

**VIRGINIA SOIL AND WATER CONSERVATION BOARD**  
**Impounding Structure (Dam Safety) Recommended Final Regulations**

[Changes made from the Proposed Version to the Recommended Final Version are in brackets and are highlighted in grey.]

**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 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 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.

~~EF.~~ The official forms as ~~called for~~ by ~~noted~~ in this chapter are available from the director department 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 ~~(one~~ (equivalent to one foot of depth over one acre of area).

"Agricultural purpose" means the production of an agricultural commodity as defined in §3.1-249.27 of the Code of Virginia that requires the use of impounded waters.

"Agricultural purpose dams" means dams impounding structures 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.~~

"Alteration" means changes to an impounding structure that could alter or affect its structural integrity. Alterations include, but are not limited to, changing the height or otherwise enlarging the dam, increasing normal pool or principal spillway elevation or physical dimensions, changing the elevation or physical dimensions of the emergency spillway, conducting necessary structural repairs or structural maintenance, or removing the impounding structure. [ Structural maintenance does not include routine maintenance. ]

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

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

~~"Conditional operation and maintenance certificate~~ Operation and Maintenance Certificate" means a certificate required for impounding structures with deficiencies.

"Construction" means the construction of a new impounding structure.

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

52 "Dam break inundation zone" means the area downstream of a dam that would be inundated or  
53 otherwise directly affected by the failure of a dam.

54 "Department" means the Virginia Department of Conservation and Recreation.

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

57 ~~"Design freeboard" means the vertical distance between the maximum elevation of the design flood~~  
58 ~~and the top of the impounding structure.~~

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

60 "Drill" means a type of emergency action plan exercise that tests, develops, or maintains skills in an  
61 emergency response procedure. During a drill, participants perform an in-house exercise to verify  
62 telephone numbers and other means of communication along with the owner's response. A drill is  
63 considered a necessary part of ongoing training.

64 "Emergency Action Plan or EAP" means a formal document that recognizes potential impounding  
65 structure emergency conditions and specifies preplanned actions to be followed to minimize loss of life  
66 and property damage. The EAP specifies actions the owner must take to minimize or alleviate  
67 emergency conditions at the impounding structure. It contains procedures and information to assist the  
68 owner in issuing early warning and notification messages to responsible emergency management  
69 authorities. It shall also contain dam break inundation zone maps as required to show emergency  
70 management authorities the critical areas for action in case of emergency.

71 "Emergency Action Plan Exercise" means an activity designed to promote emergency  
72 preparedness; test or evaluate EAPs, procedures, or facilities; train personnel in emergency  
73 management duties; and demonstrate operational capability. In response to a simulated event,  
74 exercises should consist of the performance of duties, tasks, or operations very similar to the way they  
75 would be performed in a real emergency. An exercise may include but not be limited to drills and  
76 tabletop exercises.

77 "Emergency Preparedness Plan" means a formal document prepared for Low Hazard [dams  
78 impounding structures] that provides maps and procedures for notifying owners of downstream  
79 property that may be impacted by an emergency situation at an impounding structure.

80 "Freeboard" means the vertical distance between the maximum water surface elevation associated  
81 with the spillway design flood and the top of the impounding structure.

82 "Height" means the ~~structural~~ hydraulic height of an impounding structure. If the impounding  
83 structure spans a stream or watercourse, height means the vertical distance from the natural bed of the  
84 stream or watercourse measured at the downstream toe of the impounding structure to the top of the  
85 impounding structure. If the impounding structure does not span a stream or watercourse, height  
86 means the vertical distance from the lowest elevation of the ~~outside~~ downstream limit of the barrier to  
87 the top of the impounding structure.

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

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

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

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

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

108 ~~[ "Normal impounding capacity" means the volume of water or other materials in acre feet that is  
109 capable of being impounded at the elevation of the crest of the lowest ungated outlet from the  
110 impoundment. ]~~

111 [ "Normal or typical water surface elevation" means the water surface elevation at the crest of the  
112 lowest ungated outlet from the impoundment or the elevation of the normal pool of the impoundment if  
113 different than the water surface elevation at the crest of the lowest ungated outlet. For calculating sunny  
114 day failures for flood control impounding structures, stormwater detention impounding structures, and  
115 related facilities designed to hold back volumes of water for slow release, the normal or typical water  
116 surface elevation shall be measured at the crest of the auxiliary or emergency spillway. ]

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

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

126 [ "Planned land-use" means land use that has been approved by a locality or included in a master  
127 land use plan by a locality, such as in a locality's comprehensive land use plan. ]

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

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

132 "Stage II Condition" means a flood watch or emergency spillway activation or [ ~~dam impounding~~  
133 structure ] overtopping where a [ ~~breach failure~~ ] may be possible.

134 "Stage III Condition" means an emergency spillway activation or [ ~~dam impounding structure~~ ]  
135 overtopping where imminent failure is probable.

136 "Sunny day dam failure" means the [ ~~breaching failure~~ ] of an impounding structure with the initial  
137 water level at the normal reservoir level, usually at the lowest ungated principal spillway elevation or the  
138 typical operating water level.

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

144 "Top of the impounding structure" means the lowest point of the nonoverflow section of the  
145 impounding structure.

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

148 **4VAC50-20-40. Classes Hazard potential classifications of impounding structures.**

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

153 B. For the purpose of this chapter, hazards pertain to potential loss of human life or property  
154 damage to the property of others downstream from the impounding structure in event of failure or faulty  
155 operation of the impounding structure or appurtenant facilities. Hazard potential classifications of  
156 [ dams impounding structures ] are as follows:

157 1. ~~Impounding structures in the Class I hazard potential category are located where High~~  
158 ~~Hazard Potential is defined where an impounding structure failure will cause probable loss of life~~  
159 ~~or serious economic damage to occupied. [ "Probable loss of life" means that impacts will occur~~  
160 ~~that are likely to cause a loss of human life, including but not limited to impacts to residences,~~  
161 ~~businesses, other occupied structures, or major roadways. ] Economic damage may occur to,~~  
162 ~~but not be limited to, building(s), industrial or commercial facilities, important [ primary ] public~~  
163 ~~utilities, main highway(s) or railroad(s) major [ public ] roadways, railroads, personal property,~~  
164 ~~and agricultural interests. [ "Major roadways" include, but are not limited to, interstates, primary~~  
165 ~~highways, high-volume urban streets, or other high-volume roadways. ]~~

166 2. ~~Impounding structures in the Class II hazard potential category are located where Significant~~  
167 ~~Hazard Potential is defined where an impounding structure failure could may cause possible the~~  
168 ~~loss of life or appreciable economic damage. [ "May cause loss of life" means that impacts will~~  
169 ~~occur that could cause a loss of human life, including but not limited to impacts to facilities that~~  
170 ~~are frequently utilized by humans other than residences, businesses, or other occupied~~  
171 ~~structures, or to secondary roadways. ] Economic damage may occur to, but not be limited to~~  
172 ~~occupied, building(s), industrial or commercial facilities, [ secondary ] public utilities, secondary~~  
173 ~~highway(s) or railroad(s) or cause interruption of use or service of relatively important public~~  
174 ~~utilities [ public ] roadways, railroads, personal property, and agricultural interests. [ "Secondary~~  
175 ~~roadways" include, but are not limited to, secondary highways, low-volume urban streets,~~  
176 ~~service roads, or other low-volume roadways. ]~~

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

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

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

192 6. D. Impounding structures shall be subject to reclassification by the board as necessary.

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

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

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

208 Impounding structures of regulated size and not exempted shall be constructed, operated and  
 209 maintained such that they perform in accordance with their design and purpose throughout the life of  
 210 the project. For new impounding structures, the spillway(s) capacity shall perform at a minimum to  
 211 safely pass the appropriate spillway design flood as determined in Table 1. For the purposes of  
 212 utilizing Table 1, [ Maximum Impounding Capacity and Height shall be determined in accordance with  
 213 the definitions provided in 4VAC50-20-30 and ] Hazard Potential Classification shall be determined in  
 214 accordance with 4VAC50-20-40.

215 TABLE 1—Impounding Structure Regulations

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	≥ 50,000	≥ 100	PMF <sup>c</sup>
		Medium	≥ 1,000 & < 50,000	≥ 40 & < 100	PMF
		Small	≥ 50 & < 1,000	≥ 25 & < 40	1/2 PMF to PMF
II	Possible Loss of Life; Appreciable Economic Loss	Large	≥ 50,000	≥ 100	PMF
		Medium	≥ 1,000 & < 50,000	≥ 40 & < 100	1/2 PMF to PMF
		Small	≥ 50 & < 1,000	≥ 25 & < 40	100-YR to 1/2 PMF
III	No Loss of Life Expected; Minimal Economic Loss	Large	≥ 50,000	≥ 100	1/2 PMF to PMF
		Medium	≥ 1,000 & < 50,000	≥ 40 & < 100	100-YR to 1/2 PMF
		Small	≥ 50 & < 1,000	≥ 25 & < 40	50-YR <sup>d</sup> to 100-YR <sup>e</sup>
IV	No Loss of Life Expected; No Economic Loss to Others	≥ 50 (nonagricultural) ≥ 100 (agricultural)	≥ 25 (both)	50-YR to 100-YR	

216 TABLE 1  
 217 Impounding Structure Regulations

218 [ Applicable to all impounding structures that are 25 feet or greater in height and that create a  
 219 maximum impounding capacity of 15 acre-feet or greater, and to all impounding structures that are 6  
 220 feet or greater in height and that create a maximum impounding capacity of 50 acre-feet or greater and  
 221 is not otherwise exempt from regulation by the Code of Virginia. ]

222

Hazard Potential Class of Dam	[ SIZE CATEGORIES <sup>B</sup> ]		Spillway Design Flood (SDF) [ <sup>GB</sup> ]	Minimum Threshold for Incremental Damage [ Assessment Analysis ]
	[ Maximum Impounding Capacity (Ac-Ft) ]	[ Height (Ft) ]		

High	[ All <sup>B</sup> ]	[ All <sup>B</sup> ]	PMF [ <sup>DC</sup> ]	.50 PMF
Significant	[ Large ≥ 50,000 ]	[ ≥100 ]	[ PMF <sup>D</sup> .50 PMF ]	[ .50-PMF 100-YR <sup>D</sup> ]
	[ Medium ≥ 1,000 & < 50,000 ]	[ ≥ 40 & < 100 ]	[ .75-PMF ]	[ 100-YR <sup>E</sup> ]
	[ Small ≥ 15 & < 1,000 ]	[ ≥ 6 & < 40 ]	[ .50-PMF ]	[ 100-YR <sup>E</sup> ]
Low	[ Large ≥ 50,000 ]	[ ≥100 ]	[ .50-PMF 100-YR <sup>D</sup> ]	[ 100-YR <sup>E</sup> 50-YR <sup>E</sup> ]
	[ Medium ≥ 1,000 & < 50,000 ]	[ ≥ 40 & < 100 ]	[ 100-YR <sup>E</sup> ]	[ 50-YR <sup>F</sup> ]
	[ Small ≥ 15 & < 1,000 ]	[ ≥ 6 & < 40 ]	[ 100-YR <sup>E</sup> ]	[ 50-YR <sup>F</sup> ]

223 ~~<sup>a</sup>The factor determining the largest size classification shall govern. [ B. The appropriate size~~  
224 ~~category is determined by the largest size associated with the maximum impounding capacity and~~  
225 ~~height of the impounding structure. ]~~

226 ~~<sup>b</sup> [ CB ] . The spillway design flood (SDF) represents the largest flood that need be considered in the~~  
227 ~~evaluation of the performance for a given project. The impounding structure shall perform so as to~~  
228 ~~safely pass the appropriate SDF. Where a range of SDF is indicated, the magnitude that most closely~~  
229 ~~relates to the involved risk should be selected. The establishment in this chapter of rigid design flood~~  
230 ~~criteria or standards is not intended. Safety must be evaluated in the light of peculiarities and local~~  
231 ~~conditions for each impounding structure and in recognition of the many factors involved, some of~~  
232 ~~which may not be precisely known. Such can only be done by competent, experienced engineering~~  
233 ~~judgment, which the values in Table 1 are intended to supplement, not supplant. Reductions in the~~  
234 ~~established SDF may be evaluated through the use of incremental damage [ assessment analysis ]~~  
235 ~~pursuant to 4VAC50-20-52. The SDF established for an impounding structure shall not be less than~~  
236 ~~those standards established elsewhere by state law or regulations, including but not limited to the~~  
237 ~~Virginia Stormwater Management Program (VSMP) Permit Regulations (4VAC50-60). [ Due to~~  
238 ~~potential for future development in the dam break inundation zone which would necessitate higher~~  
239 ~~spillway design flood standards or other considerations, owners may find it advisable to consider a~~  
240 ~~higher spillway design flood standard than is required. ]~~

241 ~~<sup>c</sup> [ DC ] . PMF: Probable maximum flood This means Maximum Flood is the flood that might be~~  
242 ~~expected from the most severe combination of critical meteorologic and hydrologic conditions that are~~  
243 ~~reasonably possible in the region. The PMF is derived from the current probable maximum precipitation~~  
244 ~~(PMP) available from the National Weather Service, NOAA. In some cases local topography or~~  
245 ~~meteorological conditions will cause changes from the generalized PMP values; therefore, it is~~  
246 ~~advisable to contact local, state or federal agencies to obtain the prevailing practice in specific cases.~~  
247 ~~[ In some cases, a modified PMF may be calculated utilizing local topography, meteorological~~  
248 ~~conditions, hydrological conditions, or PMP values supplied by NOAA. ] Any deviation in the application~~  
249 ~~of established developmental procedures must be explained and justified by the owner's engineer. The~~  
250 ~~owner's engineer must develop PMF hydrographs for 6-, 12-, and 24-hour durations. The hydrograph~~  
251 ~~that creates the largest peak outflow is to be used to determine capacity for nonfailure and failure~~  
252 ~~analysis. Present and planned land-use conditions shall be considered in determining the runoff~~  
253 ~~characteristics of the drainage area.~~

254 ~~[ ED ] . 100-Yr: 100-year flood represents the flood magnitude expected to be equaled or exceeded~~  
255 ~~on the average of once in 100 years. It may also be expressed as an exceedence probability with a~~  
256 ~~1.0% chance of being equaled or exceeded in any given year. Present and planned land-use conditions~~  
257 ~~shall be considered in determining the runoff characteristics of the drainage area.~~

258 ~~<sup>d</sup> [ FE ] . 50-Yr: 50-year flood. This means represents the flood magnitude expected to be equaled or~~  
259 ~~exceeded on the average of once in 50 years. It may also be expressed as an exceedence probability~~

260 with a 2.0% chance of being equaled or exceeded in any given year. Present and planned land-use  
261 conditions shall be considered in determining the runoff characteristics of the drainage area.

