E.48. West Virginia
§47-34-1. General.

1.1. Scope and Purpose. -- This legislative rule establishes requirements relating to the design, placement, construction, enlargement, alteration, removal, abandonment, and repair of dams in this State that fall within the definition set forth in 2.12. This legislative rule also establishes requirements to govern the disbursement and use of moneys held in the State Dam Safety Rehabilitation Revolving Fund. The scope does not extend to those dams that are related to coal activities.

1.2. Authority. -- W. Va. Code §22-14-4 and §22-14-19(c).

1.3. Filing Date. -- May 20, 2009.

1.4. Effective Date. -- June 1, 2009.

1.5. Amendment of Existing Rule. -- This legislative rule amends the Dam Safety Rule, 47 C.S.R. 34, filed and made effective May 10, 1995.

§47-34-2. Definitions.

2.1. "Abandonment" means to render a dam non-impounding by filling the reservoir created by that dam with solid materials and by diverting the natural drainway around the site.


2.3. "Applicant" means a person who applies for a certificate of approval or a loan pursuant to the provisions of this rule.

2.4. "Appurtenances" means any ancillary part of a dam or reservoir system which contributes to the operation or construction of the dam.

2.5. "Assessment Officer" means a person appointed by the Secretary to carry out the review and hearing procedures outlined in this rule.

2.6. “Authority” means the West Virginia Water Development Authority provided in W. Va. Code §22C-1-1 et seq.

2.7. "Average Time Headway" means the number of seconds in one day divided by the average daily traffic.

2.8. "Breach" means partial removal of a dam, creating a channel through the dam at the original stream bottom elevation.

2.9. "Bridge" means a structure, including any abutments or supports appurtenant to that structure, which:
2.9.a. Meets the definition of "dam" set forth in subsection 2.12.;

2.9.b. Is constructed across a natural drainway for the purpose of maintaining a pathway, railway, roadway, support structure, or other passageway for transporting persons, traffic, or other static or moving loads; and

2.9.c. Has an opening under the structure to provide for the passage of normal stream flow.

2.10. "Certificate of Approval" means the written approval issued by the Secretary to a person who has applied to the Secretary for a certificate of approval that authorizes the person to place, construct, enlarge, alter, remove, abandon, or repair a dam and which specifies the conditions or limitations under which the work is to be performed by the applicant.

2.11. "Cost" means the total of all reasonable and necessary costs incurred by a person or the Secretary to finance the engineering, design, alteration, improvement, repair, breaching or removal of a deficient dam for carrying out all works and undertakings necessary or incidental to the accomplishment of any project receiving a loan under this rule, including:

2.11.a. The costs of developmental, planning, and feasibility studies, surveys, plans, and specifications;

2.11.b. The costs of architectural, engineering, financial, legal, or other special services;

2.11.c. The costs of acquisition of land and any buildings and improvements thereon, including the discharge of any obligations of the sellers of such land, buildings, or improvements;

2.11.d. The costs of site preparation and development, including demolition or removal of existing structures, construction and reconstruction, labor, materials, machinery, and equipment;

2.11.e. The reasonable costs of financing incurred by the person applying for a loan from the Fund in the course of the development of the project, carrying charges incurred before placing the project in service, interest on funds borrowed to finance the project to a date subsequent to the estimated date the project is to be placed in service, necessary expenses incurred in connection with placing the project in service, and the funding of accounts and reserves as required by the Secretary;

2.11.f. Other items as are deemed reasonable and necessary by the Secretary.

2.12. "Dam" means an artificial barrier or obstruction -- including any works appurtenant to it and any reservoir created by it -- which is or will be placed, constructed, enlarged, altered, or repaired so that it does or will impound or divert water and is or will be twenty-five (25) feet or more in height from the natural bed of a stream or watercourse measured at the downstream toe of the barrier and which does or can impound fifteen (15) acre-feet or more of water or is or will be six (6) feet or more in height from the natural bed of such stream or watercourse measured at the downstream toe of the barrier and which does or can impound fifty (50) acre-feet or more of water. “Dam” does not mean:

2.12.a. Any dam owned by the federal government;

2.12.b. Any dam for which the operation and maintenance thereof is the responsibility of the federal government;

2.12.c. Any farm pond constructed and used primarily for agricultural purposes -- including, but not limited, to livestock watering, irrigation, retention of animal wastes, and fish culture -- that has no potential to cause a loss of human life in the event of embankment failure; or
2.12.d. Roadfill or other transportation structures that do not or will not impound water under normal conditions and that have a designed culvert or similar conveyance or capacity that would be used under a highway at the same location: Provided, That the Secretary may apply the provisions of W. Va. Code §22-14-10 for hazardous, non-impounding structures that become a hazard to human life or property through the frequent or continuous impoundment of water.

2.13. “Deficient dam” means a noncoal-related dam that exhibits one or more design, maintenance, or operational problems that may adversely affect the performance of the dam over a period of time or during a major storm or other inclement weather that may cause loss of life or property; or a noncoal-related dam that otherwise fails to meet the requirements of the Act or this rule.

2.14. "Dam Safety Section" means the Dam Safety Section of the Department of Environmental Protection.

2.15. "Dangerous Condition" means any structural or hydraulic condition of a dam or its appurtenances which may lead to:

2.15.a. Failure of the dam and possible loss of human life or substantial loss of property;

2.15.b. Harm to the public health or welfare; or

2.15.c. Significant harm to the environment.

2.16. "Design Storm" means predicted precipitation of given intensity, frequency, and duration based upon National Weather Service data that is required to be considered in the design of a dam.

2.17. "Disbursement" means the transfer of cash from the Fund to an applicant.

2.18. "Diversion Ditch" means a designed channel constructed for the purpose of collecting and transmitting surface runoff resulting from a given design storm.

2.19. "Embankment" means a constructed deposit of earth or waste materials, usually exhibiting at least one sloping face.

2.20. "Emergency Condition" means an imminently dangerous condition where failure of the dam is possible at any time.

2.21. "Emergency Spillway" means a hydraulic structure designed to discharge water in excess of that which an impoundment is designed to store or which cannot be passed through a principal spillway.

2.22. "Enforcement Action" means a written notification provided to an alleged violator by the Secretary within thirty (30) calendar days of an inspection, or in accordance with the provisions of the Act.

2.23. "Engineer" or "Registered Professional Engineer" means a person who by reason of his or her knowledge of mathematics, the physical sciences, and the principles of engineering, acquired by professional education and practical experience, is qualified to engage in the practice of professional engineering, and holds a current certificate of registration issued by the State granting its licensee the privilege of practicing professional engineering in accordance with the provisions of W. Va. Code §30-13-1 et seq.

2.24. "Freeboard" means the vertical distance between the lowest point of the crest of the embankment of a dam and the reservoir water surface.
2.25. "Fund" means the State Dam Safety Rehabilitation Revolving Fund.

2.26. "Geotechnical Engineering" means the application of soil mechanics, rock mechanics, and geology to the solution of problems involving engineering structures and their interaction with surrounding earth materials.

2.27. "Hazard Classification" means a classification rating assigned to a structure based upon engineering evaluations and judgments for predicting the danger to human life, property, and environment should a failure of the structure occur.

2.28. "High Risk Highway" means a roadway, roadfill, bridge, support structure, or other passageway for transporting persons, traffic, or other static or moving loads where the average time headway between vehicles in traffic is less than the duration of overtopping caused by the dam break flood wave.

2.29. "Hydraulics" means the study of the physical behavior of liquids, especially water, in natural or man-made systems or processes.

2.30. "Hydrologic Analysis" means a determination, using accepted engineering methods, to establish surface water runoff for a given design storm.

2.31. "Hydrology" means the science that deals with the occurrence and behavior of water in the atmosphere, on the ground, and underground.

2.32. "Impoundment" means a basin for the retention of water, sediment, or waste.

2.33. "Incised Reservoir" means an impoundment, or that portion of an impoundment, which has been excavated below the natural stream level into natural ground.

2.34. "Loan" means a loan made by the Authority to an applicant pursuant to section 20.

2.35. "Loan Agreement" means an agreement entered into between the Authority and the applicant pertaining to a loan.

2.36. "Low Risk Highway" means a roadway, roadfill, bridge, support structure, or other passageway for transporting persons, traffic, or other static or moving loads where the average time headway between vehicles in traffic is greater than the duration of overtopping caused by the dam break flood wave.

