to its expiration. Credits shall
- 1716 only be provided to the nearest 6-month interval.
- 1717

**FORMS**

- 1718
- 1719
- 1720            ~~Dam Owner's Annual Inspection Form, DCR 199-098 (rev. 12/01).~~
- 1721
- 1722            ~~Operation and Maintenance Application Class I, II and III Impounding Structures, DCR~~
- 1723 ~~199-099 (rev. 12/01).~~
- 1724
- 1725            ~~As-Built Report for Class I, II and III Impounding Structures, DCR 199-100 (rev. 12/01).~~
- 1726
- 1727            ~~Design Report for the Construction/Alteration of Impounding Structures, DCR 199-101~~
- 1728 ~~(rev. 12/01).~~
- 1729
- 1730            ~~Emergency Action Plan for Class I, Class II and Class III Impounding Structures, DCR~~
- 1731 ~~199-103 (rev. 12/01).~~
- 1732
- 1733            ~~Inventory Report for Class III and Class IV Impounding Structures, DCR 199-104 (rev.~~
- 1734 ~~12/01).~~
- 1735
- 1736            ~~Reinspection Report for Class I and II Impounding Structures, DCR 199-105 (rev.~~
- 1737 ~~12/01).~~
- 1738
- 1739            ~~Agricultural Certification for Impounding Structures, DCR 199-106 (rev. 12/01).~~
- 1740
- 1741            ~~Transfer Application for Impounding Structures, DCR 199-107 (rev. 12/01).~~