262 ~~° -100-Yr: 100-year flood. This means the flood magnitude expected to be equaled or exceeded on the~~  
263 ~~average of once in 100 years. It may also be expressed as an exceedence probability with a 1.0%~~  
264 ~~chance of being equaled or exceeded in any given year.~~

265 **[ 4VAC50-20-51. Special criteria for certain low hazard impounding structures.**

266 A. Notwithstanding the requirements of this chapter, should the failure of a low hazard potential  
267 impounding structure cause no expected loss of human life and no economic damage to any property  
268 except property owned by the impounding structure owner, then the owner may follow the below  
269 requirements instead of the requirements specified in this chapter:

270 1. No map required pursuant to section 4VAC50-20-54 shall be required to be developed for the  
271 impounding structure should a licensed professional engineer certify that the impounding  
272 structure is a low hazard potential impounding structure and eligible to utilize the provisions of  
273 this section:

274 2. The spillway design flood for the impounding structure is recommended as a minimum 50-  
275 year flood; however, no specific spillway design flood shall be mandatory for an impounding  
276 structure found to qualify under the requirements of this section;

277 3. No emergency preparedness plan prepared pursuant to 4VAC50-20-177 shall be required.  
278 However, the impounding structure owner shall notify the local emergency services coordinator  
279 in the event of a failure or emergency condition at the impounding structure;

280 4. An owner shall perform inspections of the impounding structure annually in accordance with  
281 the requirements of 4VAC50-20-105. No inspection of the impounding structure by a licensed  
282 professional engineer shall be required, however, so long as the owner certifies at the time of  
283 operation and maintenance certificate renewal that conditions at the impounding structure and  
284 downstream are unchanged since the last inspection conducted by a licensed professional  
285 engineer; and

286 5. No certificate or permit fee established in this chapter shall be applicable to the impounding  
287 structure.

288 B. Any impounding structure electing to utilize the requirements of subdivisions (1) through (5) of  
289 subsection A of this section shall otherwise comply with all other requirements of this chapter applicable  
290 to low hazard impounding structures.

291 C. The owner shall notify the department immediately of any change in circumstances that would  
292 cause the impounding structure to no longer qualify to utilize the provisions of this section. ]

293 **4VAC50-20-52. Incremental damage [ assessment analysis ] .**

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

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

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

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

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

303 4. Inspection report requirements have been met and are considered satisfactory by the  
304 director;

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

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

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

311 ~~[ CB ] . [ After meeting the criteria set out in subsection B of this section, the The ]~~ owner's  
312 engineer may proceed with an incremental damage analysis. Once the owner's engineer has  
313 determined the required spillway design flood through application of Table 1, further analysis may be  
314 performed to evaluate the limiting flood condition for incremental damages. ~~[ Site-specific conditions~~  
315 ~~should be recognized and considered. ]~~ This ~~[ assessment analysis ]~~ may be used to lower the spillway  
316 design flood. In no situation shall the allowable reduction be less than the level at which the incremental  
317 increase in water surface elevation downstream due to failure of ~~[ a dam an impounding structure ]~~ is  
318 no longer considered to present an ~~[ unacceptable ]~~ additional downstream threat. This engineering  
319 analysis will need to present water surface elevations at each structure that may be impacted  
320 downstream of the dam. ~~[ Water depths greater than two feet and overbank flow velocities greater than~~  
321 ~~three feet per second shall be used to define conditions for unacceptable additional downstream threat~~  
322 ~~to persons or property. An additional downstream threat to persons or property is presumed to exist~~  
323 ~~when water depths exceed two feet or when the product of water depth (in feet) and the average~~  
324 ~~floodplain flow velocity (in feet per second) is greater than seven. ]~~

325 ~~[ DC ] . The spillway design flood shall not be reduced below the minimum threshold values as~~  
326 ~~determined by Table 1.~~

327 ~~[ D. The required spillway design flood shall be subject to reclassification by the board as~~  
328 ~~necessary to reflect changed conditions at the impounding structure and in the dam break inundation~~  
329 ~~zone. ]~~

330 **4VAC50-20-54. Dam break inundation zone mapping.**

331 ~~A. Dam break inundation zone maps shall be provided to the department to meet the requirements~~  
332 ~~set out in Hazard Potential Classifications of Impounding Structures (4VAC50-20-40), Emergency~~  
333 ~~Action Plan for High and Significant Potential Hazard [ Dams Impounding Structures ] (4VAC50-20-~~  
334 ~~175), and Emergency Preparedness for Low Hazard Potential [ Dams Impounding Structures ]~~  
335 ~~(4VAC50-20-177), as applicable.~~

336 ~~B. The location of the end of the inundation mapping should be indicated where the water surface~~  
337 ~~elevation of the dam break inundation zone and the water surface elevation of the spillway design flood~~  
338 ~~during [ a nondam failure an impounding structure non-failure ] event converge to within one foot of~~  
339 ~~each other. [ This would demonstrate a level where failure of the dam does not further constitute a~~  
340 ~~hazard to downstream life or property. ]~~ The inundation maps shall be supplemented with water  
341 surface profiles ~~[ and cross sections at critical areas ]~~ showing the peak water surface elevation prior to  
342 failure and the peak water surface elevation after failure.

343 ~~C. All inundation zone map(s), except those utilized in meeting the requirements of Emergency~~  
344 ~~Preparedness for Low Hazard Potential [ Dams Impounding Structures ] (4VAC50-20-177), shall be~~  
345 ~~signed and sealed by a licensed professional engineer.~~

346 ~~D. For determining the hazard potential classification, a minimum of the following shall be provided~~  
347 ~~to the department:~~

348 ~~1. A sunny day dam break analysis utilizing the volume retained at the normal or typical water~~  
349 ~~surface elevation of the impounding structure;~~

350 ~~2. A dam break analysis utilizing [ a probable maximum flood the spillway design flood ] with a~~  
351 ~~dam failure; [ and ]~~

352 ~~3. [ A dam break An ] analysis utilizing [ a probable maximum flood the spillway design flood ]~~  
353 ~~without a dam failure [ ; and ]~~

354 ~~[ 4. For the purposes of future growth planning, a dam break analysis utilizing the probable~~  
355 ~~maximum flood with a dam failure. ]~~

356 ~~E. To meet the requirements of Emergency Preparedness set out in 4VAC50-20-177, all Low~~  
357 ~~Hazard Potential impounding structures shall provide a simple map, acceptable to the department,~~  
358 ~~demonstrating the general inundation that would result from a dam failure. Such maps do not require~~  
359 ~~preparation by a professional licensed engineer, however, it is preferred that the maps be prepared by~~  
360 ~~a licensed professional engineer.~~



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

365 1. The map(s) shall be developed at a scale sufficient to graphically display downstream  
366 inhabited areas and structures, roads, [ public utilities that may be affected, ] and other pertinent  
367 structures within the identified inundation area. In coordination with the local organization for  
368 emergency management, a list of downstream inundation zone property owners and occupants,  
369 including telephone numbers may be plotted on the map or may be provided with the map for  
370 reference during an emergency.

371 2. [ A note shall be included on each map to state: "Mapping of flooded areas and flood wave  
372 travel times are approximate. Timing and extent of actual inundation may differ from information  
373 presented on this map." Each map shall include the following statement: "The information  
374 contained in this map is prepared for use in notification of downstream property owners by  
375 emergency management personnel". ]

376 **4VAC50-20-58. Local government notifications.**

377 For each certificate issued, the impounding structure owner shall send a copy of the certificate to  
378 the appropriate local government(s) with planning and zoning responsibilities. A project description and  
379 the map(s) required under 4VAC50-20-54 showing the area that could be affected by the impounding  
380 structure [ breach failure ] shall be submitted with the certificate. The department will provide a  
381 standard form cover letter for forwarding the certificate copy and accompanying materials.

382 **[ 4VAC50-20-59. Reporting.**

383 For the purposes of categorizing and reporting information to national and other dam safety  
384 databases, impounding structure size shall be classified as noted in Table 2.

385  
386  
387

Table 2  
Impounding Structure Regulations

Maximum Impounding Capacity (Ac-Ft)	Height (Ft)
Large $\geq 50,000$	$\geq 100$
Medium $\geq 1,000$ & $< 50,000$	$\geq 40$ & $< 100$
Small $\geq 15$ & $< 1,000$	$\geq 6$ & $< 40$ ]

388 Part II  
389 Permit Requirements

390 **4VAC50-20-60. Required permits.**

391 A. No person or entity shall construct or begin to construct [ ~~an a new~~ ] impounding structure until  
392 the board has issued a construction permit.

393 B. No person or entity shall alter or begin to alter an existing impounding structure ~~in a manner~~  
394 ~~which would potentially affect its structural integrity~~ until the board has issued an alteration permit, or in  
395 the case of an emergency, authorization obtained from the director. The permit requirement may be  
396 waived if the director determines that the alteration of improvement will not substantially alter or affect  
397 the structural integrity of the impounding structure. Alteration does not mean normal operation and  
398 maintenance. If an owner or the owner's engineer has determined that circumstances are impacting the  
399 integrity of the impounding structure that could result in the imminent failure of the impounding

400 structure, temporary repairs may be initiated prior to approval from the board. The owner shall notify the  
401 department within 24 hours of identifying the circumstances impacting the integrity of the impounding  
402 structure. Such emergency notification shall not relieve the owner of the need to obtain an alteration  
403 permit as soon as may be practicable, nor shall the owner take action beyond that necessary to  
404 address the emergency situation.

405 C. ~~When the board receives~~ owner submits an application to the board for any permit to construct  
406 or alter an impounding structure, the ~~director~~ owner shall also inform the local government of ~~any~~  
407 jurisdiction ~~which~~ or jurisdictions that might be affected by the permit application.

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

410 **4VAC50-20-70. Construction permits.**

411 A. Prior to preparing the complete design report for a ~~construction permit~~ Construction Permit,  
412 ~~applicants are encouraged to seek approval of the project concept from the director~~ may submit a  
413 preliminary design report to the department to determine if the project concept is acceptable to the  
414 department. ~~For this purpose the applicant should submit~~ The preliminary design report should contain,  
415 at a minimum, a general description of subdivisions 1 through 4-12 of subsection B of this section and  
416 subdivisions 1 and 2 of this subsection:

417 1. Proposed design criteria and a description of the size of the impounding structure, ground  
418 cover conditions, extent of current upstream development ~~of~~ within the watershed and the  
419 hydraulic, hydrological and structural features, geologic conditions and the geotechnical  
420 engineering assumptions used to determine the ~~foundations~~ foundation, impoundment rim  
421 stability and materials to be used.

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

424 B. An applicant for a ~~construction permit~~ Construction Permit shall submit a design report ~~on official~~  
425 forms. A form for the design report will be available from the department (Design Report for the  
426 Construction or Alteration of Virginia Regulated Impounding Structures). The design report shall be  
427 prepared in accordance with 4VAC50-20-240 ~~and shall include the following information:~~ The design  
428 report is a required element of a complete application for a Construction Permit and shall include the  
429 following information:

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

433 1. Project information including a description of the proposed construction, name of the  
434 impounding structure, inventory number if available, name of the reservoir, and the purpose of  
435 the reservoir.

436 2. The proposed hazard potential classification in conformance with Table 1 of 4VAC50-20-50.

437 3. Location of the impounding structure including the city or county, number of feet or miles  
438 upstream or downstream of a highway and the highway number, name of the river or the  
439 stream, and the latitude and longitude.