2.37. "Major Damage" means destruction, ruin, collapse, or displacement of dwellings, commercial or industrial buildings, public highways or bridges, or important public utilities. Dwellings, buildings, public highways or bridges, or important public utilities will sustain major damage when:

2.37.a. The dwelling, commercial or industrial building, public highway or bridge, or important public utility is in the direct path of the dam break flood wave, or;

2.37.b. Important public utilities equipment or public highways or bridges will be harmed sufficiently to cause disruption of service, or to require repair or replacement of the important public utility equipment, or public highway or bridge, or;

2.37.c. The dwelling, commercial or industrial building or important public utility will experience more than 1.5 feet of flood rise due to the dam break flood wave above the lowest ground elevation adjacent to the outside foundation walls; or more than 1.5 feet of flood rise due to the dam break
flood wave above the lowest floor elevation of the dwelling, commercial or industrial building or important public utility. The lower of the elevations shall govern.

2.38. "Minor Damage" means insignificant harm to dwellings, commercial or industrial buildings, public highways or bridges, or public utilities that does not qualify as major damage.

2.39. "Natural Bed" means the lowest elevation of a stream, intermittent stream, or channel created by nature which has not been altered or changed by the actions of man.

2.40. "Natural Drainway" means any natural watercourse which may carry water to the tributaries and rivers of the watershed.

2.41. "Notice of Civil Administrative Penalty" means a written notification provided to a violator by the Secretary, by means of certified mail or personal service, assessing a civil administrative penalty. A notice of civil administrative penalty shall include:

2.41.a. A reference to the section of the statute, rule, notice, order, or certificate of approval term allegedly violated;

2.41.b. A concise statement of the facts alleged to constitute the violation;

2.41.c. A statement of the amount of the initial civil administrative penalty to be imposed; and

2.41.d. A statement of the alleged violator's right to an informal hearing.

2.42. "Notice of Dismissal" means a written notification provided to a violator by the assessment officer or the Secretary dismissing and vacating the civil administrative penalty. A notice of dismissal may be issued at any time during the proceedings.

2.43. “No Hazard” means a situation that is not associated with the structural or hydraulic condition of a dam.

2.44. "P100" means the rainfall amount based upon a one hundred (100) year frequency, six (6) hour duration rainfall event (i.e, a 100-year, 6-hour storm).

2.45. "Person" means any public or private corporation, institution, association, society, firm, organization or company organized or existing under the laws of this or any other state or country; the state of West Virginia; any state governmental agency; any political subdivision of the state or of its counties or municipalities; a sanitary district; a public service district; a drainage district; a conservation district; a watershed improvement district; a partnership; trust, or estate; a person or individual; a group of persons or individuals acting individually or as a group; or any other legal entity. The term "person", when used in this article, includes and refers to any authorized agent, lessee or trustee of any of the foregoing or receiver or trustee appointed by any court for any of the foregoing.

2.46. "Piping" means progressive internal erosion of earth material or adjacent unaltered material caused by water movement through embankment material with sufficient force to move soil particles, leading to the development of a channel or a hole.

2.47. "Principal Spillway" means the hydraulic structure designed to discharge water stored between the normal pool and the emergency spillway invert elevations.
2.48. "Probable Maximum Precipitation" or "PMP" means the depth-duration-area rainfall event for a particular area that represents the maximization of the most critical meteorological conditions that are considered possible to occur.

2.49. “Project” means planning, design, or construction activity necessary to obtain a certificate of approval or to obtain a loan for repair or removal of a dam.

2.50. "Project Area" means all areas physically affected by the construction of a dam including, but not limited to, the dam and its appurtenances, the reservoir area, construction zones, permanent or temporary access roads, borrow areas, materials storage areas, staging areas, and waste disposal areas.

2.51. "Removal" means complete elimination of the dam embankment or structure to restore the approximate original topographic contours of the valley.

2.52. "Roadfill" means a barrier or obstruction which:

2.52.a. Meets the definition of "dam" set forth in subsection 2.12.;

2.52.b. Is constructed across a natural drainway for the purpose of maintaining a roadway or similar crossing across that drainway; and

2.52.c. Has a culvert located in the drainway that is of sufficient size to prevent the normal impoundment of water.

2.53. "Safety Factor" or "Factor of Safety" means the ratio of the sum of the forces or moments resisting mass movement to the sum of the forces or moments tending to produce mass movement.

2.54. "Secretary" means the Secretary of the West Virginia Department of Environmental Protection or his or her authorized representative.

2.55. "Sediment" means solid material, either mineral or organic, resulting from the works of man that has been moved from its site of origin by water.

2.56. "Serious Problem" means a structural or hydraulic condition that if left uncorrected may lead to a dangerous condition.

2.57. "Significant Harm to the Environment" means the degradation of a public or private surface water supply, the alteration of habitat that adversely affects wildlife, or the reduction of the productivity of agricultural land.

2.58. "Site" means the permanent location of a dam, including the dam and its appurtenances, the reservoir area, diversion ditches, and sediment control facilities.

2.59. "Subsidence" means a sinking, collapsing, or cracking of a portion of the earth's surface resulting from the presence of a void or voids beneath the surface.

2.60. "Violator" means the person who is alleged to have violated the Act, or any rule, notice to comply, order, or certificate of approval term imposed pursuant to the Act.

2.61. "Written Decision" means a written decision furnished to the violator concerning the Secretary's final decision regarding the assessment of a civil administrative penalty and the reasons therefor.

3.1. Types of Dams - For the purpose of this rule, dams are divided into four general types:

3.1.a. Embankment Dams - Embankment dams are usually constructed of materials which exhibit rock-like or soil-like properties.

3.1.b. Gravity Dams - Gravity dams are usually constructed of concrete or masonry materials which form a rigid body.

3.1.c. Waste Disposal Dams - Waste disposal dams are usually constructed of waste materials such as fly ash or coal refuse. The reservoir is utilized to dispose of waste material, thereby creating a continuously decreasing freeboard condition.

3.1.d. Dams of Multiple Type - In cases where a dam exhibits properties of more than one type, such as gabion structures or roller-compacted concrete, the person or his or her agent must apply design techniques which are reasonably applicable to the particular structure involved.

3.2. Dam-Related Measurements.

3.2.a. Measuring Dam Height - The height of a dam is measured from the crest or uppermost point on the dam to the lowest point in the natural bed of the stream or watercourse at the downstream toe of the dam. Gravity overflow dams must be measured to the highest level which is greater than ten percent (10%) of the total crest length of the dam. The height of dams with sloping crests shall be determined by a weighted-average height above the natural bed of the stream or watercourse, excluding spillways.

3.2.b. Measuring Reservoir Volume - For purposes of determining whether a dam meets the criteria set forth in subsection 2.12. as applied to reservoir volume calculations, the volume must be calculated at the crest elevation of the dam that is equivalent to the elevation used in determining the dam height.

3.2.c. Incised Reservoirs - The height of the embankment of an incised reservoir must be measured using the method set forth in paragraph 3.2.a. Reservoir volume must be calculated from the crest of the embankment to the elevation of the lowest point in the natural bed of the stream or watercourse at the downstream toe. That portion of the water stored below stream grade shall not be included in determining whether a dam meets the criteria set forth in subsection 2.12.; however, it must be reported in the application as part of the total reservoir volume.

3.3. Dams in Series - If the Secretary determines that a series or combination of water-impounding structures within the same watercourse, or within the tributaries of the watercourse, which cumulatively meet the definition of "dam" set forth in subsection 2.12. constitute a hazard to human life, and failure of one or more of the impounding structures may induce failure of any or all of the remaining impounding structures, he or she may require the owner or owners of each impounding structure to comply with the requirements of this rule.

3.4. Incidental Dams.

3.4.a. Roadfills.

3.4.a.1. If the Secretary finds that a roadfill has become a hazard to human life or property through the frequent or continuous impoundment of water, he or she may order the owner of that roadfill
to take all steps that are necessary to protect life or property in accordance with the emergency powers provided under W. Va. Code §22-14-10.

3.4.a.2. A certificate of approval will not be required for roadfills.

3.4.b. Bridges.

3.4.b.1. If the Secretary finds that a bridge has become a hazard to human life or property through the frequent or continuous impoundment of water, he or she may order the owner of that bridge to take all steps that are necessary to protect life or property in accordance with the emergency powers provided under W. Va. Code §22-14-10.

3.4.b.2. A certificate of approval will not be required for bridges.

3.4.c. Diversions - A certificate of approval will be required for dikes or other structures used to divert water and otherwise meeting the definition of "dam" set forth in subsection 2.12.

3.4.d. Stream Encroachments - If the Secretary finds that a natural drainway has been restricted by filling or other artificial means so that the restriction can or does impound water, and the fill and resulting reservoir meets the height and storage requirements of a "Dam" as defined in this rule, he or she may order the fill removed or require a certificate of approval or both.