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

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

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

446 a. Top of [ ~~dam~~ impounding structure ] (elevation);

447 b. Downstream toe – lowest (elevation);

448 c. Height of [ ~~dam~~ impounding structure ] (feet);

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

450 e. Crest width (feet);

- 451 f. Upstream slope (horizontal [ and to ] vertical); and  
452 g. Downstream slope (horizontal [ and to ] vertical).
- 453 7. Reservoir data including the following:  
454 a. Maximum capacity (acre-feet);  
455 b. Maximum pool (elevation);  
456 c. Maximum pool surface area (acres);  
457 d. Normal capacity (acre-feet);  
458 e. Normal pool (elevation);  
459 f. Normal pool surface area (acres); and  
460 g. Freeboard [ ~~normal pool to top of dam~~ ] (feet).
- 461 8. Spillway data including the type, construction material, design configuration, and invert  
462 elevation for the low level drain, the principal spillway, and the emergency spillway.
- 463 9. Watershed data including drainage area (square miles); type and extent of watershed  
464 development; time of concentration (hours); routing procedure; spillway design flood used and  
465 state source; design inflow hydrograph volume (acre-feet), peak inflow (cfs), and rainfall  
466 duration (hours); and freeboard during passage of the spillway design flood (feet).
- 467 ~~2-10.~~ A description of properties located in the dam break inundation zone downstream from the  
468 site of the proposed impounding structure, including the location and number of residential  
469 structures, buildings, roads, utilities and other property that would be endangered should the  
470 impounding structure fail.
- 471 ~~3. A statement from the governing body of the local political subdivision or other evidence~~  
472 ~~confirming that body is aware of the proposal to build an impounding structure and of the land~~  
473 ~~use classifications applicable to the inundation zone. 11. Evidence that the local government or~~  
474 ~~governments have been notified of the proposal by the owner to build an impounding structure.~~
- 475 ~~4-12.~~ Maps showing the location of the proposed impounding structure that include: the county  
476 or city in which the proposed impounding structure would be located, the location of roads, and  
477 access to the site, and the outline of the impoundment. Existing aerial photographs or existing  
478 topographic maps may be used for this purpose.
- 479 ~~5-13.~~ A report of the geotechnical investigations of the foundation soils, or bedrock, or both and  
480 of the materials to be used to construct the impounding structure.
- 481 ~~6-14.~~ Design assumptions and analyses sufficient to indicate that the impounding structure will  
482 be stable during its construction and during the life of the impounding structure under all  
483 conditions of reservoir impoundment operations, including rapid filling, flood surcharge, seismic  
484 loadings, and rapid drawdown of the impoundment.
- 485 ~~7-15.~~ Evaluation of the stability of the reservoir impoundment rim area in order to safeguard  
486 against reservoir impoundment rim slides of such magnitude as to create waves capable of  
487 overtopping the impounding structure and confirmation evaluation of rim stability during seismic  
488 activity.
- 489 ~~8-16.~~ Design assumptions and analyses sufficient to indicate that seepage in, around, through  
490 or under the impounding structure, foundation and abutments will be reasonably and practically  
491 controlled so that internal or external forces or results thereof will not endanger the stability and  
492 integrity of the impounding structure. The design report shall also include information on graded  
493 filter design.
- 494 ~~9-17.~~ Calculations and assumptions relative to hydraulic and structural design of the spillway or  
495 spillways and energy dissipater or dissipaters. Spillway capacity shall conform to the criteria of  
496 Table 1 and 4VAC50-20-52.
- 497 ~~10-18.~~ Provisions to ensure that the impounding structure and appurtenances will be protected  
498 against unacceptable deterioration or erosion due to freezing and thawing, wind, wave action,  
499 and rain or any combination thereof.

500 14-19. Other pertinent design data, assumptions and analyses commensurate with the nature of  
501 the particular impounding structure and specific site conditions, including when required by the  
502 director this chapter, a plan and [ water surface ] profile of the dam break inundation [ zones  
503 zone ] .

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

507 ~~13-20. A description of the techniques to be used to divert stream flow during construction so as~~  
508 ~~to prevent hazard to life, health and property, including a detailed plan and procedures to~~  
509 ~~maintain a stable impounding structure during storm events, a drawing showing temporary~~  
510 ~~diversion devices, and a description of the potential impoundment during construction. Such~~  
511 ~~diversion plans shall also be in accordance with applicable environmental laws.~~

512 14-21. A plan of for project construction monitoring and quality control testing to confirm that  
513 construction materials and methods performance standards meet the design requirements set  
514 forth in the specifications.

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

516 ~~16-22. Plans and specifications as required by 4VAC50-20-310.~~

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

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

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

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

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

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

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

540 24. Owner's signature certifying receipt of the information provided pursuant to this subsection.

541 C. A plan of construction is a required element of a complete permit application for a Construction  
542 Permit and shall include:

543 1. A construction sequence with milestones.

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

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

550 4. The stormwater management plan or stormwater management facility plan, as approved by  
551 the local government, if the impounding structure is a stormwater management best  
552 management practice.

553 D. A Temporary Emergency Action Plan is a required element of a complete application for a  
554 Construction Permit and shall include:

555 1. A notification list of state and local emergency response agencies;  
556 2. Provisions for notification of potentially affected residences and structures;  
557 3. Construction site evacuation routes; and  
558 4. Any other special notes particular to the project.

559 E. Within 120 days of receipt of a complete Construction Permit Application the board shall act on  
560 the application. If the application is not acceptable, the director shall inform the applicant within 60 days  
561 of receipt and shall explain what changes are required for an acceptable application. A complete  
562 Construction Permit Application consists of the following:

563 1. A final design report, submitted on the department form (Design Report for the Construction  
564 or Alteration of Virginia Regulated Impounding Structures), with attachments as needed, and  
565 certified by the owner and the owner's engineer;  
566 2. A plan of construction that meets the requirements of subsection C of this section; and  
567 3. A Temporary Emergency Action Plan that meets the requirements of subsection D of this  
568 section.

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

573 ~~H.G.~~ The ~~construction permit~~ Construction Permit shall be valid for the plan of construction  
574 schedule specified in the ~~approved design report~~ Construction Permit Application. The ~~construction~~  
575 schedule may be amended by the director for good cause at the request of the applicant.

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

581 ~~J.~~ The director may ~~revoke a construction permit if any of the permit terms are violated, or if~~  
582 construction is conducted in a manner hazardous to downstream life or property. The director may  
583 order the owner to eliminate such hazardous conditions within a period of time limited by the order.  
584 Such corrective measures shall be at the owner's expense. The applicant may petition the board to  
585 reissue the permit with such modifications as the board determines to be necessary.

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

591 I. The board, the director, or both may take any necessary action consistent with the Dam Safety  
592 Act (§10.1-604 et seq. of the Code of Virginia) if any terms of this section or of the permit are violated, if  
593 the activities of the owner are not in accordance with the approved plans and specifications, if  
594 construction is conducted in a manner hazardous to downstream life or property, or for other cause as  
595 described in the Act.

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

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

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

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

604 b. Location of the impounding structure including the city or county, number of feet or miles  
605 upstream or downstream of a highway and the highway number, name of the river or the  
606 stream, and the latitude and longitude;

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

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

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

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

616 (1) Top of [ ~~dam~~ impounding structure ] (elevation);  
617 (2) Downstream toe – lowest (elevation);  
618 (3) Height of [ ~~dam~~ impounding structure ] (feet);  
619 (4) Crest length – exclusive of spillway (feet);  
620 (5) Crest width (feet);  
621 (6) Upstream slope (horizontal [ ~~and to~~ ] vertical); and  
622 (7) Downstream slope (horizontal [ ~~and to~~ ] vertical).

623 g. Reservoir data including the following:

624 (1) Maximum capacity (acre-feet);  
625 (2) Maximum pool (elevation);  
626 (3) Maximum pool surface area (acres);  
627 (4) Normal capacity (acre-feet);  
628 (5) Normal pool (elevation);  
629 (6) Normal pool surface area (acres); and  
630 (7) Freeboard [ –normal pool to top of dam ] (feet).

631 h. Spillway data including the type, construction material, design configuration, and invert  
632 elevation for the low level drain, the principal spillway, and the emergency spillway; a  
633 description of the low level drain and principal spillway including dimensions, trash guard  
634 information, and orientation of intake and discharge to [ ~~dam~~ impounding structure ] if  
635 looking downstream; and a description of the emergency spillway including dimensions and  
636 orientation to [ ~~dam~~ impounding structure ] if looking downstream;

637 i. Watershed data including drainage area (square miles); type and extent of watershed  
638 development; time of concentration (hours); routing procedure; spillway design flood used  
639 and state source; design inflow hydrograph volume (acre-feet), peak inflow (cfs), and rainfall  
640 duration (hours); freeboard during passage of the spillway design flood (feet); and  
641 confirmation as to whether the impounding structure has ever been overtopped;

642 j. Impounding structure history including the date construction was completed, who it was  
643 designed by and the date, who it was built by and the date, who performed inspections and  
644 dates, description of repairs, and confirmation as to whether the impounding structure has  
645 ever been overtopped;

646 k. A narrative describing the impounding structure procedures for operation, maintenance,  
647 filling, emergency action plan implementation, and structure evaluation;

648 l. A narrative describing the hydraulic and hydrologic data on the spillway design flood,  
649 hydrologic records, flood experience, flood potential, reservoir regulation, and comments or  
650 recommendations regarding these attributes;

651 m. A narrative describing stability of the foundation and abutments, embankment materials,  
652 and a written evaluation of each;

653 n. A complete set of record drawings signed and sealed by a licensed professional engineer  
654 and signed by the owner;

655 o. Certification by the owner's engineer that the information provided pursuant to subdivision  
656 J 2 of this section is true and correct in their professional judgment. Such certification shall  
657 include the engineer's signature, printed name, Virginia number, date, and the engineer's  
658 Virginia seal; and

659 p. Owner's signature certifying receipt of the information provided pursuant to subdivision J  
660 2 of this section.

661 3. Certification from the licensed professional engineer who has monitored construction of the  
662 impounding structure during construction that, to the best of the engineer's judgment,  
663 knowledge and belief, the impounding structure and its appurtenances were constructed in  
664 conformance with the plans, specifications, drawings and other requirements approved by the  
665 board;

666 4. Operation and Maintenance Certificate Application (Operation and Maintenance Certificate  
667 Application for Virginia Regulated Impounding Structures) in accordance with 4VAC50-20-105;  
668 and

669 5. Emergency Action Plan or Emergency Preparedness Plan in accordance with 4VAC50-20-  
670 175 or 4VAC50-20-177.

671 K. Upon completion of construction, the impoundment may be filled upon board issuance of an  
672 Operation and Maintenance Certificate.

673 **4VAC50-20-80. Alterations permits.**

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

677 BA. Alterations which would potentially affect the structural integrity of an impounding structure  
678 include, but are not limited to, changing its the height or otherwise enlarging the dam, increasing the  
679 normal pool or principal spillway elevation or physical dimensions, changing the elevation or physical  
680 dimensions of the emergency spillway, conducting necessary repairs or structural maintenance, or  
681 removing the impounding structure. [ Structural maintenance does not include routine maintenance. ]

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

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

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

687 B. An applicant for an Alteration Permit shall submit a design report. A form for the design report will  
688 be available from the department (Design Report for the Construction or Alteration of Virginia  
689 Regulated Impounding Structures). The design report shall be prepared in accordance with 4VAC50-  
690 20-240. The design report shall include, but not be limited to, the following information:

691 1. Project information including a description and benefits of the proposed alteration, name of  
692 the impounding structure, inventory number if available, name of the reservoir, and the purpose  
693 of the reservoir.

694 2. The hazard potential classification in conformance with Table 1 in 4VAC50-20-50.

695 3. Location of the impounding structure including the city or county, number of feet or miles  
696 upstream or downstream of a highway and the highway number, name of the river or the  
697 stream, and the latitude and longitude.

- 698 4. Owner's name or representative if corporation, mailing address, residential and business  
699 telephone numbers, and other means of communication.
- 700 5. Owner's engineer's name, firm, professional engineer Virginia number, mailing address, and  
701 business telephone number.
- 702 6. Impounding structure data including type of material (earth, concrete, masonry or other) and  
703 the following configurations (note both existing and design configurations for each):
- 704 a. Top of [ dam impounding structure ] (elevation);  
705 b. Downstream toe – lowest (elevation);  
706 c. Height of [ dam impounding structure ] (feet);  
707 d. Crest length – exclusive of spillway (feet);  
708 e. Crest width (feet);  
709 f. Upstream slope (horizontal [ and to ] vertical); and  
710 g. Downstream slope (horizontal [ and to ] vertical).
- 711 7. Reservoir data including the following (note both existing and design configurations for each):
- 712 a. Maximum capacity (acre-feet);  
713 b. Maximum pool (elevation);  
714 c. Maximum pool surface area (acres);  
715 d. Normal capacity (acre-feet);  
716 e. Normal pool (elevation);  
717 f. Normal pool surface area (acres); and  
718 g. Freeboard [ –normal pool to top of dam ] (feet).
- 719 8. Spillway data including the type, construction material, design configuration, and invert  
720 elevation for the low level drain, the principal spillway, and the emergency spillway.
- 721 9. Watershed data including drainage area (square miles); type and extent of watershed  
722 development; time of concentration (hours); routing procedure; spillway design flood used and  
723 state source; design inflow hydrograph volume (acre-feet), peak inflow (cfs), and rainfall  
724 duration (hours); and freeboard during passage of the spillway design flood (feet).
- 725 10. Evidence that the local government has been notified of the alteration and repair plan.
- 726 11. Plans and specifications as required by 4VAC50-20-310. The plan view of the [ dam  
727 impounding structure ] site should represent all significant structures and improvements that  
728 illustrate the location of all proposed work.
- 729 12. A report of the geotechnical investigations of the foundation soils, bedrock, or both in the  
730 areas affected by the proposed alterations and of the materials to be used to alter the  
731 impounding structure.
- 732 13. Design assumptions and analyses sufficient to indicate that the impounding structure will be  
733 stable during the alteration of the impounding structure under all conditions of reservoir  
734 operations.
- 735 14. Calculations and assumptions relative to design of the improved spillway or spillways, if  
736 applicable.
- 737 15. Provisions to ensure that the impounding structure and appurtenances during the alteration  
738 will be protected against unacceptable deterioration or erosion due to freezing and thawing,  
739 wind, wave action and rain or any combination thereof.
- 740 16. Other pertinent design data, assumptions and analyses commensurate with the nature of  
741 the particular impounding structure and specific site conditions, including when required by this  
742 chapter, a plan and [ water surface ] profile of the dam break inundation [ zones zone ] .
- 743 17. If applicable, a description of the techniques to be used to divert stream flow during  
744 alteration work so as to prevent hazard to life, health and property, including a detailed plan and  
745 procedures to maintain a stable impounding structure during storm events, a drawing showing



746 temporary diversion devices, and a description of the potential impoundment during the  
747 alteration. Such diversion plans shall be in accordance with the applicable environmental laws.