3.5. Classification of Dams - The applicant for a certificate of approval must propose the hazard classification for his or her dam based upon the classification guidelines listed in paragraph 3.5.b. and the hazard evaluation performed pursuant to paragraph 3.5.c. The classification proposed by an applicant is subject to approval by the Secretary.

3.5.a. Changes in Dam Classification - The Secretary will periodically review the hazard classification of each dam subject to this rule and may reclassify a dam if he or she determines that the hazard potential has changed. The owner shall be notified by the Secretary of any hazard classification change.

3.5.b. Hazard Classifications.

3.5.b.1. Class 1 (High Hazard) Dams - Class 1 dams are those dams located where failure may cause loss of human life or major damage to dwellings, commercial or industrial buildings, main railroads, important public utilities, or where a high risk highway may be affected or damaged. This classification must be used if failure may result in the loss of human life.

3.5.b.2. Class 2 (Significant Hazard) Dams - Class 2 dams are those dams located where failure may cause minor damage to dwellings, commercial or industrial buildings, important public utilities, main railroads, or cause major damage to unoccupied buildings, or where a low risk highway may be affected or damaged. The potential for loss of human life resulting from failure of a Class 2 dam must be unlikely.

3.5.b.3. Class 3 (Low Hazard) Dams - Class 3 dams are those dams located in rural or agricultural areas where failure may cause minor damage to nonresidential and normally unoccupied buildings, or rural or agricultural land. Failure of a Class 3 dam would cause only a loss of the dam itself and a loss of property use, such as use of related roads, with little additional damage to adjacent property. The potential for loss of human life resulting from failure of a Class 3 dam must be unlikely.

3.5.b.3.A. An impoundment exceeding forty (40) feet in height or four hundred (400) acre-feet storage volume shall not be classified as a Class 3 dam.
3.5.b.3.B. A waste disposal dam, the failure of which may cause significant harm to the environment, shall not be classified as a Class 3 dam.

3.5.b.4. Class 4 (Negligible Hazard) Dams - Class 4 dams are dams where failure is expected to have no potential for loss of human life, no potential for property damage and no potential for significant harm to the environment. Examples of Class 4 dams include: dams across rivers, failure of which under any conditions will not flood areas above normal stream bank elevations; dams located in the reservoir of another dam which, under any conditions, can contain water released by failure of the Class 4 dam; and dams in series where the toe of the Class 4 dam(s) is in close proximity to the reservoir of a dam which can contain failure of the Class 4 dam(s) under any condition. In considering a request for a Class 4 designation, the Secretary may require written concurrence from the owner(s) of downstream dams that may be affected by failure of the Class 4 dam. Approval for use of this classification is vested in the Secretary, and will be based on engineering evaluation of the dam(s) and downstream areas in question.

3.5.c. Hazard Evaluation.

3.5.c.1. Downstream Hazards - In evaluating the hazard potential of a dam in order to determine its hazard classification, a complete evaluation of the downstream area which will be affected in the event of dam failure must be performed. A sudden flooding of inhabited land accompanied by a water flow with damaging velocity, a wall of water, or the flooding of inhabited structures will all be deemed to have the potential to result in a loss of human life. The planned or potential future development of downstream areas must also be considered when evaluating hazard classification.

3.5.c.2. Dam Break Analysis - An applicant must perform a downstream breach analysis to evaluate and map the downstream inundation area under assumed normal conditions and overtopping failure conditions.

3.5.c.2.A. The Secretary may waive the downstream breach analysis required under subparagraph 3.5.c.2. for a Class 2 or Class 3 or Class 4 dam where downstream conditions prevent any future introduction of new facilities or residences that thereby change the hazard classification of the dam.

3.5.c.3. Upstream Hazards - No dam shall be constructed which, during maximum pool conditions, will flood upstream dwellings, public utilities, primary highways, or main railroads unless otherwise approved by the Secretary based upon site-specific conditions.

3.5.d. Risk Assessment - The applicant may propose a risk assessment according to the following provisions to determine the effect upon dwellings or other buildings downstream (paragraph 3.5.d.1.), to reduce the hazard classification (subdivision 3.5.b.) or to reduce the design storm requirements (paragraph 7.1.a.2.) based upon failure of the dam by overtopping. The applicant must include appropriate calculations to support the request for hazard classification or design storm requirement reduction. The Secretary will not consider risk assessment based upon planned evacuation, probability of inhabitation, or monetary recovery of property damage. If both paragraph 3.5.d.1. (Dwellings or other Buildings Affected Downstream) and paragraph 3.5.d.2. (Highways Affected Downstream) pertain to the downstream area, then the hazard classification representing the greatest risk category and the largest of the design storm requirements resulting from the above calculations shall apply. Approval of hazard classification reduction or reduction of design storm requirements based upon risk assessment is vested in the Secretary, and will be based on engineering evaluation of the dam(s) and downstream areas in question.

3.5.d.1. Dwellings or Other Buildings Affected Downstream - The Secretary may consider reduced design storm requirements (subparagraph 7.1.1.b.) within the approved hazard classification, if the applicant can demonstrate that all affected dwellings, commercial and industrial buildings or important public utilities will be inundated and evacuated prior to the dam failure. The applicant must
also demonstrate that the potential for loss of human life resulting from the dam failure is not significantly increased from that which occurs immediately prior to the dam failure.

3.5.d.2. Highways Affected Downstream - The Secretary may consider reduced hazard classification (paragraph 3.5.b.) and reduced design storm requirements (subparagraph 7.1.a.2.), if the applicant can demonstrate that affected highway(s) will be impassable and traffic will be stopped in the dam failure inundation area due to the highway(s) being flooded by high water prior to the dam failure. The applicant must also demonstrate that the potential for loss of human life resulting from the dam failure is not significantly increased from that which occurs immediately prior to the dam failure.

§47-34-4. Certificates of Approval.

4.1. Certificate Required - A person must obtain a certificate of approval from the Secretary in order to place, construct, enlarge, alter, breach, remove, abandon, or perform major repairs upon any dam in this State that falls within the definition set forth in subsection 2.12.

4.2. Certificate Issuance.

4.2.a. Certificates of approval may constitute full and final approval of a dam or be issued for alterations or repairs, in which case the certificate may or may not constitute final approval of the dam.

4.2.b. The Secretary will issue or refuse to issue a certificate of approval based upon the following:

4.2.b.1. The receipt of a complete application, including all applicable fees, in accordance with the provisions of subsection 5.1;

4.2.b.2. The review of the application form and plan package for sufficiency; and

4.2.b.3. The results of any hearings held in accordance with the provisions of W. Va. Code §22-14-7.

4.2.c. The Secretary will return defective applications to the applicant by certified or registered mail, return receipt requested, in order that the applicant may correct any defect. The applicant must send a corrected application to the Secretary within thirty (30) days of the date of the applicant's receipt of the returned application. The Secretary may extend the thirty-day period upon the receipt of a written request from the applicant.

4.2.d. Upon the receipt of written approval from the Secretary of the sufficiency of the application, the applicant shall immediately publish a Class I legal advertisement in a qualified newspaper, as defined in W. Va. Code §59-3-1, serving the county in which the proposed dam is to be located or in which the existing dam is located. The notice shall include the name and address of the applicant, the location of the dam for which the application was filed, and such other information as may be specified by the Secretary in his or her written approval.

4.3. Hearings Prior to Certificate Issuance - Any person who may be adversely affected by the issuance of a certificate of approval shall have a right to a hearing before the Secretary. A written request for a public hearing, detailing the specific objections to the issuance of the certificate of approval, must be sent to the Secretary within fifteen (15) days of the publication of the Class I legal advertisement required under subdivision 4.2.d. Hearings that concern specific objections to the issuance of a certificate of approval will be conducted in accordance with the provisions of W. Va. Code §22-14-7 at a location and time set by the Secretary.
4.4. Certificate Revocation or Suspension - The Secretary may revoke or suspend a certificate of approval in accordance with the provisions of W. Va. Code §22-14-8 if he or she determines that a dam for which the certificate was issued constitutes a danger to life and property.

4.5. Certificate Terms and Conditions - A certificate of approval may include such terms and conditions as the Secretary may find necessary for the construction or operation of the dam. These terms and conditions may be amended by the Secretary in accordance with the provisions of W. Va. Code §22-14-8.

4.6. Approval to Impound Water - No person may cause a reservoir to initially fill with water, or refill a drained reservoir, without written approval from the Secretary.

4.6.a. Upon the receipt of a written petition from a dam owner, the Secretary may waive or modify the refilling approval requirement of subsection 4.6 in a case where frequent draining and refilling of a reservoir is the intended purpose and normal operation of the owner's dam.

4.7. Other Approvals - The Secretary may refuse to issue a certificate of approval or may delay issuing a certificate of approval if the applicant fails to obtain necessary approvals from State or federal agencies.

4.7.a. Waterways Under State or Federal Jurisdiction - Construction of a dam across a waterway which is under the jurisdiction of the State or federal government may require State or federal agency approval prior to issuance of a certificate of approval by the Secretary.

4.7.b. Wetlands - Construction of a dam which may inundate, drain, or otherwise adversely affect wetlands (i.e., swamps, marshes, bogs, and similar areas) may require State and federal agency approval.

§47-34-5. Application Procedures.

5.1. Application Preparation and Submission.

5.1.a. Applications for a certificate of approval shall be prepared by or under the direct supervision of an engineer.

5.1.b. Applications shall be submitted on the forms provided by the Secretary. Application forms must be completed in their entirety without unauthorized omissions, alterations, or additions. Applications shall be signed by the applicant and an engineer.

5.1.c. A complete application will consist of a completed and signed application form, all applicable fees, and a plan package containing the information required under subsection 6.4.

5.1.d. Plans, reports, specifications, and design drawings shall be signed and sealed by an engineer in accordance with the provisions of subsection 6.2.

5.2. Application Review.

5.2.a. Applications will be reviewed for sufficiency by the Dam Safety Section. The review will consider the completeness and technical accuracy of the information submitted and will evaluate all engineering plans and assumptions to determine the safety of the dam.

5.2.b. Applications which are incomplete or otherwise not in compliance with the requirements of this rule will be returned to the applicant for correction in accordance with the provisions of W. Va. Code §22-14-7.
§47-34-6. Plans and Specifications.

6.1. Plans and Specifications - Plans and specifications relating to the design, placement, construction, enlargement, alteration, removal, abandonment, or repair of a dam must be prepared in accordance with the requirements of sections 7 through 12.

6.2. Engineer's Signature and Seal Required - All plans and specifications shall be signed and sealed by an engineer. The engineer's signature and seal are required on each full-size plan sheet, even if the sheets are bound together, and are further required on the front page of any engineering report book and each unbound sheet of drawings or specifications included in appendices or pockets.

6.3. Engineering Practices - All plans and specifications for the placement, construction, enlargement, alteration, breaching, removal, abandonment, or repair of a dam shall be in the charge of an engineer.

6.3.a. Standard Practices - All engineering designs, procedures, processes, and analyses shall be based upon standard, accepted, and sound engineering practices. Practices which are questionable or difficult to prove analytically may be rejected by the Secretary or returned for additional information.

6.3.b. Experimental Practices - Experimental design will not be approved by the Secretary unless the experiment meets the following conditions:

6.3.b.1. Engineering analysis indicates the design is realistic and success is likely;

6.3.b.2. Failure of the experiment to perform properly will not endanger life and property or cause the failure of the dam; and

6.3.b.3. The engineer and dam owner agree to redesign and modify the experimental design if it does not perform properly.

6.4. Plan Package Organization - Each plan package submitted for approval shall contain the following information, arranged in the following order, unless an alternative submission format is approved by the Secretary:

6.4.a. Project Narrative - A general narrative discussion of the project shall be included in the plan package to detail the following:

6.4.a.1. Existing site conditions;

6.4.a.2. Local geology and geotechnical considerations;

6.4.a.3. Design life of the dam and its appurtenances;

6.4.a.4. Subsidence potential;

6.4.a.5. Design techniques with associated design computations and data;

6.4.a.6. Environmental protection measures for the control of erosion and sedimentation and for the disposal of construction wastes;

6.4.a.7. Method of construction, including clearing and grubbing, topsoil stockpiles, and surface and subsurface drainage structures;
6.4.a.8. Phases or sequence of construction; and
6.4.a.9. Routine inspection and maintenance procedures and schedules.

6.4.b. Construction Sequence and Schedule - A proposed or recommended sequence of construction, with a schedule listing the anticipated number of working days necessary to accomplish each item in the sequence, shall be included in the plan package. The construction sequence and schedule must be specific to the dam and must cover the following general categories:

6.4.b.1. Sediment control measures;
6.4.b.2. Clearing and grubbing;
6.4.b.3. Road or utility relocations;
6.4.b.4. Development of borrow areas;
6.4.b.5. Placement of coffer dams or diversions;
6.4.b.6. Excavation of foundation areas;
6.4.b.7. Excavation of spillways;
6.4.b.8. Placement of embankment or structural materials;
6.4.b.9. Placement of spillways and appurtenances to spillways;
6.4.b.10. Seeding and mulching of the project area;
6.4.b.11. General cleanup of the project area; and
6.4.b.12. Other information as requested by the Secretary.

6.4.c. Project Specifications - Specifications submitted with the plan package must be specific to construction of the dam or must contain a specific section concerning construction of the dam. Inclusion of specifications for the dam throughout other general construction specifications is not acceptable. Specifications shall be included in the plan package to detail the following:

6.4.c.1. Clearing and grubbing;
6.4.c.2. Soil stockpiles;
6.4.c.3. Subdrain construction;
6.4.c.4. Slopes;
6.4.c.5. Grades;
6.4.c.6. Surface drainage structures such as embankment diversion ditches;
6.4.c.7. Spreading and compaction requirements, including lift thicknesses, moisture content, and degree of compaction;
6.4.c.8. Material and gradation requirements for subsurface drainage structures;
6.4.c.9. Pipes;
6.4.c.10. Concrete, including testing and curing;
6.4.c.11. Anti-seep mechanisms;
6.4.c.12. Cutoff trenches including specific treatment of joints, bedding planes, fractures, weak zones, overhangs or faults;
   6.4.c.13. Channel and slope protection (e.g., riprap);
6.4.c.14. Project quality control and testing;
6.4.c.15. Blasting;
6.4.c.16. Construction erosion and sediment control;
6.4.c.17. Construction waste disposal;
6.4.c.18. Dust abatement;
6.4.c.19. Revegetation;
6.4.c.20. Installation and reading of monitoring devices;
6.4.c.21. Inspection and maintenance; and
6.4.c.22. Other information as requested by the Secretary.

6.4.d. Maps and Drawings.

6.4.d.1. Maps shall be included in the plan package showing the project area in relation to primary highways, county seats, and major drainages. County highway maps may be used for this purpose.

6.4.d.2. A map showing the limits of the watershed with respect to the project area shall be included in the plan package. The minimum map scale meeting this requirement is a 7-1/2 minute United States Geological Survey topographic map with the project area plotted on it.

6.4.d.3. A plan view map of the project area that shows all disturbed and reservoir areas shall be included in the plan package showing detailed contour intervals (i.e., a five-foot maximum interval).

6.4.d.3.A. The location of the following items, if present, shall be plotted on the plan view map:

6.4.d.3.A.1. Caves;
6.4.d.3.A.2. Cemeteries and graves;
6.4.d.3.A.3. Seeps;
6.4.d.3.A.4. Springs;
6.4.d.3.A.5. Mine drainage;
6.4.d.3.A.6. Underground mine openings;
6.4.d.3.A.7. Underground mine workings;
6.4.d.3.A.8. Borings and test pits;
6.4.d.3.A.9. Cross-sections;
6.4.d.3.A.10. Project stationing;
6.4.d.3.A.11. Reference points;
6.4.d.3.A.12. Instrumentation;
6.4.d.3.A.13. The subdrain system;
6.4.d.3.A.14. Diversion channels;
6.4.d.3.A.15. Surface water drainage channels;
6.4.d.3.A.16. Spillway channels;
6.4.d.3.A.17. Borrow source areas; and

6.4.d.3.B. Additional detailed plan views of the dam or its spillways and appurtenances may be required by the Secretary.

6.4.d.4. Transverse and longitudinal cross-sections and profiles of the dam shall be included in the plan package showing original ground, subdrain locations, elevations, benches, spillways, and other pertinent features of the project area. A cross-section shall be provided for stability computations showing the dam at critical areas, with subsurface data plotted in accordance with the provisions of part 7.4.b.1.D.4.

6.4.d.5. Cross-sections and profiles of major drainage facilities shall be included in the plan package.

6.4.d.6. Construction drawings shall be included in the plan package showing subdrains, spillways, anti-seep mechanisms, and other pertinent structures.

6.4.e. Inventory of Protected Sites.

6.4.e.1. An inventory of sites protected under State or federal law must be conducted by each applicant seeking a certificate of approval to:

6.4.e.1.A. Construct a new dam; or
6.4.e.1.B. Alter or enlarge an existing dam whereby new areas will be disturbed or flooded.