748 18. A plan for project construction monitoring and quality control testing to confirm that materials  
749 used in the alteration work and that performance standards meet the design requirements set  
750 forth in the specifications.

751 19. Certification by the owner's engineer that the information provided pursuant to this  
752 subsection is true and correct in their professional judgment. Such certification shall include the  
753 engineer's signature, printed name, Virginia number, date, and the engineer's Virginia seal.

754 20. Owner's signature certifying receipt of the information provided pursuant to this subsection.

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

756 1. A construction sequence with milestones.

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

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

763 D. Within 120 days of receipt of a complete Alteration Permit Application, the board shall act on the  
764 application. If the application is not acceptable, the director shall inform the applicant within 60 days of  
765 receipt and shall explain what changes are required for an acceptable application. A complete  
766 Alteration Permit Application consists of the following:

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

768 2. A plan of construction that meets the requirements of subsection C of this section;

769 3. Any necessary interim provisions to the current Emergency Action Plan or Emergency  
770 Preparedness Plan. Interim provisions shall be submitted to the local organization for  
771 emergency management, the Virginia Department of Emergency Management, and the  
772 department; and

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

778 E. During the alteration work, the owner shall provide the director with any proposed changes from  
779 the approved design, plans, specifications, or a plan of construction. Approval shall be obtained from  
780 the director prior to the alteration or installation of any changes that will affect the integrity or  
781 impounding capacity of the impounding structure.

782 F. The Alteration Permit shall be valid for the construction sequence with milestones specified in the  
783 approved Alteration Permit Application.

784 G. Work identified in the Alteration Permit must commence within the time frame identified in the  
785 Alteration Permit. If work does not commence within the prescribed time frame, the permit shall expire,  
786 except that the applicant may petition the board for extension of the prescribed time frame and the  
787 board may extend such period for good cause with an updated construction sequence with milestones.

788 H. The board, the director, or both may take any necessary action consistent with the Dam Safety  
789 Act (§10.1-604 et seq. of the Code of Virginia) if any terms of this section or of the permit are violated, if  
790 the activities of the owner are not in accordance with the approved plans and specifications, if the  
791 alteration is conducted in a manner hazardous to downstream life or property, or for other cause as  
792 described in the Act.

793 I. Within 90 days after completion of the alteration of an impounding structure, the owner shall  
794 submit a complete Record Report. A form for the Record Report will be available from the department  
795 (Record Report for Virginia Regulated Impounding Structures). The Record Report [ shall be ] signed  
796 and sealed by a licensed professional engineer and signed by the owner [ and shall be sent ] to the

797 department indicating [ that ] the modifications made to the structural features of the impounding  
798 structure [ have been completed ] . This report is not required when the Alteration Permit has been  
799 issued for the removal of an impounding structure. The Record Report shall include the following:

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

802 b. Location of the impounding structure including the city or county, number of feet or miles  
803 upstream or downstream of a highway and the highway number, name of the river or the  
804 stream, and the latitude and longitude;

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

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

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

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

814 (1) Top of [ dam impounding structure ] (elevation);  
815 (2) Downstream toe – lowest (elevation);  
816 (3) Height of [ dam impounding structure ] (feet);  
817 (4) Crest length – exclusive of spillway (feet);  
818 (5) Crest width (feet);  
819 (6) Upstream slope (horizontal [ and to ] vertical); and  
820 (7) Downstream slope (horizontal [ and to ] vertical).

821 g. Reservoir data including the following:

822 (1) Maximum capacity (acre-feet);  
823 (2) Maximum pool (elevation);  
824 (3) Maximum pool surface area (acres);  
825 (4) Normal capacity (acre-feet);  
826 (5) Normal pool (elevation);  
827 (6) Normal pool surface area (acres); and  
828 (7) Freeboard [ –normal pool to top of dam ] (feet).

829 h. Spillway data including the type, construction material, design configuration, and invert  
830 elevation for the low level drain, the principal spillway, and the emergency spillway; a  
831 description of the low level drain and principal spillway including dimensions, trash guard  
832 information, and orientation of intake and discharge to [ dam impounding structure ] if looking  
833 downstream; and a description of the emergency spillway including dimensions and orientation  
834 to [ dam-impounding structure ] if looking downstream;

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

839 j. Impounding structure history including the date construction was completed, who it was  
840 designed by and the date, who it was built by and the date, who performed inspections and  
841 dates, description of repairs, and confirmation as to whether the impounding structure has ever  
842 been overtopped;

843 k. A narrative describing the impounding structure procedures for operation, maintenance,  
844 emergency action plan implementation, and structure evaluation;

- 845 l. A narrative describing the hydraulic and hydrologic data on the spillway design flood,  
846 hydrologic records, flood experience, flood potential, reservoir regulation, and comments or  
847 recommendations regarding these attributes;
- 848 m. A narrative describing stability of the foundation and abutments, embankment materials, and  
849 a written evaluation of each;
- 850 n. A complete set of record drawings signed and sealed by a licensed professional engineer and  
851 signed by the owner;
- 852 o. Certification by the owner's engineer that the information provided pursuant to subdivision l 2  
853 of this section is true and correct in their professional judgment. Such certification shall include  
854 the engineer's signature, printed name, Virginia number, date, and the engineer's Virginia seal;  
855 and
- 856 p. Owner's signature certifying receipt of the information provided pursuant to subdivision l 2 of  
857 this section.

858 J. For altered impounding structures, a certification from a licensed professional engineer who has  
859 monitored the alteration of the impounding structure that, to the best of the engineer's judgment,  
860 knowledge, and belief, the impounding structure and its appurtenances were altered in conformance  
861 with the plans, specifications, drawings and other requirements approved by the board.

862 **4VAC50-20-90. Transfer of permits.**

863 A. Prior to the transfer of ownership of a permitted impounding structure the permittee shall notify  
864 the director in writing and the new owner shall file a transfer application on official forms notification with  
865 the department. A form for the transfer notification will be available from the department (Transfer of  
866 Impounding Structure Notification form Past Owner to New Owner). The new owner shall amend the  
867 existing permit application as necessary and shall certify to the director that he is aware of and will  
868 comply with all of the requirements and conditions of the permit.

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

- 870 1. Project information including the name and inventory number of the structure, name of the  
871 reservoir, and impoundment hazard classification;
- 872 2. Location of the impounding structure including the city or county, number of feet or miles  
873 upstream or downstream of a highway and the highway number, name of the river or the  
874 stream, and the latitude and longitude;
- 875 3. Type of certificates and permits to be transferred including effective date and expiration date  
876 of all certificates and permits;
- 877 4. Past owner's name, mailing address, and residential and business telephone numbers;
- 878 5. New owner's name, mailing address, and residential and business telephone numbers;
- 879 6. Request to transfer certification statement signed and dated by the past owner;
- 880 7. Certification of compliance with permit or certificate with all said terms and conditions signed  
881 and dated by the new owner; and
- 882 8. Contact information updates for Emergency Action Plan or Emergency Preparedness Plan  
883 provided by the new owner. Such updates shall include the name, mailing address, and  
884 residential and business telephone numbers for the [ dam impounding structure ] owner,  
885 [ dam impounding structure ] operator, rainfall and staff gage observer, and alternate observer.

886 **Part III**  
887 **Certificate Requirements**

888 **4VAC50-20-100. Operation and maintenance certificates. (Repealed.)**

889 ~~A. A Class I Operation and Maintenance Certificate is required for a Class I Hazard potential~~  
890 ~~impounding structure. The certificate shall be for a term of six years. It shall be updated based upon the~~  
891 ~~filing of a new reinspection report certified by a professional engineer every two years.~~

892 ~~B. A Class II Operation and Maintenance Certificate is required for a Class II Hazard potential~~  
893 ~~impounding structure. The certificate shall be for a term of six years. It shall be updated based upon the~~  
894 ~~filing of a new reinspection report certified by a professional engineer every three years.~~

895 ~~C. A Class III Operation and Maintenance Certificate is required for a Class III Hazard potential~~  
896 ~~impounding structure. The certificate shall be for a term of six years.~~

897 ~~D. The owner of a Class I, II or III impounding structure shall provide the director an annual owner's~~  
898 ~~inspection report on official forms in years when no professional reinspection is required and may be~~  
899 ~~done by the owner or his representative.~~

900 ~~E. If an Operation and Maintenance Certificate is not updated as required, the board shall take~~  
901 ~~appropriate enforcement action.~~

902 ~~F. The owner of a Class I, II or III impounding structure shall apply for the renewal of the six year~~  
903 ~~operation and maintenance certificate 90 days prior to its expiration in accordance with 4VAC50-20-120~~  
904 ~~of this chapter.~~

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

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

912 Part III  
913 Certificate Requirements

914 **4VAC50-20-105. Regular Operation and Maintenance Certificates.**

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

- 917 1. High Hazard Potential Regular Operation and Maintenance Certificate;  
918 2. Significant Hazard Potential Regular Operation and Maintenance Certificate; or  
919 3. Low Hazard Potential Regular Operation and Maintenance Certificate.

920 B. The owner of an impounding structure shall apply for the renewal of the six-year Regular  
921 Operation and Maintenance Certificate 90 days prior to its expiration. If a Regular Operation and  
922 Maintenance Certificate is not renewed as required, the board shall take appropriate enforcement  
923 action.

924 C. Any owner of an impounding structure that does not have a Regular Operation and Maintenance  
925 Certificate or any owner renewing a Regular Operation and Maintenance Certificate shall file an  
926 Operation and Maintenance Certificate Application. A form for the application will be available from the  
927 department (Operation and Maintenance Certificate Application for Virginia Regulated Impounding  
928 Structures). Such application shall be signed by the owner and signed and sealed by a licensed  
929 professional engineer. The following information shall be submitted on or with the application:

- 930 1. The application shall include the following required information:
- 931 a. The name of structure and inventory number;
  - 932 b. The proposed hazard potential classification;
  - 933 c. Owner's name or representative if corporation, mailing address, residential and business  
934 telephone numbers, and other means of communication;
  - 935 d. An operating plan and schedule including a narrative on the operation of control gates  
936 and spillways and the impoundment drain;
  - 937 e. For earthen embankment [ ~~dams~~ impounding structures ] , a maintenance plan and  
938 schedule for the embankment, principal spillway, emergency spillway, low-level outlet,  
939 impoundment area, downstream channel, and staff gages;
  - 940 f. For concrete [ ~~dams~~ impounding structures ] , a maintenance plan and schedule for the  
941 upstream face, downstream face, crest of dam, galleries, tunnels, abutments, spillways,  
942 gates and outlets, and staff gages;
  - 943 g. An inspection schedule for operator inspection, maintenance inspection, technical safety  
944 inspection, and overtopping situations;

945 h. A schedule including the rainfall amounts, emergency spillway flow levels or storm event  
946 that initiates the Emergency Action or Preparedness Plan and the frequency of  
947 observations;

948 i. A statement as to whether or not the current hazard potential classification for the [ dam  
949 impounding structure ] is appropriate and whether or not additional work is needed to make  
950 an appropriate hazard potential designation;

951 j. For newly constructed or recently altered impounding structures, a certification from a  
952 licensed professional engineer who has monitored the construction or alteration of the  
953 impounding structure that, to the best of the engineer's judgment, knowledge, and belief, the  
954 impounding structure and its appurtenances were constructed or altered in conformance  
955 with the plans, specifications, drawings and other requirements approved by the board;

956 k. Certification by the owner's engineer that the Operation and Maintenance Certificate  
957 Application information provided pursuant to subdivision 1 of this subsection is true and  
958 correct in their professional judgment. Such certification shall include the engineer's  
959 signature, printed name, Virginia number, date, and the engineer's Virginia seal; and

960 l. Owner's signature certifying the Operation and Maintenance Certificate Application  
961 information provided pursuant to subdivision 1 of this subsection and that the operation and  
962 maintenance plan and schedule shall be conducted in accordance with this chapter.

963 2. An Inspection Report (Annual Inspection Report for Virginia Regulated Impounding  
964 Structures) in accordance with subsection E of this section;

965 3. An Emergency Action Plan in accordance with 4VAC50-20-175 or an Emergency  
966 Preparedness Plan in accordance with 4VAC50-20-177 and evidence that the required copies  
967 of such plan have been submitted to the local organization for emergency management and the  
968 Virginia Department of Emergency Management; and

969 4. Any additional analysis determined necessary by the director, the board or the owner's  
970 engineer to address public safety concerns. Such additional analysis may include, but not be  
971 limited to, seismic stability, earthen spillway integrity, adequate freeboard allowance, stability  
972 assessment of the impoundment's foundation, potential liquefaction of the embankment,  
973 overturning or sliding of a concrete structure and other structural stress issues.

974 D. If the Operation and Maintenance Certificate Application submittal is found to be not complete,  
975 the director shall inform the applicant within 30 days and shall explain what changes are required for an  
976 acceptable submission. Within 60 days of receipt of a complete application the board shall act upon the  
977 application. Upon finding that the impounding structure as currently operating is in compliance with this  
978 chapter, the board shall issue a Regular Operation and Maintenance Certificate. Should the board find  
979 that the impounding structure as currently operating is not in compliance with this chapter, the board  
980 may deny the permit application or issue a Conditional Operation and Maintenance Certificate in  
981 accordance with 4VAC50-20-150.

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

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

986 a. For a High Hazard Potential impounding structure, every two years,  
987 b. For a Significant Hazard Potential impounding structure, every three years,  
988 c. For a Low Hazard Potential impounding structure, every six years.

989 In years when an Inspection Report signed and sealed by a licensed professional engineer  
990 is not required, an owner shall submit the Annual Inspection Report for Virginia Regulated  
991 Impounding Structures.

992 2. The Inspection Report shall include the following required information:

993 a. Project information including the name and inventory number of structure, name of the  
994 reservoir, and purpose of the reservoir;

995 b. City or county where the impounding structure is located;

996 c. Owner's name or representative if corporation, mailing address, residential and business  
997 telephone numbers, and other means of communication;  
998 d. Owner's engineer's name, firm, professional engineer Virginia number, mailing address,  
999 and business telephone number;  
1000 e. Inspection observation of the impounding structure including the following:  
1001 (1) Earthen embankment information including any embankment alterations; erosion;  
1002 settlement, misalignments or cracks; seepage and seepage flow rate and location;  
1003 (2) Upstream slope information including notes on woody vegetation removed, rodent  
1004 burrows discovered, and remedial work performed;  
1005 (3) Intake structure information including notes on deterioration of concrete structures,  
1006 exposure of rebar reinforcement, need to repair or replace trash rack, any problems with  
1007 debris in the reservoir, and whether the drawdown valve operated;  
1008 (4) Abutment contacts including notes on seepage and seepage flow rate and location;  
1009 (5) Earthen emergency spillway including notes on obstructions to flow and plans to correct,  
1010 rodent burrows discovered, and deterioration in the approach or discharge channel;  
1011 (6) Concrete emergency spillway including notes on the deterioration of the concrete,  
1012 exposure of rebar reinforcement, any leakage below concrete spillway, and obstructions to  
1013 flow and plans to correct;  
1014 (7) Downstream slope information including notes on woody vegetation removed, rodent  
1015 burrows discovered, whether seepage drains are working, and any seepage or wet areas;  
1016 (8) Outlet pipe information including notes on any water flowing outside of discharge pipe  
1017 through the [ dam impounding structure ] and a description of any reflection or damage to  
1018 the pipe;  
1019 (9) Stilling basin information including notes on the deterioration of the concrete, exposure of  
1020 rebar reinforcement, deterioration of the earthen basin slopes, repairs made, and any  
1021 obstruction to flow;  
1022 (10) Gates information including notes on gate malfunctions or repairs, corrosion or  
1023 damage, and whether any gates were operated and if so how often and to what extreme;  
1024 (11) Reservoir information including notes on new developments upstream of the dam,  
1025 slides or erosion of lake banks, and general comments to include silt, algae, or other  
1026 influence factors;  
1027 (12) Instruments information including any reading of instruments and any installation of new  
1028 instruments; and  
1029 (13) General information including notes on new development in the downstream floodplain  
1030 that would impact [ hazard classification spillway design flood requirements ] , the maximum  
1031 stormwater discharge or peak elevation during the previous year, whether general  
1032 maintenance was performed and when, and actions that need to be completed before the  
1033 next inspection.  
1034 f. Evaluation rating of the [ dam impounding structure ] and appurtenances (excellent, good,  
1035 or poor), general comments, and recommendations;  
1036 g. Certification by the owner and date of inspection; and  
1037 h. Certification and seal by the owner's engineer and date of inspection, as applicable.  
1038 F. The owner of an impounding structure shall notify the department immediately of any change in  
1039 the use of the area downstream that would impose hazard to life or property in the event of failure.  
1040 **4VAC50-20-110. Operation and maintenance certificate for newly constructed impounding**  
1041 **structures. (Repealed.)**  
1042 A. Within 180 days after completion of the construction of an impounding structure, the owner shall  
1043 submit:  
1044 1. A complete set of as-built drawings certified by a professional engineer and an as-built report  
1045 on official forms.

1046 ~~2. A copy of a certificate from the professional engineer who has inspected the impounding~~  
1047 ~~structure during construction certifying that, to the best of his judgment, knowledge and belief,~~  
1048 ~~the impounding structure and its appurtenances were constructed in conformance with the~~  
1049 ~~plans, specifications, drawings and other requirements approved by the board.~~  
1050 ~~3. A copy of the operation and maintenance plan and emergency action plan submitted with the~~  
1051 ~~design report including any changes required by the director.~~  
1052 ~~B. If the director finds that the operation and maintenance plan or emergency action plan is~~  
1053 ~~deficient, he shall return it to the owner within 60 days with suggestions for revision.~~  
1054 ~~C. Within 60 days of receipt of the items listed in subsection A above, if the board finds that~~  
1055 ~~adequate provision has been made for the safe operation and maintenance of the impounding~~  
1056 ~~structure, the board shall issue an operation and maintenance certificate.~~  
1057 **4VAC50-20-120. Operation and maintenance certificates for existing impounding structures.**  
1058 **(Repealed.)**  
1059 ~~A. Any owner of an impounding structure other than a Class IV impounding structure which has~~  
1060 ~~already filed an inventory report that does not have an operation and maintenance certificate or any~~  
1061 ~~owner renewing an operation and maintenance certificate shall file an application with the board.~~  
1062 ~~B. The application for an operation and maintenance certificate shall be on official forms and shall~~  
1063 ~~include:~~  
1064 ~~1. A reinspection report for Class I and II impounding structures. The reinspection report shall~~  
1065 ~~include an update of conditions of the impounding structure based on a previous safety~~  
1066 ~~inspection as required by the board, a previous reinspection report or an as-built report.~~  
1067 ~~2. An inventory report for Class III impounding structures. The inventory report shall include:~~  
1068 ~~a. The name and location of the impounding structure and the name of the owner.~~  
1069 ~~b. The description and dimensions of the impounding structure, the spillways, the reservoir~~  
1070 ~~and the drainage area.~~  
1071 ~~c. The history of the impounding structure which shall include the design, construction,~~  
1072 ~~repairs, inspections and whether the structure has been overtopped.~~  
1073 ~~d. Observations of the condition of the impounding structure, reservoir, and upstream and~~  
1074 ~~downstream areas.~~  
1075 ~~e. Any changes in the impounding structure, reservoir, and upstream and downstream~~  
1076 ~~areas.~~  
1077 ~~f. Recommendations for remedial work.~~  
1078 ~~3. An impoundment and impounding structure operation and maintenance plan certified by a~~  
1079 ~~professional engineer. This plan shall place particular emphasis on operating and maintaining~~  
1080 ~~the impounding structure in keeping with the project design in such manner as to maintain its~~  
1081 ~~structural integrity and safety during both normal and abnormal conditions which may~~  
1082 ~~reasonably be expected to occur during its planned life. The safety inspection report required by~~  
1083 ~~the board should be sufficient to serve as the basis for the operation and maintenance plan for a~~  
1084 ~~Class I and Class II impounding structure. For a Class III impounding structure, the operation~~  
1085 ~~and maintenance plan shall be based on the data provided in the inventory report.~~  
1086 ~~4. An emergency action plan and evidence that a copy of such plan has been filed with the local~~  
1087 ~~organization for emergency management and the State Department of Emergency~~  
1088 ~~Management. The plan shall include a method of providing notification and warning to persons~~  
1089 ~~downstream, other affected persons or property owners and local authorities in the event of a~~  
1090 ~~flood hazard or the impending failure of the impounding structure.~~  
1091 ~~C. The owner shall certify in writing that the operation and maintenance plan approved by the board~~  
1092 ~~will be adhered to during the life of the project except in cases of emergency requiring departure~~  
1093 ~~therefrom in order to mitigate hazard to life and property, at which time the owner's engineer and the~~  
1094 ~~director shall be notified.~~  
1095 ~~D. If the director finds that the operation and maintenance plan or emergency action plan is~~  
1096 ~~deficient, he shall return it to the owner within 60 days with suggestions for revision.~~

1097 ~~E. Within 60 days of receipt of an acceptable application if the board finds that adequate provision~~  
1098 ~~has been made for the safe operation and maintenance of the impounding structure, the board shall~~  
1099 ~~issue an operation and maintenance certificate.~~

1100 **4VAC50-20-125. Delayed effective date for Spillway Design Flood requirements for impounding**  
1101 **structures.**

1102 A. If an impounding structure has been determined to have an adequate spillway capacity prior to  
1103 the effective date of these regulations and is currently operating under a Regular Operation and  
1104 Maintenance Certificate, but will now require spillway modifications due to changes in these  
1105 regulations, the owner shall submit to the board an Alteration Permit Application in accordance with  
1106 4VAC50-20-80 to address spillway capacity at the time of the expiration of their Regular Operation and  
1107 Maintenance Certificate or within three years of the effective date of these regulations, whichever is  
1108 later. The Alteration Permit Application shall contain a construction sequence with milestones for  
1109 completing the necessary improvements within five years of Alteration Permit issuance. The board may  
1110 approve an extension of the prescribed time frame for good cause. Should the owner be able to  
1111 demonstrate that no spillway capacity change is necessary, the impounding structure may be found to  
1112 be in compliance with this chapter.

1113 B. In accordance with 4VAC50-20-105, the owner shall submit the Operation and Maintenance  
1114 Certificate Application (Operation and Maintenance Certificate Application for Virginia Regulated  
1115 Impounding Structures), the Emergency Action Plan or Emergency Preparedness Plan, and the  
1116 Inspection Report (Annual Inspection Report for Virginia Regulated Impounding Structures) 90 days  
1117 prior to the expiration of the Regular Operation and Maintenance Certificate.

1118 C. If circumstances warrant more immediate repairs to the impounding structure, the board may  
1119 direct alterations to the spillway to be completed sooner.

1120 D. During this delay period, owners are required to address other deficiencies that may exist that  
1121 are not related to the spillway design flood.

1122 **4VAC50-20-130. Existing impounding structures constructed prior to July 1, 1982. (Repealed.)**

1123 ~~A. Many existing impoundment structures were designed and constructed prior to the enactment of~~  
1124 ~~the Dam Safety Act, and may not satisfy current criteria for new construction. The board may issue an~~  
1125 ~~operation and maintenance certificate for such structures provided that:~~

1126 ~~1. Operation and maintenance is determined by the director to be satisfactory and up to date;~~  
1127 ~~2. Annual owner's inspection reports have been filed with and are considered satisfactory by the~~  
1128 ~~director;~~

1129 ~~3. The applicant proves in accordance with the current design procedures and references of~~  
1130 ~~4VAC50-20-320 to the satisfaction of the board that the impounding structure as designed,~~  
1131 ~~constructed, operated and maintained does not pose an unreasonable hazard to life and~~  
1132 ~~property; and~~

1133 ~~4. The owner satisfies all special requirements imposed by the board.~~

1134 ~~B. When appropriate with existing impounding structures only, the spillway design flood requirement~~  
1135 ~~may be reduced by the board to the spillway discharge at which dam failure will not significantly~~  
1136 ~~increase the downstream hazard existing just prior to dam failure provided that the conditions of~~  
1137 ~~4VAC50-20-130 A have been met.~~

1138 **4VAC50-20-140. Existing impounding structures constructed after July 1, 1982. (Repealed.)**

1139 ~~The board may issue an operation and maintenance certificate for an impounding structure having~~  
1140 ~~a construction permit issued after July 1, 1982, and shall not require upgrading to meet new more~~  
1141 ~~stringent criteria unless the board determines that the new criteria must be applied to prevent an~~  
1142 ~~unreasonable hazard to life or property.~~

1143 **4VAC50-20-150. Conditional operation and maintenance certificate.**

1144 A. During the review of any operation Operation and maintenance application Maintenance  
1145 Certificate Application (Operation and Maintenance Certificate Application for Virginia Regulated  
1146 Impounding Structures) completed in accordance with 4VAC50-20-105 should the director determine  
1147 that the impounding structure has nonimminent deficiencies of a nonimminent danger category, the



1148 director may recommend that the board issue a ~~conditional operation~~ Conditional Operation and  
1149 ~~maintenance certificate~~ Maintenance Certificate.