6.4.e.2. The minimum acceptable protected sites inventory shall include the following components:

6.4.e.2.A. A field survey shall be conducted by the applicant or his or her agents to ascertain the presence of any cave (i.e., a naturally occurring underground subterranean cavity such as a cavern or grotto) within the area to be disturbed or flooded by the project. The location of all caves must then be plotted on the plan view map required under paragraph 6.4.d.3. If no caves are present in the area to be disturbed or flooded, that fact must be noted in a statement attached to the plan view map submitted to the Secretary.

6.4.e.2.B. A field survey shall be conducted by the applicant or his or her agents to ascertain the presence of any cemetery or grave within the area to be disturbed or flooded by the project. The location of all cemeteries and graves must then be plotted on the plan view map required under paragraph 6.4.d.3. If no cemeteries or graves are present in the area to be disturbed or flooded, that fact must be noted in a statement attached to the plan view map submitted to the Secretary.

6.4.e.2.C. A copy of the plan view map required under subparagraph 6.4.d.3. shall be sent by the applicant to the West Virginia Division of Natural Resources, Nongame Wildlife Program, P.O. Box 67, Elkins, West Virginia 26241. A letter of transmittal that briefly explains the nature of the applicant's project must accompany the map so that State officials may have the opportunity to assess whether the applicant's project will adversely impact any animal or plant species that is listed by the federal government as endangered or threatened in Endangered Species Act. [1987 Stat. 884, as amended: 16 U.S.C. 1531 et seq.]. A copy of the applicant's letter of transmittal must be included in the plan package submitted to the Secretary; and

6.4.e.2.D. A copy of the plan view map required under subparagraph 6.4.d.3. shall be sent by the applicant to the West Virginia Division of Culture and History, Historic Preservation Unit, Cultural Center, State Capitol Complex, 1900 Kanawha Boulevard East, Charleston, West Virginia 25305. A letter of transmittal that briefly explains the nature of the applicant's project must accompany the map so that State officials may have the opportunity to assess whether the applicant's project will adversely impact any historic site that is listed by the West Virginia Division of Culture and History on the State Register of Historic Places. A copy of the applicant's letter of transmittal must be included in the plan package submitted to the Secretary.

6.4.e.3. If either artifacts of historical significance or human remains are uncovered by construction or related activities, the Dam Safety Section must be contacted immediately. The Secretary may suspend activities in the vicinity of such artifacts or remains until appropriate investigations have been conducted.

6.4.f. Erosion and Sediment Control - The plan package must include either:

6.4.f.1. A copy of the applicant's letter transmitting a permit application for the WV/NPDES Storm Water Construction General Permit to the Secretary, if the disturbed area within the site will exceed limits necessary for a NPDES permit, or;

6.4.f.2. An erosion and sediment control plan as required in subdivision 7.5.a., if the disturbed area within the site is less than the limits necessary for a NPDES permit.

§47-34-7. Design Requirements.

7.1. Hydrologic Considerations.
7.1.a. General Hydrologic Requirements.

7.1.a.1. Hydrologic Investigation.

7.1.a.1.A. A survey shall be conducted to evaluate soil types, land use, land slope, watershed area, runoff curve number, and any other factors needed to establish watershed characteristics. A summary of all hydrologic and hydraulic data compiled in the initial site investigation and used in the analysis shall be included in table or figure form in the plan package.

7.1.a.1.B. A stream flow analysis shall be conducted to evaluate stream flow quantity and quality as it affects the dam and its appurtenances.

7.1.a.2. Design Storm Requirements - The design storm and any incremental reduction of the design storm proposed by the applicant is subject to approval by the Secretary. All dams shall be designed to meet the following minimum hydrologic criteria based upon hazard classification:

7.1.a.2.A. Class 1 Dams - Class 1 dams shall be designed for the probable maximum precipitation of six (6) hours in duration. The design precipitation for a Class 1 dam may be reduced based on Risk Assessment (subdivision 3.5.d.), but in no case to less than seventy percent (70%) of the probable maximum precipitation.

7.1.a.2.B. Class 2 Dams - Class 2 dams shall be designed for fifty percent (50%) of a probable maximum precipitation of six (6) hours duration. The design precipitation for a Class 2 dam may be reduced based on Risk Assessment (subdivision 3.5.d.), but in no case to less than twenty-five percent (25%) of the probable maximum precipitation.

7.1.a.2.C. Class 3 Dams - Class 3 dams shall be designed for twenty-five percent (25%) of a probable maximum precipitation of six (6) hours in duration. The design precipitation for a Class 3 dam may be reduced based on Risk Assessment (subdivision 3.5.d.), but in no case to less than a P100 rainfall of six (6) hours in duration.

7.1.a.2.D. Class 4 Dams - Class 4 dams shall be designed for a P100 rainfall of six (6) hours in duration.

7.1.a.3. Antecedent Moisture Conditions - Where applicable to the development of a hydrograph, Antecedent Moisture Condition II (AMC II) may be used unless a different condition class is required by the Secretary.

7.1.a.4. Flood Routings - An analysis shall be performed for the reservoir and spillways which includes inflow hydrographs, stage storage curves, stage discharge curves, and routings. The spillways must be able to safely discharge that portion of the design storm that is not stored in the reservoir. If a computer analysis is used, the input data and output results must be clearly labeled and identified. Trial calculations or intermediate results not relevant to the final results may be omitted from the plan package.

7.1.b. Specific Hydrologic Requirements.

7.1.b.1. Embankment Dams.

7.1.b.1.A. Storage and Discharge.
7.1.b.1.A.1. Class 1 dams designed with either an open channel spillway only or with an emergency spillway and a principal spillway together must be capable of discharging that portion of the design storm that cannot be safely stored in the impoundment. Class 1 dams designed with a decant or principal spillway only must be capable of storing the volume of water generated by a PMP rainfall event of six (6) hours in duration. The design of a Class 1 dam must assure that ninety percent (90%) of the stored volume of the design storm will be discharged within ten (10) days after the storm event.

7.1.b.1.A.2. Class 2 dams must be designed with either an open channel spillway only or a combination of principal and emergency spillways. A Class 2 dam shall be capable of passing that portion of the design storm that cannot be safely stored in the impoundment. The design of a Class 2 dam must assure that ninety percent (90%) of the stored volume of the design storm will be discharged within ten (10) days after the storm event.

7.1.b.1.A.3. Class 3 dams must be designed with either an open channel spillway only or a combination of principal and emergency spillways. A Class 3 dam shall be capable of passing that portion of the design storm that cannot be safely stored in the impoundment. The design of a Class 3 dam must assure that ninety percent (90%) of the stored volume of the design storm will be discharged within ten (10) days after the storm event.

7.1.b.1.B. Surface Drainage Control - Surface drainage control devices (e.g., vegetated slopes, benches, groin ditches, and collection channels) shall be provided as necessary to protect the dam and its appurtenances from the effects of erosion. Riprap or other erosion protection measures shall be included where excessive velocity is anticipated or experienced. All surface drainage control devices must be designed to exit safely beyond the downstream toe of an embankment in a natural drainway capable of carrying the design flow without excessive erosion. The 50-year, 6-hour rainfall event shall be used as the design storm for surface drainage systems.

7.1.b.1.C. Spillway Frequency of Operation - Outlet works that incorporate vegetated earth or unlined earth emergency spillways shall be designed so that the average frequency of operation is no greater than the following recurrence schedule, based upon a 6-hour rainfall event:

7.1.b.1.C.1. Class 1 Dams - Once in one hundred (100) years.

7.1.b.1.C.2. Class 2 Dams - Once in fifty (50) years.


7.1.b.1.D. Overtopping Embankments - Regardless of their hazard classification, dams designed to overtop in accordance with the provisions of subparagraph 7.4.b.1.E. shall not overtop more frequently than once in one hundred (100) years, based upon a 6-hour rainfall event.

7.1.b.2. Gravity Dams - Gravity dams may be designed in the same manner as the corresponding hazard classes of embankment type dams in subparagraph 7.1.b.1.A. except that designed overtopping of the dam may be substituted for the emergency spillway requirements.

7.1.b.3. Waste Disposal Dams.

7.1.b.3.A. Storage and Discharge - The following storage and discharge systems may be used in design of waste disposal dams:

7.1.b.3.A.1. Open Channel Only or Emergency Spillway with Principal Spillway - A dam designed with either an open channel spillway only or with an emergency spillway and a principal spillway together shall be capable of discharging that portion of the design storm that cannot be safely stored in the impoundment.
stored in the impoundment. This type of design must assure that ninety percent (90%) of the stored volume of the design storm will be discharged within ten (10) days after the storm event. Slurry impoundments shall be provided with a means of removing water to maintain the lowest practical water level.