1150 B. The ~~conditional operation~~ Conditional Operation and ~~maintenance certificate~~ Maintenance  
1151 Certificate for Class I, II and III High, Significant, and Low Hazard Potential impounding structures shall  
1152 be for a maximum term of two years. This certificate will allow the owner to continue normal operation  
1153 and maintenance of the impounding structure, and shall require that the owner correct the deficiencies  
1154 on a schedule [ ~~determined~~ approved ] by the director board.

1155 C. A ~~conditional certificate~~ Conditional Certificate may be ~~renewed~~ extended in accordance with the  
1156 procedures of ~~4VAC50-20-120~~ 4VAC50-20-155 provided that ~~annual owner inspection reports~~  
1157 Inspection Reports (Annual Inspection Report for Virginia Regulated Impounding Structures) are on file,  
1158 and the board determines that the owner is proceeding with the necessary corrective actions.

1159 D. Once the deficiencies are corrected, the board shall issue ~~an operation~~ a Regular Operation and  
1160 ~~maintenance certificate~~ Maintenance Certificate based upon ~~any required revisions to the original~~  
1161 ~~application~~ the impounding structure's meeting the requirements of 4VAC50-20-105.

1162 **4VAC50-20-155. Extension of Operation and Maintenance Certificates.**

1163 The board may extend an Operation and Maintenance Certificate for impounding structures  
1164 provided that the owner submits a written request justifying an extension, the amount of time needed to  
1165 comply with the requirements set out in the current Operation and Maintenance Certificate, and any  
1166 required fees. The owner must have demonstrated substantial and continual progress towards meeting  
1167 the requirements [ of the certificate in order to receive an extension ] .

1168 **4VAC50-20-160. Additional operation and maintenance requirements.**

1169 A. The owner of an impounding structure shall not, through action or inaction, cause or allow such  
1170 structure to impound water following receipt of a written report from the owner's engineer that the  
1171 impounding structure will not safely impound water.

1172 B. In accordance with §10.1-609.2 of the Code of Virginia, [ ~~dam~~ impounding structure ] owners  
1173 shall not permit the growth of trees and other woody vegetation and shall remove any such vegetation  
1174 from the slopes and crest of embankments and the emergency spillway area, and within a distance of  
1175 25 feet from the toe of the embankment and abutments of the dam.

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

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

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

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

1186 2. Location of the impounding structure including the city or county, number of feet or miles  
1187 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 business  
1190 telephone numbers, and other means of communication;

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

1192 5. A list of the agricultural functions for which the impoundment supplies water;

1193 6. The date of validation; and

1194 7. The owner's signature validating that the impoundment is operated primarily for agricultural  
1195 purposes and is exempt from the regulations.

1196 C. The Agricultural Exemption Report may be verified by the department through a [ ~~possible~~ ] site  
1197 visit.

1198 **4VAC50-20-170. Transfer of certificates.**

1199 A. Prior to the transfer of ownership of an impounding structure the certificate holder shall notify the  
1200 director in writing and the new owner shall file a transfer application on official forms notification with the  
1201 department. A form for the transfer notification will be available from the department (Transfer of  
1202 Impounding Structure Notification from Past Owner to New Owner). The new owner may elect to  
1203 continue the ~~current existing~~ operation and maintenance certificate for the remaining term or he may  
1204 apply for a new certificate in accordance with ~~4VAC50-20-120~~ 4VAC50-20-105. If the owner elects to  
1205 continue the existing certificate, he shall ~~amend the existing certificate application as necessary and~~  
1206 shall certify to the director that he is aware of and will comply with all of the requirements and  
1207 conditions of the certificate.

1208 B. The Transfer Notification shall include the following required information:

- 1209 1. Project information including the name and inventory number of the structure, name of the  
1210 reservoir, and impoundment hazard classification;
- 1211 2. Location of the impounding structure including the city or county, number of feet or miles  
1212 upstream or downstream of a highway and the highway number, name of the river or the  
1213 stream, and the latitude and longitude;
- 1214 3. Type of certificates and permits to be transferred including effective date and expiration date  
1215 of all certificates and permits;
- 1216 4. Past owner's name, mailing address, and residential and business telephone numbers;
- 1217 5. New owner's name, mailing address, and residential and business telephone numbers;
- 1218 6. Request to transfer certification statement signed and dated by the past owner;
- 1219 7. Certification of compliance with permit or certificate with all said terms and conditions signed  
1220 and dated by the new owner; and
- 1221 8. Contact information updates for Emergency Action Plan or Emergency Preparedness Plan  
1222 provided by the new owner. Such updates shall include the name, mailing address, and  
1223 residential and business telephone numbers for the [ ~~dam~~ impounding structure ] owner, [ ~~dam~~  
1224 impounding structure ] operator, rainfall and staff gage observer, and alternate observer.

1225 **4VAC50-20-175. Emergency Action Plan (EAP) for High and Significant Hazard Potential [ ~~Dams~~**  
1226 **impounding structures ] .**

1227 A. In order to protect life during potential emergency conditions at [ ~~a dam~~ an impounding structure ]  
1228 , and to ensure effective, timely action is taken should [ ~~a dam~~ an impounding structure ] emergency  
1229 occur, an EAP shall be required for each High and Significant Hazard Potential impounding structure.  
1230 The EAP shall be coordinated with the Department of Emergency Management in accordance with  
1231 §44-146.18 of the Code of Virginia. The EAP required by these regulations shall be incorporated into  
1232 local and interjurisdictional emergency plans pursuant to §44-146.19 of the Code of Virginia.

1233 B. It is the [ ~~dam~~ impounding structure ] owner's responsibility to develop, maintain, exercise, and  
1234 implement a site-specific EAP.

1235 C. An EAP shall be submitted every six years. The EAP shall be submitted with the owner's  
1236 submittal of their Regular Operation and Maintenance Certificate application (Operation and  
1237 Maintenance Certificate Application for Virginia Regulated Impounding Structures).

1238 D. The owner shall update [and resubmit] the EAP immediately upon becoming aware of  
1239 necessary changes to keep the EAP workable. Should [ ~~a dam~~ an impounding structure ] be  
1240 reclassified, an EAP in accordance with this section shall be submitted.

1241 E. A drill shall be conducted annually for each high or significant hazard impounding structure. To  
1242 the extent practicable, the drill should include a face-to-face meeting with the local emergency  
1243 management agencies responsible for any necessary evacuations to review the EAP and ensure the  
1244 local emergency management agencies understand the actions required during an emergency. A  
1245 table-top exercise shall be conducted once every [ ~~three six~~ ] years [ ,although more frequent table-top  
1246 exercises are encouraged ] . [ Drills and table-top exercises for multiple impounding structures may be  
1247 performed in combination if the involved parties are the same. ] Owners shall certify to the department  
1248 annually that a drill, a table-top exercise, or both has been completed [ , ~~provide a critique of the~~

1249 ~~exercise or exercises ] and [ provide ] any revisions or updates to the EAP or a statement that no~~  
1250 ~~revisions or updates are needed.~~

1251 F. ~~[ Dam Impounding structure ] owners shall test existing monitoring, sensing, and warning~~  
1252 ~~equipment at remote or unattended [ dams impounding structures ] at least twice per year [ or as~~  
1253 ~~performed by the Virginia Department of Emergency Management pursuant to §10.1-609.1 of the Code~~  
1254 ~~of Virginia ] and maintain a record of such tests.~~

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

1257 1. Notification chart. A notification chart shall be included for all classes of ~~[ dams impounding~~  
1258 ~~structures ]~~ that shows who is to be notified, by whom, and in what priority. The notification  
1259 chart shall include contact information providing 24-hour telephone coverage for all responsible  
1260 parties ~~[ including, but not limited to, the impounding structure operator or manager, state and~~  
1261 ~~local emergency management officials, local police or sheriffs' departments, and the owner's~~  
1262 ~~engineer ]~~. ~~[ The notification chart shall also identify the process by which downstream property~~  
1263 ~~owners will be notified, and what party or parties will be responsible for making such~~  
1264 ~~notifications. ]~~

1265 2. Emergency Detection, Evaluation, and Classification. The EAP shall include a discussion of  
1266 the procedures for timely and reliable detection, evaluation, and classification of emergency  
1267 situations considered to be relevant to the project setting and impounding features. Each  
1268 relevant emergency situation is to be documented to provide an appropriate course of action  
1269 based on the urgency of the situation. Where appropriate, situations should address ~~[ dam~~  
1270 ~~breaks impounding structure failures ]~~ that are imminent or in progress, a situation where the  
1271 potential for ~~[ dam impounding structure ]~~ failure is rapidly developing, and a situation where the  
1272 threat is slowly developing.

1273 3. Responsibilities. The EAP shall specify responsibilities for EAP-related tasks. The EAP shall  
1274 also clearly designate the responsible party for making the decision that an emergency  
1275 condition no longer exists at the ~~[ dam impounding structure ]~~. The EAP shall include procedures  
1276 and the responsible parties for notifying to the extent possible any known local occupants,  
1277 owners, or lessees of downstream properties potentially impacted by the ~~[ dam's impounding~~  
1278 ~~structure's] failure.~~

1279 4. Preparedness. The EAP shall include a section that describes preparedness actions to be  
1280 taken both before and following development of emergency conditions.

1281 5. Dam Break Inundation Maps. The EAP shall include dam break inundation maps developed  
1282 in accordance with 4VAC50-20-54.

1283 6. Appendices. The appendices shall contain information that supports and supplements the  
1284 material used in the development and maintenance of the EAP such as analyses of ~~[ dam break~~  
1285 ~~impounding structure failure ]~~ floods; plans for training, exercising, updating, and posting the  
1286 EAP; and other site-specific concerns.

1287 7. Certification. ~~[ The EAP shall include a section that is signed by all parties with assigned~~  
1288 ~~responsibilities in the EAP pursuant to this subdivision 3 of this subsection, where they indicate~~  
1289 ~~their receipt of the EAP. The EAP shall include a section that identifies all parties with assigned~~  
1290 ~~responsibilities in the EAP pursuant to subdivision 3 of this subsection. This will include~~  
1291 ~~certification that the EAP has been received by these parties. ]~~ The preparer's name, title, and  
1292 contact information shall be printed in this section. The preparer's signature shall also be  
1293 included in the certification section. The local organization for emergency management shall  
1294 provide the owner and the department with any deficiencies they may note.

1295 H. The development of the EAP shall be coordinated with all entities, jurisdictions, and agencies  
1296 that would be affected by ~~[ a dam an impounding structure ]~~ failure or that have statutory  
1297 responsibilities for warning, evacuation, and postflood actions. Consultation with state and local  
1298 emergency management officials at appropriate levels of management responsible for warning and  
1299 evacuation of the public shall occur to ensure that there is awareness of their individual and group  
1300 responsibilities. The owner shall also coordinate with the local organization for emergency

1301 management to identify properties that upon failure of the impounding structure would result in  
1302 economic impacts.

1303 I. The EAP, or any updates to an existing EAP, shall be submitted to the department, the local  
1304 organization for emergency management, and the Virginia Department of Emergency Management.  
1305 Two copies shall be provided to the department.

1306 J. The following format shall be used as necessary to address the requirements of this section.

1307 Title Page/Cover Sheet

1308 Table of Contents

1309 I. Certifications

1310 II. Notification Flowchart

1311 III. Statement of Purpose

1312 IV. Project Description

1313 V. Emergency Detection, Evaluation, and Classification

1314 VI. General Responsibilities Under the EAP

1315 A. [ Dam Impounding Structure] Owner Responsibilities

1316 B. Responsibility for Notification

1317 C. Responsibility for Evacuation

1318 D. Responsibility for Termination and Follow-Up

1319 E. EAP Coordinator Responsibility

1320 VII. Preparedness

1321 VIII. Inundation Maps

1322 IX [.] Appendices

1323 A. Investigation and Analyses of [ Dam-break Impounding Structure Failure ] Floods

1324 B. Plans for Training, Exercising, Updating, and Posting the EAP

1325 C. Site-Specific Concerns

1326 **4VAC50-20-177. Emergency Preparedness Plan for Low Hazard [ Dams impounding structures ]**  
1327 :

1328 [A.] Low Hazard [ Dams impounding structures ] shall provide information for emergency  
1329 preparedness to the department, the local organization for emergency management and the Virginia  
1330 Department of Emergency Management. A form for the submission will be available from the  
1331 department (Emergency Preparedness Plan for Low Hazard Virginia Regulated Impounding  
1332 Structures). The information shall include, but not be limited, to the following:

1333 1. Name of the impounding structure, inventory number, city or county, latitude, and longitude;

1334 2. Owner's name, mailing address, residential and business telephone numbers, and other  
1335 means of communication. Contact information shall provide for 24-hour telephone contact  
1336 capability;

1337 3. [ Dam Impounding structure ] operator's name, mailing address, residential and business  
1338 telephone numbers, and other means of communication. Contact information shall provide for  
1339 24-hour telephone contact capability;

1340 4. Rainfall and staff gage observer's name, mailing address, residential and business telephone  
1341 numbers, and other means of communication. Contact information shall provide for 24-hour  
1342 telephone contact capability;

1343 5. Contact information for alternate operator and alternate rainfall and staff gage observer, if  
1344 applicable;

1345 6. Contact information for the local dispatch center nearest [ dam impounding structure ]  
1346 including address and 24-hour telephone number;

1347 7. City or county emergency services coordinator's name, mailing address, residential and  
1348 business telephone numbers, and other means of communication;

- 1349 8. A procedure and the responsible parties for notifying to the extent possible any known local  
1350 occupants, owners, or lessees of downstream properties potentially impacted by the [ dam's  
1351 impounding structure's ] failure;
- 1352 9. A discussion of the procedures for timely and reliable detection, evaluation, and classification  
1353 of emergency situations considered to be relevant to the project setting and impounding  
1354 features. Each relevant emergency situation is to be documented to provide an appropriate  
1355 course of action based on the urgency of the situation;
- 1356 10. A simple dam break inundation map acceptable to the director, demonstrating the general  
1357 inundation that would result from [a dam an impounding structure] failure. Such maps required  
1358 pursuant to this section do not require preparation by a professional licensed engineer;  
1359 however, maps prepared by a licensed professional engineer are preferred;
- 1360 11. Identification of public roads downstream noting the highway number and distance below  
1361 the [ dam impounding structure ] . If roads exist, contact information for the resident Virginia  
1362 Department of Transportation engineer or city or county engineer including address and 24-hour  
1363 telephone numbers;
- 1364 12. Amount of rainfall that will initiate a Stage II Condition in inches per six hours, inches per 12  
1365 hours, and inches per 24 hours and a Stage III Condition in inches per six hours, inches per 12  
1366 hours, and inches per 24 hours;
- 1367 13. Amount of flow in the emergency spillway that will initiate a Stage II Condition in feet (depth  
1368 of flow) and a Stage III Condition in feet (depth of flow);
- 1369 14. Staff gage location and description; the frequency of observations by the rainfall or staff  
1370 gage observer under a Stage I Condition, and Stage II Condition, and a Stage III Condition; and  
1371 a clear description of an access route and means of travel during flood conditions to the [ dam  
1372 impounding structure ] ;
- 1373 15. Evacuation procedures including notification, monitoring, evacuation, and reporting  
1374 processes and responsibilities;
- 1375 16. Evidence that the required copies of such plan have been submitted to the local  
1376 organization for emergency management and the Virginia Department of Emergency  
1377 Management; and
- 1378 17. Certification of the plan by the owner.

1379 Part IV  
1380 Procedures

1381 **4VAC50-20-180. Inspections.**

1382 A. The director may make inspections during construction, alteration or operation and maintenance  
1383 as deemed necessary to ensure that the impounding structure is being constructed, altered or operated  
1384 and maintained in compliance with the permit or certificate issued by the board. The director shall  
1385 provide the owner a copy of the findings of these inspections. ~~This~~ The department's inspection does  
1386 not relieve the owner from the responsibility of providing adequate inspection during construction,  
1387 alteration, or operation and maintenance. During the maintenance, construction, or alteration of any  
1388 [ dam impounding structure ] or reservoir, the director shall require the owner to perform, at the owner's  
1389 expense, such work or tests as necessary to obtain information sufficient to enable the director to  
1390 determine whether conformity with the plans and specifications approved by the certificate is being  
1391 secured.

1392 B. Periodic inspections during construction or alteration shall be conducted under the supervision  
1393 direction of a licensed professional engineer who shall ~~propose~~ the frequency and nature of the  
1394 inspections subject to approval by the director provide for [ full-time ] monitoring, review of contractor  
1395 submittals, and appropriate confirmatory testing of all facets of construction affecting the safety of the  
1396 impounding structure in accordance with the construction or alteration permit issued by the board.

1397 Periodic C. Required inspections during operation and maintenance shall be conducted under the  
1398 supervision of a licensed professional engineer at an interval not greater than that required to update  
1399 the operation and maintenance certificate [ - ] At a minimum, an annual owner's inspection shall be  
1400 conducted when a professional inspection is not required intervals designated under 4VAC50-20-105.

1401 D. Every owner shall provide for an inspection by a licensed professional engineer after overtopping  
1402 of the impounding structure or after flows cause damage to the emergency spillway. A copy of the  
1403 findings of each inspection with the engineer's recommendations shall be filed with the board within a  
1404 reasonable period of time not to exceed 30 days subsequent to completion of the inspection.

1405 **[ 4VAC50-20-190. Right to informal fact-finding proceeding or hearing.**

1406 Any owner aggrieved by an action taken by the director or by the board without hearing, or by  
1407 inaction of the director or the board, under the provisions of this chapter, may demand in writing an  
1408 informal fact-finding proceeding pursuant to §2.2-4019 of the Code of Virginia or a formal hearing  
1409 pursuant to §2.2-4020 of the Code of Virginia. A formal hearing may be granted only with the consent  
1410 of the board. ]

1411 **4VAC50-20-200. Enforcement.**

1412 ~~Any owner refusing to obey any order of the board or the director pursuant to this chapter may be~~  
1413 ~~compelled to obey and comply with such provisions by injunction or other appropriate remedy obtained~~  
1414 ~~in a court proceeding. Such proceeding shall be instituted by the board or in the case of an emergency,~~  
1415 ~~by the director in the court which granted approval to the owner to impound waters or, if such approval~~  
1416 ~~has not been granted, the proceeding shall be instituted in any appropriate court. The provisions of this~~  
1417 ~~chapter may be enforced by the board, the director, or both in any manner consistent with the~~  
1418 ~~provisions of the Dam Safety Act (§10.1-604 et seq. of the Code of Virginia).~~

1419 **4VAC50-20-210. Consulting ~~boards~~ committee.**

1420 A. When the board needs to satisfy questions of safety regarding plans and specifications,  
1421 construction, alteration, or operation and maintenance, or when requested by the owner, the board may  
1422 appoint a consulting ~~board~~ committee to report to it with respect to those questions of the impounding  
1423 structure's safety of an impounding structure. Such a ~~board~~ committee shall consist of two or more  
1424 consultants, none of whom have been associated with the impounding structure.

1425 B. The costs and expenses incurred by the consulting ~~board~~ committee, if appointed at the request  
1426 of an owner, shall be paid by the owner.

1427 C. The costs and expenses incurred by the consulting ~~board~~ committee, if initiated by the board,  
1428 shall be paid by the board.

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

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

1435 B. Imminent danger.

1436 1. If an owner or the owner's engineer has determined that circumstances are impacting the  
1437 integrity of the impounding structure that could result in the imminent failure of the impounding  
1438 structure, temporary repairs may be initiated prior to approval from the board. The owner shall  
1439 notify the department within 24 hours of identifying the circumstances impacting the integrity of  
1440 the impounding structure. Such emergency notification shall not relieve the owner of the need to  
1441 obtain an alteration permit as soon as may be practicable, nor shall the owner take action  
1442 beyond that necessary to address the emergency situation.

1443 2. When the director finds that an impounding structure is unsafe and constitutes an imminent  
1444 danger to life or property, he shall immediately notify the State Virginia Department of  
1445 Emergency Management and confer with the owner who shall activate the Emergency Action  
1446 Plan or Emergency Preparedness Plan if appropriate to do so. The owner of an impounding  
1447 structure found to constitute an imminent danger to life or property shall take immediate  
1448 corrective action to remove the imminent danger as required by §10.1-608 of the Code of  
1449 Virginia.

1450 C. Nonimminent danger. The owner of an impounding structure who has been issued a ~~report by~~  
1451 ~~the board containing findings and recommendations, by the board,~~ for the correction of deficiencies  
1452 which that may threaten life or property if not corrected, shall undertake to implement the

1453 recommendations for correction of deficiencies according to a schedule of implementation contained in  
1454 that report as required by §10.1-609 of the Code of Virginia.

1455 **4VAC50-20-230. Complaints.**

1456 A. Upon receipt of a complaint alleging that the person or property of the complainant is  
1457 endangered by the construction, alteration, maintenance or operation of an impounding structure, the  
1458 director shall cause an inspection of the structure, unless the data, records and inspection reports on  
1459 file with the board are found adequate to determine if the complaint is valid.

1460 B. If the director finds that an unsafe condition exists, the director shall proceed under the  
1461 provisions of §§10.1-608 and 10.1-609 of the Code of Virginia to render the extant condition safe.

1462 Part V  
1463 Design Requirements

1464 **4VAC50-20-240. Design of structures.**

1465 A. The owner shall complete all necessary investigations prior to submitting the design report  
1466 (Design Report for the Construction or Alteration of Virginia Regulated Impounding Structures). The  
1467 design report shall contain those components outlined in 4VAC50-20-70 for construction activities or  
1468 those outlined in 4VAC50-20-80 for alteration activities. The scope and degree of precision required is  
1469 a matter of engineering judgment based on the complexities of the site and the hazard potential  
1470 classification of the proposed structure.

1471 B. Surveys shall be made with sufficient accuracy to locate the proposed construction site and to  
1472 define the total volume of storage in the impoundment. Locations of center lines and other horizontal  
1473 and vertical controls shall be shown on a map of the site. The area downstream and upstream from the  
1474 proposed impounding structure shall be investigated in order to delineate the areas and extent of  
1475 potential damage in case of failure or backwater due to flooding.

1476 C. The drainage area shall be determined. ~~Present, projected and potential future~~ and planned  
1477 land-use conditions shall be considered in determining the runoff characteristics of the drainage area.  
1478 The most severe of these conditions shall be included in the design calculations which shall be  
1479 submitted as part of the design report.

1480 D. The geotechnical engineering investigation shall consist of borings, test pits and other  
1481 subsurface explorations necessary to adequately define the existing conditions. The investigations shall  
1482 be performed so as to appropriately define the soil, rock and ground water conditions.

1483 E. All construction materials shall be adequately researched and selected so as to ensure that their  
1484 ~~properties meet~~ as constructed behavior will reasonably conform to design criteria. If on-site materials  
1485 are to be utilized, they shall be located and determined to be adequate in quantity and quality.

1486 **4VAC50-20-250. Design flood. (Repealed.)**

1487 ~~The minimum design flood to be utilized in impounding structure evaluation, design, construction,~~  
1488 ~~operation and maintenance shall be commensurate with the size and hazard potential of the particular~~  
1489 ~~impounding structure as determined in 4VAC50-20-50 and Table 1. Competent, experienced,~~  
1490 ~~professional engineering judgment shall be used in applying those design and evaluation procedures~~  
1491 ~~referenced in 4VAC50-20-320 of this chapter.~~

1492 **4VAC50-20-260. Emergency spillway Spillway design.**

1493 A. Every impounding structure shall have a spillway system with adequate capacity to discharge the  
1494 design flood without endangering the safety of the impounding structure.

1495 ~~B. An emergency spillway shall be required.~~

1496 ~~B~~B. Vegetated earth or an unlined emergency spillway may be approved when the applicant  
1497 demonstrates that it will pass the spillway design flood without jeopardizing the safety of the  
1498 impounding structure [(such as by allowance of overtopping of a structure not designed to permit  
1499 overtopping) ] . In no case shall [ dam impounding structure ] owners permit the growth of trees and  
1500 other woody vegetation in the emergency spillway area.

1501 ~~D~~C. Lined emergency spillways shall include design criteria calculations, plans and specifications  
1502 for open channel, drop, ogee and chute suitable energy dissipators and for spillways that include crest  
1503 control structures, chutes, walls, panel lining, sills, blocks, and miscellaneous details. All joints shall be

1504 reasonably water-tight and placed on a foundation capable of sustaining applied loads without undue  
1505 deformation. Provision shall be made for handling ~~leakage from the channel or under seepage and~~  
1506 uplift pressures from the foundation which might adversely affect the structural integrity and structural  
1507 stability of the impounding structure.

1508 **4VAC50-20-270. Principal spillways and outlet works.**

1509 A. It will be assumed that principal spillways and regulating outlets provided for special functions will  
1510 operate to normal design discharge capabilities during the spillway design flood, provided appropriate  
1511 analyses show:

- 1512 1. That control gates and structures are suitably designed to operate reliably under maximum  
1513 heads for durations likely to be involved and risks of blockage by debris are minimal;  
1514 2. That access roads and passages to gate regulating controls would be safely passable by  
1515 operating personnel under spillway design flood conditions; and  
1516 3. That there are no ~~other~~ substantial reasons for concluding that outlets would not operate  
1517 safely to ~~fill~~ full design capacity during the spillway design flood.

1518 B. If there are reasons to doubt that any of the above basic requirements might not be adequately  
1519 met under spillway design flood conditions, the "dependable" discharge capabilities of regulating outlets  
1520 shall be assumed to be less than 100% of design ~~capabilities~~ capacities, generally as outlined in the  
1521 following subsections C through G of this section.

1522 C. Any limitations in safe operating heads, maximum velocities to be permitted through structures or  
1523 approach channels, or other design limitations shall be observed in establishing "dependable"  
1524 discharge rating curves to be used in routing the spillway design flood hydrograph through the  
1525 reservoir.

1526 D. If intakes to regulating outlets are likely to be exposed to ~~dangerous~~ significant quantities of  
1527 floating ~~drift~~ debris, sediment depositions or ice hazards prior to or during major floods, the dependable  
1528 discharge capability during the spillway design flood shall be assumed to be zero.

1529 E. If access roads or structural passages to operating towers or controls are likely to be flooded or  
1530 otherwise unusable during the spillway design flood, the dependable discharge capability of regulating  
1531 outlets will be assumed to be zero for ~~these period~~ the periods of time during which such conditions  
1532 might exist.