7.1.b.3.A.2. Principal Spillway or Decant Only - A dam designed with a decant or principal spillway only shall be capable of storing the volume equivalent to a minimum of one (1) design storm. Risk assessment shall not be applied to dams with principal spillway or decant only. This type of design must assure that ninety percent (90%) of the stored volume of the design storm will be discharged within ten (10) days after the storm event. Slurry impoundments shall be provided with a means of removing water to maintain the lowest practical water level.

7.1.b.3.A.3. No Outlet Works - A dam designed without discharge structures shall be capable of storing the volume equal to a minimum of two (2) design storms. Risk assessment shall not be applied to dams with no outlet works. Water shall be removed from the impoundment to its lowest practical level by pumping or other means if storm water reduces the storage capacity to one (1) design storm or less.

7.2. Hydraulic Considerations.

7.2.a. General Hydraulic Requirements.

7.2.a.1. Hydraulic Analysis - Using standard engineering practices, a hydraulic analysis shall be performed for the spillways and surface drainage system. Typical cross-section design techniques may be used where constant slopes are encountered. All hydraulic structures shall be designed to safely control the velocity of water in order to prevent excessive erosion. Accepted engineering practices shall be used to design riprap, non-flexible channel linings, bedding, and energy dissipators.

7.2.b. Specific Hydraulic Requirements.

7.2.b.1. Open Channels - Open channels, including open channel spillways, shall be analyzed for flow depth, velocity, nonuniform flow conditions, super-elevation, and hydraulic jumps.

7.2.b.1.A. Stage Discharge - Where an open channel is used as a spillway, a stage discharge rating shall be developed using standard engineering practices for the type and shape of the spillway. In developing the rating, increase in upstream water depth due to change in velocity head must be considered.

7.2.b.1.B. Water Surface Profiles - Where channel slopes or cross-sections vary and nonuniform flow conditions result, a water surface profile may be necessary in order to analyze the channel flow depths and the location of hydraulic jumps.

7.2.b.1.C. Hydraulic Jumps - Where hydraulic jumps will occur, channel sidewall height shall be sufficient to contain the jump. The channel lining shall be designed to withstand the hydraulic jump without damage.

7.2.b.1.D. Critical Flows - Channels shall be designed so that water will not flow at critical depth for extended distances. In channels of varying slope or cross-section where nonuniform flow occurs, the transition through critical flow shall be as rapid as possible.

7.2.b.1.E. Super-elevation - Channel walls shall be designed to contain super-elevated flows in curves. Where curves occur in spillway channels, the Secretary may approve super-elevation
wall height based upon one-half of the design flow, but not less than the P100 design flow, provided the excess overflow will impinge on natural ground and will not endanger the dam, human life, or property.

7.2.b.2. Closed Conduit Systems - Closed conduit systems including principal spillways, risers, and pipes shall be analyzed to determine the controlling limits of weir, orifice, and pipe flows.

7.2.b.2.A. Risers and Drop Inlets - Risers shall be protected with a designed trash rack and anti-vortex device. The drop inlet shall be sized to provide a rapid transition from partial to full pipe flow conditions.

7.2.b.2.B. Stage Discharge - When a closed conduit system is used as a principal system, a stage discharge rating shall be developed using standard engineering practices for weir, orifice, and pipe flow calculations.

7.2.b.2.C. Slug Flow - Conduit systems shall be designed to avoid formation of alternating partial and full pipe flow conditions through proper selection of pipe slope and headwater or tailwater conditions.

7.3. Geotechnical Considerations.

7.3.a. Geotechnical Investigation - A geotechnical investigation shall be performed. The quantity, location, and depth of borings, test pits, or trenches must be adequate for the evaluation of the bearing capacity and subsurface conditions for the proposed structure and may vary based upon the height, impoundment volume, and hazard classification of the dam. Factors to be considered include depth of soil, characteristics of bedrock, and determination of groundwater location. Results of in-situ testing and soil sampling shall be reported in the plan package. Soil profiles shall be utilized for critical foundation locations of the structure, spillways, and other pertinent locations which affect the safety of the structure. A geological study shall also be conducted to evaluate stratigraphy, landslides, bedrock discontinuities such as soft seams, joints, joint systems, bedding planes, and fault zones which may adversely affect the structure's performance. Past and future mining including thickness of coal seams, depth and type of rock above the coal seam, and previous or expected subsidence problems shall be considered where subsidence may affect the safety of the structure.

7.3.a.1. Project Area Survey - A project area survey shall be conducted to establish baselines and elevations of the dam embankments, reservoir and borrow areas, and appurtenant structures. The survey shall locate all test pits, borings, gas wells, oil wells, water wells, mine openings, landslides, and areas of natural seepage.

7.3.a.2. Borrow Areas - Borrow areas shall be evaluated for appropriate construction materials and required volume. Borrow areas and excavation materials shall be tested to determine the suitability of material for use in embankments or drains.

7.3.b. Laboratory Testing - Laboratory tests shall be conducted on a sufficient number of samples of foundation and embankment materials to provide an accurate representation of soil conditions. Tests shall include, but not be limited to, a complete soil classification including grain size, sieve, hydrometer analysis, Atterberg limits, density, water content, compaction tests, shear strength, consolidation, and permeability where applicable. Compaction and proctor curves shall be developed for all fill materials as appropriate.

7.3.c. Geotechnical Evaluation - A summary of all geotechnical data determined in the initial site geotechnical investigation and used in the analysis shall be included in table or figure form in the plan package.
7.3.c.1. Seepage Analysis - An analysis of seepage and its detrimental effects on structural integrity shall be made. The analysis shall include consideration of potential piping in the embankment, foundations, and abutments. Seepage control measures shall be specified as necessary in order to enhance the stability of the embankment and adjacent area. Drainage systems shall be designed and constructed using a material approved by the Secretary and shall be protected by a properly designed filter zone using standard geotechnical engineering design practices. The design shall specify methods for sealing or controlling seepage encountered in foundation zones during construction.

7.3.c.1.A. Foundation Treatment - If analysis indicates a highly fractured foundation, the engineer shall specify necessary treatment of the foundation zone including, but not limited to, foundation grout curtains, dental concrete treatment of fractures or overhangs, and detailed methods of foundation zone cleaning. Material used in grouts shall be specified in accordance with the provisions of subparagraph 7.4.a.1.B.

7.3.c.2. Foundation Stability - The foundation must be designed to have adequate bearing capacity to support the embankment and any appurtenant works. Potential subsidence and settlement and their consequences shall be considered using standard engineering practices. Special attention shall be given to differential settlement which would lead to cracking of the dam. Spillway pipes on compressible foundations shall be protected from damage due to settlement.

7.3.c.3. Landslides - The potential for landslides, as determined in the initial project area investigation, shall be evaluated by the engineer. If landslides noted in the project area could cause instability of the dam or appurtenant structures, blockage of spillways and other critical drainage structures, or overtopping of the dam by displacement of water in the reservoir area, such conditions shall be corrected to a minimum static safety factor of 1.5.

7.4. Structural Considerations.

7.4.a. General Structural Requirements - All structures shall be designed to perform as intended for the design life of the dam with proper maintenance or replacement.

7.4.a.1. Structural Materials - Materials selected for use in the dam shall be of adequate quality and durability for the intended purpose of the structure. All structures shall be designed to have sufficient strength plus an adequate safety factor against failure during maximum anticipated loading conditions.

7.4.a.1.A. Earth Materials - Earth materials selected for use in dam construction shall be free from roots, brush, organic materials, construction waste, and other debris. Where rock or rock fill is specified, the rock shall be durable and not subject to slaking or breakdown. Size gradations of the earth materials shall be specified to perform as planned. Compaction requirements for earth materials shall be specified in the plan package.

7.4.a.1.B. Concrete Design - Concrete shall be designed in accordance with standard engineering practices. Concrete design specifications shall include materials, proportioning, form-work, reinforcement, joints and embedded items, production, placing, repair of surface defects, finishing, curing and protection, testing, evaluation and acceptance, and allowable tolerances for acceptance.

7.4.a.1.B.1. Concrete Specifications - The engineer shall specify the nature of concrete to be used with sufficient detail for on-site quality control. The concrete may be specified by specific mix, aggregate, water content, additives, compressive strength, slump, and air entrainment or by reference to specific standards of concrete quality. If published standard specifications are referenced, a copy of the standard or pertinent sections of the standard shall be included in the plan package.
7.4.a.1.B.2. Concrete Placement - The engineer shall specify methods and limits of placement of the concrete including foundation preparation, maximum lift height, maximum time allowed between mixing and placement, methods of working into forms and corners, methods of consolidation and use of vibrating devices, and allowable ambient air temperatures and concrete temperatures.