1533 F. Any deficiencies in discharge performance likely to result from delays in the operation of gates  
1534 before attendants could be reasonably expected to reach the control ~~for in~~ must be taken into account  
1535 when estimating "dependable" discharge capabilities ~~to be assumed~~ assumptions in routing the  
1536 spillway design flood through ~~reservoir~~ the impoundment. Reports on design studies shall indicate the  
1537 allowances made for possible delays in initiating gate operations. Normally, for projects located in small  
1538 basins, where critical spillway design flood inflows may occur within several hours after intense  
1539 precipitation, outflows through any regulating outlets that must be opened after the flood begins shall be  
1540 assumed to be zero for an appropriate period of time subsequent to the beginning of intense rainfall.

1541 G. All gates, valves, conduits and concrete channel outlets shall be designed and constructed to  
1542 prevent significant erosion or damage to the impounding structure or to the downstream outlet or  
1543 channel.

1544 **4VAC50-20-280. Drain requirements.**

1545 All new impounding structures regardless of their hazard potential classification, shall include a  
1546 device to permit draining of the impoundment within a reasonable period of time as determined by the  
1547 owner's licensed professional engineer [ ~~, subject to approval by the director~~ ] . [ Existing drains on  
1548 impounding structures shall be kept operational. When practicable, existing impounding structures shall  
1549 be retrofitted with devices to permit draining. ]

1550 **4VAC50-20-290. Life of the impounding structure.**

1551 Components of the impounding structure, ~~the impoundment~~, the outlet works, drain system and  
1552 appurtenances shall be durable [ and maintained ] or replaced in keeping with the design and planned  
1553 life of the impounding structure.



1554 **4VAC50-20-300. Additional design requirements.**

1555 A. Flood routings shall start at or above the elevation of the crest of the lowest ungated outlet.  
1556 Freeboard determination and justification must be addressed by the owner's engineer.

1557 B. All elements of the impounding structure and impoundments shall conform to sound engineering  
1558 practice. Safety factors, design standards and design references that are used shall be included with  
1559 the design report.

1560 C. Inspection devices may be required by the director for use by inspectors, owners or the director  
1561 in conducting inspections in the interest of structural integrity during and after completion of  
1562 construction and during the life of the impounding structure.

1563 **4VAC50-20-310. Plans and specifications.**

1564 The plans and specifications for a proposed impounding structure required in 4VAC50-20-70 for  
1565 construction activities and in 4VAC50-20-80 for alteration activities shall consist of a detailed  
1566 engineering design report ~~that includes~~ (Design Report for the Construction or Alteration of Virginia  
1567 Regulated Impounding Structures) and engineering drawings and specifications, with the following as a  
1568 minimum:

1569 1. The name of the project; the name of the owner; classification of the impounding structure as  
1570 set forth in this chapter; designated access to the project and the location with respect to  
1571 highways, roads, streams and existing impounding structures and impoundments that would  
1572 affect or be affected by the proposed impounding structure.

1573 2. Cross-sections, plans, profiles, logs of test borings, laboratory and in situ test data, drawings  
1574 of principal and emergency spillways, impounding structures, outlet works, drain system and  
1575 appurtenances, and other ~~additional drawings~~ project components in sufficient detail to indicate  
1576 clearly the extent and complexity of the work to be performed.

1577 3. Contract drawings should include, but not be limited to, foundation and abutment treatment,  
1578 stream or river diversion, excavation and material fill processes, phased fill and compaction and  
1579 drainage devices.

1580 4. The erosion and sediment control plan, as approved by the local government, which  
1581 minimizes soil erosion and sedimentation during all phases of construction or alteration.

1582 ~~3. The technical provisions~~ 5. Technical specifications, as may be required to describe the  
1583 materials, performance, and methods of the construction and construction quality control for the  
1584 project.

1585 4. ~~Special provisions, as may be required to describe technical provisions needed to ensure that~~  
1586 ~~the impounding structure is constructed according to the approved plans and specifications.~~

1587 **4VAC50-20-320. Acceptable design procedures and references.**

1588 To ensure consistency of approach, within the major engineering disciplines of hydrology,  
1589 hydraulics, soils and foundations, structures, and general civil design, criteria and approaches from  
1590 multiple sources shall not be mixed for developing the design of a given feature or facility without  
1591 approval of the director. In all cases the owner's engineer shall identify the source of the criteria.

1592 The following are acceptable as design procedures and references:

1593 1. The design procedures, manuals and criteria used by the United States Army Corps of  
1594 Engineers.

1595 2. The design procedures, manuals and criteria used by the United States Department of  
1596 Agriculture, Natural Resources Conservation Service.

1597 3. The design procedures, manuals and criteria used by the United States Department of the  
1598 Interior, Bureau of Reclamation.

1599 4. The design procedures, manuals and criteria used by the United States Department of  
1600 Commerce, National Weather Service.

1601 5. The design procedures, manuals and criteria used by the United States Federal  
1602 [ Agency Energy ] Regulatory Commission.

1603 5.6. Other design procedures, manuals and criteria that are accepted as current, sound  
1604 engineering practices, as approved by the director prior to the design of the impounding  
1605 structure.

1606 **4VAC50-20-330. Other applicable dam safety references.**

1607 [ A. ] Manuals, guidance, and criteria used by the Federal Emergency Management Agency,  
1608 including the following:

1609 1. Federal Guidelines for Dam Safety: Emergency Action Planning for Dam Owners, U.S.  
1610 Department of Homeland Security, Federal Emergency Management Agency, October 1998,  
1611 Reprinted January 2004; FEMA 64 or as revised.

1612 2. Federal Guidelines for Dam Safety: Selecting and Accommodating Inflow Design Floods for  
1613 Dams, U.S. Department of Homeland Security, Federal Emergency Management Agency,  
1614 October 1998, Reprinted April 2004; FEMA 94 or as revised.

1615 [ B. Manuals, guidance, and forms provided by the department. Such materials may be located on  
1616 the department's website at: <http://www.dcr.virginia.gov>. ]

1617 Part VI  
1618 Fees

1619 **4VAC50-20-340. Authority to establish fees.**

1620 Under §10.1-613.5 of the Code of Virginia, the board is authorized to establish and collect  
1621 application fees for the administration of the dam safety program, administrative review, certifications,  
1622 and the repair and maintenance of [ ~~dams~~ impounding structures ]. The fees will be deposited into the  
1623 Dam Safety, Flood Prevention and Protection Assistance Fund.

1624 **4VAC50-20-350. Fee submittal procedures.**

1625 A. (Upon the effective date of these regulations,) fees for all application submittals required  
1626 pursuant to 4VAC50-20-370 through 4VAC50-20-390 are due prior to issuance of a certificate or  
1627 permit. No application for an Operation and Maintenance Certificate or a Construction Permit will be  
1628 acted upon by the board without full payment of the required fee per §10.1-613.5 of the Code of  
1629 Virginia.

1630 B. Fees shall be paid by check, draft or postal money order payable to the Treasurer of Virginia, or  
1631 submitted electronically (if available), and must be in U.S. currency, except that agencies and  
1632 institutions of the Commonwealth of Virginia may submit Interagency Transfers for the amount of the  
1633 fee. All fees shall be sent to the following address (or submitted electronically, if available): Virginia  
1634 Department of Conservation and Recreation, [ ~~Dam Safety Receipts Control, P.O. Box 10150, Division~~  
1635 of Finance, Accounts Payable, 203 Governor Street, ] Richmond, Virginia [ ~~23240 23219~~ ].

1636 C. All fee payments shall be accompanied by the following information:

- 1637 1. Applicant name, address and daytime phone number.  
1638 2. The name of the [ ~~dam~~ impounding structure ], and the [ ~~dam~~ impounding structure ] location.  
1639 3. The type of application or report submitted.  
1640 4. Whether the submittal is for a new permit or certificate issuance or permit or certificate  
1641 reissuance.  
1642 5. The amount of fee submitted.  
1643 6. [ ~~Dam~~ Impounding structure ] identification number, if applicable.

1644 D. No permit fees remitted to the department shall be subject to refund except as credits provided  
1645 for in 4VAC50-20-390 [ ~~DC~~ ].

1646 **4VAC50-20-360. Fee exemptions.**

1647 Impounding structures owned by Virginia Soil and Water Conservation Districts shall be exempt  
1648 from all fees associated with [ ~~Part VI~~ this part ] in accordance with §10.1-613.5 of the Code of Virginia.  
1649 There will be no fee assessed [ for a low hazard impounding structure exempted from fees pursuant to  
1650 4VAC50-20-51 or ] for the decommissioning of an impounding structure.

1651 **4VAC50-20-370. Construction Permit application fees.**

1652 A. Any application form submitted pursuant to 4VAC50-20-70 for permitting a proposed impounding  
1653 structure construction after the effective date of these regulations shall be accompanied by a payment  
1654 as determined in subsection B of this section.

1655 B. Fees shall be as follows:

1656 1. \$2,500 for High or Significant Hazard Potential impounding structures

1657 2. \$1,000 for Low Hazard Potential impounding structures

1658 **4VAC50-20-380. Regular Operation and Maintenance Certificate application fees.**

1659 A. Any application for a six-year Regular Operation and Maintenance Certificate after the effective  
1660 date of these regulations, except as otherwise exempted, shall be accompanied by a payment as  
1661 determined in subsection B of this section.

1662 B. Fees for High, Significant, or Low Hazard Potential impounding structures shall be as follows:

1663 1. [ \$1,500 \$600 ] for High Hazard Potential

1664 2. [ \$1,000 \$600 ] for Significant Hazard Potential

1665 3. [ \$600 \$300 ] for Low Hazard Potential

1666 [ C. Fees for extension of Regular Operation and Maintenance Certificates shall be \$250 per year  
1667 or portion thereof. ]

1668 **4VAC50-20-390. Conditional Operation and Maintenance Certificate application fee.**

1669 A. Fees for [ issuance of ] a Conditional Operation and Maintenance Certificate [ or for the  
1670 extension of a Conditional Operation and Maintenance Certificate for High or Significant Hazard  
1671 Potential impounding structures ] shall be as follows:

1672 1. For a [ 2-year Certificate: \$1,000 certificate for more than one year but no more than two  
1673 years: \$300 ]

1674 2. For a [ 1.5-year Certificate: \$750 certificate for one year or less: \$150. ]

1675 [ 3. For a 1-year Certificate: \$500 ]

1676 [ 4. For a 6-month Certificate: \$250 ]

1677 [ B. The fee for an extension of a Conditional Operation and Maintenance Certificate shall be \$250  
1678 per year or portion thereof. ]

1679 [ B. Fees for a Conditional Operation and Maintenance Certificate or for the extension of a  
1680 Conditional Operation and Maintenance Certificate for Low Hazard Potential impounding structures  
1681 shall be as follows:

1682 1. For a 2-year Certificate: \$500

1683 2. For a 1.5-year Certificate: \$375

1684 3. For a 1-year Certificate: \$250

1685 4. For a 6-month Certificate: \$125 ]

1686 [ C. Fees for a Conditional Operation and Maintenance Certificate or for the extension of a  
1687 Conditional Operation and Maintenance Certificate for any impounding structure that requires a  
1688 modification in spillway capacity due to changes in the regulations and that is eligible for a delayed  
1689 effective date pursuant to 4VAC50-20-125 shall be as follows:

1690 1. For a 2-year Certificate: \$200

1691 2. For a 1.5-year Certificate: \$150

1692 3. For a 1-year Certificate: \$100

1693 4. For a 6-month Certificate: \$50 ]

1694 [ DC ] . The board may allow a partial credit towards the Regular Operation and Maintenance  
1695 Certificate fee if the owner of the impounding structure has completed, to the director's satisfaction, the  
1696 conditions of the Conditional Certificate prior to its expiration. [ Credits shall only be provided to the  
1697 nearest 6-month interval. ]

1698 **4VAC50-20-400. Incremental Damage Analysis review fees.**

1699 ~~[ The fee for the review of an incremental damage analysis submitted pursuant to 4VAC50-20-52~~  
1700 ~~shall be \$225. Re-review of an analysis determined to be incomplete or in error upon the department's~~  
1701 ~~prior review shall cost an additional \$45 per subsequent submittal. ] Should the department determine~~  
1702 ~~that outside expertise to assist with the review [ of an incremental damage analysis ] is necessary, the~~  
1703 ~~applicant shall be responsible for the cost of such outside expertise. Such costs shall be agreed upon in~~  
1704 ~~advance by the [ department and the ] applicant.~~

1705 FORMS (Repealed.)

1706 Dam Owner's Annual Inspection Form, DCR 199-098 (rev. 12/01).

1707 Operation and Maintenance Application Class I, II and III Impounding Structures, DCR 199-099  
1708 (rev. 12/01).

1709 As-Built Report for Class I, II and III Impounding Structures, DCR 199-100 (rev. 12/01).

1710 Design Report for the Construction/Alteration of Impounding Structures, DCR 199-101 (rev. 12/01).

1711 Emergency Action Plan for Class I, Class II and Class III Impounding Structures, DCR 199-103  
1712 (rev. 12/01).

1713 Inventory Report for Class III and Class IV Impounding Structures, DCR 199-104 (rev. 12/01).

1714 Reinspection Report for Class I and II Impounding Structures, DCR 199-105 (rev. 12/01).

1715 Agricultural Certification for Impounding Structures, DCR 199-106 (rev. 12/01).

1716 Transfer Application for Impounding Structures, DCR 199-107 (rev. 12/01).