7.4.a.1.B.3. Concrete Curing - The engineer shall specify the method of curing the concrete including moist curing or membrane curing, wetting, types of covering, acceptable curing temperature range of the concrete, any anticipated cold weather curing specifications or methods such as protection from freezing and insulation methods, hot weather placement methods and limitations, and curing time.

7.4.a.1.B.4. Concrete Finishing - The engineer shall specify the type of finishing to be applied to the concrete and the acceptable temperature range.

7.4.b. Specific Structural Requirements.

7.4.b.1. Embankment Dams.

7.4.b.1.A. Selection of Materials - Material selected for construction of embankments shall be select earth material that is free from roots, brush, organic matter, construction waste, and other debris. The material must not be subject to breakdown or chemical reaction. Unless otherwise approved by the Secretary, the selected material must be thoroughly tested for density, shear strength, liquid and plastic limits, and optimum moisture content. The source of the material and available quantities shall be identified and adequate sampling performed in order to attain consistent quality and soil characteristics.

7.4.b.1.B. Seepage and Piping Control - The Secretary may require installation of a properly designed filter drain system to prevent embankment failure due to seepage and/or internal erosion of any dam which can cause loss of human life or major damage to dwellings, or commercial or industrial buildings, important public utilities, or where a high risk highway may be affected.

7.4.b.1.C. Zoned Embankments.

7.4.b.1.C.1. Filter Drains - Filter drains shall be used in embankment zones where necessary to intercept seepage, reduce phreatic level, and reduce potential for internal erosion. Drain outlets shall be visible, not submerged under normal conditions, unobstructed, and protected with an animal guard where conduits are utilized.

7.4.b.1.C.1(a) Gradations - The gradations of the filter material shall be sized to prevent or resist the migration of embankment material into the voids of the filter. The filter shall be permeable relative to the surrounding embankment material.

7.4.b.1.C.1(b) Size - The filter drain shall be capable of passing the maximum anticipated seepage flows without excessive pore pressure. The combination of filter permeability and area shall be considered in sizing the drain.

7.4.b.1.C.1(c) Durability - The material used in the filter shall be hard, durable material that is not subject to slaking, breakdown, or chemical reaction.

7.4.b.1.C.1(d) Conduits - Perforated pipes may be used in the filter drain to increase capacity. Perforations shall be compatible with the filter gradations so that filter material will not enter the pipe. The pipe shall be capable of supporting the fill load and shall be of a material which will last for the design life of the structure. Corrugated metal pipe shall not be used in critical areas of the embankment or in any areas where the pipe is not reasonably accessible for replacement.
7.4.b.1.C.1(e) Filter Cloth - Filter cloth shall not be used in critical areas of the embankment or in any areas where the cloth is not reasonably accessible for replacement.

7.4.b.1.C.2. Diaphragm Cutoff Walls - When concrete cutoff walls are used as an impermeable barrier, the concrete wall shall be placed upon an adequate foundation and be constructed of reinforced concrete. Where pipes pass through the concrete wall, adequate support for the pipe shall be provided to prevent differential settlement and pipe shearing.

7.4.b.1.D. Embankment Stability - The following stability requirements apply to Class 1 through Class 3 dams. The Secretary may approve lower safety factors for Class 4 dams, based on engineering recommendations.

7.4.b.1.D.1. Embankment Safety Factors - Slope stability shall be analyzed to show that the embankment design achieves the following factors of safety under the conditions listed. Unless otherwise indicated, factors of safety requirements apply to both upstream and downstream slopes of the embankment:

7.4.b.1.D.1(a) A safety factor of 1.5 for the embankment loading conditions specified in part 7.4.b.1.D.3.;

7.4.b.1.D.1(b) An end of construction safety factor of 1.3;

7.4.b.1.D.1(c) An upstream slope rapid drawdown safety factor of 1.2; and

7.4.b.1.D.1(d) An earthquake safety factor under steady-state seepage conditions of 1.2 using seismic loading appropriate to the geological site conditions.

7.4.b.1.D.2. Appurtenance Structural Stability - Embankments constructed as part of an appurtenant structure where failure will lead to a dangerous condition in the dam shall achieve a static safety factor of 1.5.

7.4.b.1.D.3. Embankment Loading Conditions - Loading conditions shall assume a long-term steady-state condition with the phreatic surface originating at the elevation of the emergency spillway crest for embankment dams with emergency spillways or at a maximum design pool elevation for embankment dams without spillways.

7.4.b.1.D.4. Stability Analyses - All slope stability analyses shall be performed using standard engineering practices. Exceptions to this requirement will be allowed by the Secretary only where there is sufficient evidence to indicate that slope failures will not occur.

7.4.b.1.D.4(a) Critical cross-sections of the dam using equal X and Y axes scales shall be provided in the plan package. The cross-sections shall show the embankment limits, foundation zones, soil zones, phreatic line, assumed reservoir elevation, stability arcs or failure planes through the dam, and resulting safety factors for each critical arc or failure plane shown.

7.4.b.1.D.4(b) A listing of soil zone unit weights, angles of internal friction, and cohesion values for each soil shown on the cross-section shall be provided in the plan package. If an alternative analysis is utilized, assumed soil values of the analysis shall be shown.

7.4.b.1.E. Overtopping Embankments.
7.4.b.1.E.1. Rock-Covered Embankments - Rock-covered embankments shall be designed so that the rocks selected will be sized to withstand the maximum depth and velocity of the overtopping flow and be individually placed to maximize the interlocking effect. A minimum of two (2) layers of boulders is required. Boulders shall cover the crest, downstream face, and necessary areas of the upstream face of the dam and extend beyond the dam abutments to the extent necessary to contain the overtopping flow depth. Graded smaller rock shall fill the voids where the boulders contact the embankment to prevent erosion due to flow through the voids. The rock cover may be covered with soil and vegetated, provided that the equipment used to place the soil will not break the rock.

7.4.b.1.E.2. Roller-Compacted Concrete Embankments. Roller-compacted concrete lift thickness and width shall be sized to withstand the maximum anticipated loading and uplift forces. Filter drains and weep holes shall be provided to relieve hydrostatic pressure behind roller-compacted concrete facings. The roller-compacted concrete may be covered with soil and vegetated.

7.4.b.2. Gravity Dams. The following stability requirements apply to Class 1 through Class 3 dams. The Secretary may approve lower safety factors for Class 4 dams, based on engineering recommendations.

7.4.b.2.A. Stability Loading Conditions - Loading conditions for the stability analysis shall assume maximum overflow head from the design storm.

7.4.b.2.B. Gravity Dam Stability.

7.4.b.2.B.1. Overturning - The reaction of all forces must act within the middle one-third of the base. This requirement may be modified by the Secretary if detailed computations prove that overturning will not occur.

7.4.b.2.B.2. Sliding - The dam shall have a factor of safety against sliding of at least 3.0 for normal loading conditions and 1.5 for maximum loading conditions. The sliding factor of safety may be reduced to no less than 2.0 for normal loading conditions where intimate knowledge of subsurface conditions has resulted from a state-of-the-art subsurface investigation, testing program and design analysis. The subsurface investigation and testing necessary to reduce the factor of safety should include, but not be limited to: sampling and testing of weak zones such as discontinuities, joints, joint fill material, fracture zones, bedding planes, and faults and; determination of peak, ultimate and residual strengths of foundation materials. Design analyses should include, but not be limited to: three dimensional analyses of foundation strength resulting from the subsurface investigation. The adequacy of subsurface investigations, testing, and design analyses necessary to reduce the factor of safety is subject to approval by the Secretary.

7.4.b.2.B.3. Bearing - The factor of safety against bearing failure shall be at least 1.5 for maximum stress at the downstream toe.

7.4.b.3. Waste Disposal Dams - The potential for liquefaction must be considered and the design shall include safeguards against the development of this condition.

7.4.b.4. Spillways - All spillways shall be designed to discharge an adequate distance beyond the downstream toe of the dam in a natural drainway to prevent erosion of the downstream toe or other detrimental effects to the dam structure.

7.4.b.4.A. Conduit Spillways - Inlets shall be protected by a designed trash rack and riser type spillways shall be designed to prevent detrimental vortexing. Risers shall have adequate weight to be non-buoyant and shall be of sufficient strength to withstand maximum dynamic water and ice forces. Foundations for risers shall be designed to support the riser without serious movement or deformation.
7.4.b.4.A.1. Conduits - Pipe conduits shall be placed on a designed foundation and bedding of sufficient strength to minimize settlement and other detrimental effects to the conduit. Anti-seep or anti-piping mechanisms shall be provided for all conduits passing through the dam, foundation, or abutments to control seepage along the pipe. Design allowances shall be made to compensate for differential settlement, elongation, and movement of the pipe conduit if the cradle is placed on a yielding foundation. Pipe conduits shall be of sufficient strength to support the maximum external loads and the maximum internal hydraulic pressure without leaking, and shall resist uplift pressures. The pipe conduit shall be constructed of material which will not deteriorate during the design life of the structure.

7.4.b.4.A.1(a) Use of Corrugated Metal Pipes - Corrugated metal pipes, whether coated or uncoated, shall not be used in new Class 2 or new Class 1 dams. Corrugated metal pipes in existing dams must be either replaced with new pipe or retrofitted with an appropriate liner if the Secretary determines that the existing pipe constitutes a hazard to the proper operation of the dam because the pipe has developed leaks, has deteriorated, or has otherwise ceased to function properly.

7.4.b.4.A.2. Outlets - Pipe conduits shall be designed to outlet in a natural drainway or a designed channel leading to a natural drainway. An energy dissipator shall be provided to eliminate erosion at the pipe outlet and be designed for maximum pipe flow. If pipe blockage by animals may occur, the pipe outlet shall be protected by an animal guard.

7.4.b.4.A.3. Gated Drain Pipe Required for New Freshwater Dams - All new freshwater dams shall have a gated drainpipe for draining the impoundment. The gate or valve shall be located in the reservoir or in the saturated zone upstream of the cutoff wall or impermeable barrier. If the gate is located within the embankment or structure, a service well shall be provided. The elevation of the gate system shall be such that the reservoir will be drained completely to original stream level. The drain system shall be designed to drain ninety percent (90%) of the volume of stored water at normal pool in ten (10) days including normal base flow and have a minimum capacity of three (3) times the normal base flow for the watershed with a headwater-to-diameter (HW/D) ratio of 1.5, unless otherwise approved by the Secretary. The drain conduit shall meet the requirements for conduits set forth in part 7.4.b.4.A.1. A designed trash rack shall be provided at the inlet of the drain. The controls to operate the drain gate shall be accessible without the use of specialized equipment or of divers. The drawdown rate for reservoir storage volumes in excess of two thousand (2000) acre-feet may be established by the Secretary.

7.4.b.4.A.4. Existing Dams with Gated Drain Pipes - All existing dams currently equipped with a gated drain pipe must meet the design requirements of part 7.4.b.4.A.3. and continue to be operated and maintained with the gated drain pipe. If such a gate or valve was not previously installed, a gate or valve shall be installed in the reservoir or in the saturated zone upstream of the cutoff wall or impermeable barrier. The Secretary may approve reduced drawdown time and flow quantity requirements for existing drains. Drain systems not meeting the design requirements of part 7.4.b.4.A.3. or dams with leaking or inoperative drain systems must be repaired or modified to maintain the greatest practical capacity of the drain system. If installation of the upstream gate or valve is impractical without draining of the reservoir and reservoir drainage will cause major economic loss to the owner, the Secretary may approve delay of the upstream gate or valve installation until the next necessary draining of the reservoir, provided that the existing drain system is functioning properly and is not leaking in a manner that would create a serious problem. If the existing drain system develops a serious problem, the Secretary may order immediate remedial action. The Secretary may grant an exemption to this subpart when investigation of the existing drain system determines to the Secretary's satisfaction that installation of an upstream drain gate or valve is not feasible.

7.4.b.4.A.5. The term "gate" or "valve" as used in this rule is a general term referring to a device used for controlling water flow.
7.4.b.4.B. Open Spillways - Unless specifically excluded, spillways of this type include the various designs of open type spillways including open channel, side channel, chute, labyrinth, and ogee.

7.4.b.4.B.1. Earth Spillways - Spillways that are constructed of or in earth material shall be designed to pass the maximum design flow without excessive erosion. Earth spillways shall not be constructed over dam embankment fill material.

7.4.b.4.B.1(a) Flexible Linings - Vegetation, rock riprap, soil reinforcement, or other flexible linings may be used to increase flow quantities and velocities in earth spillways within design limits.

7.4.b.4.B.2. Concrete Spillways.

7.4.b.4.B.2(a) Concrete - The engineer shall specify the grade and strength of concrete to be used in the spillway construction. The concrete structure shall be of sufficient strength to withstand the maximum design applied load.

7.4.b.4.B.2(b) Foundation - Concrete shall be placed on a prepared foundation and bedding capable of sustaining the applied loads without excessive deformation.

7.4.b.4.B.2(c) Drains - Designed filter drains and water pressure relief devices shall be provided under concrete slabs and walls to collect and safely convey water from seepage or leakage of construction joints and to relieve uplift pressure from seepage conditions.

7.4.b.4.B.2(d) Joints - Construction joints shall be made watertight by use of a sealant material. Sliding joints shall be supported by a slab to maintain alignment.

7.4.b.4.B.2(e) Cutoff Barriers - Cutoff barriers keyed into the foundation shall be provided to prevent or reduce seepage flow under the spillway.

7.4.b.4.B.2(f) Energy Dissipators - An energy dissipator shall be provided to reduce the hydraulic energy at the end of the spillway. The dissipator shall be designed to function properly for flows of at least one-half of the design spillway flow. Flows in excess of the design capacity of the energy dissipator shall not endanger the dam or its appurtenances and may result only in erosion.

7.4.b.4.B.3. Nonstandard Spillway Design - The Secretary may reject any spillway design if such design is of a nonstandard or untested nature and it is not possible to analytically predict the performance of the spillway or the detrimental effects of cross-waves, eddies, vortices, super-elevation, or hydraulic jumps within the spillway system.

7.4.b.5. Water Supply Pipes - Water supply pipes through a dam shall be constructed of a long-life, high-strength material. Welded joints or mechanical joints with sealing rings, or an alternative sealing method approved by the Secretary, shall be utilized. Pipes shall be properly bedded to reduce differential settling or elongation. Anti-seep mechanisms or filter drains shall be provided to prevent piping along the exterior of the pipe. If the pipe is enclosed in or passes through concrete, the relative coefficients of expansion shall be considered. Anti-corrosive measures shall be employed if soil tests indicate corrosion may be a problem. An upstream shutoff valve shall be installed on all new dams or when upgrading existing dams where reservoirs are to be drained as part of the upgrading. The section of the pipe through the dam shall be capable of withstanding a minimum pressure of twice the maximum reservoir head. The pipe shall be pressure-tested for leaks at maximum reservoir head pressure prior to the final covering of the pipe installation.
7.5. Miscellaneous Considerations.

7.5.a. Erosion and Sediment Control - Erosion and sediment control measures sufficient to comply with the provisions of paragraph 8.1.m. shall be included in the project design where the disturbed area within the site is less than NPDES limits. If the disturbed area within the site exceeds NPDES limits, a letter documenting submission of a NPDES permit application must be submitted in accordance with subparagraph 6.4.f.1.

7.5.b. Waste Disposal Areas - The engineer shall delineate locations in the project area which are to be used as waste disposal areas.

7.5.c. Instrumentation - The engineer shall recommend instrumentation as necessary to monitor and measure performance of new dams or modifications to existing dams. The engineer shall specify the types and purpose of the recommended instrumentation.

7.5.c.1. Piezometers or Observation Wells - Piezometers or observation wells may be required by the Secretary on embankment type dams to monitor phreatic level and water pressures in critical areas of the embankment and, if necessary, the foundation or abutments. All piezometer or well heads shall be anchored in concrete and protected from vandalism with a locking metal cylinder surrounding the piezometer or well pipe.

7.5.c.2. Survey Monuments - Survey monuments may be required by the Secretary on embankment and gravity dams to monitor displacement, settlement, rotation, and deformation. Survey monuments on earth dams shall be sufficiently embedded into the structure to prevent localized movement of the monument. Protective casings shall be installed if necessary to prevent damage or forced movement of the survey point.

7.5.d. Staged Construction - Waste disposal dams designed in stages of construction shall be capable of storing or passing the design storm specified in paragraph 7.1.a.2. and subparagraph 7.1.b.1.A. during all stages of construction except during the initial start-up period, unless otherwise approved by the Secretary. During the initial start-up period, the dam shall be capable of storing or passing the P100 rainfall event as soon as possible. Construction shall increase storm capacity, reaching the full design storm capacity within two (2) years.

§47-34-8. Construction or Modification of a Dam.


8.1.a. Notification of the Commencement of Construction - Prior to the commencement of construction activities in the project area, the person who has been issued a certificate of approval, or his or her representative, shall notify the Secretary of the following:

8.1.a.1. The intent of the contractor to start construction in the project area and the date of such start-up.

8.1.a.2. The name, address, and telephone number of the owner's authorized contact person at the project area who is responsible for communicating with the Dam Safety Section and for receiving inspections reports and legal notifications.

8.1.b. Conformance with Plans - All work undertaken in the construction or modification of a dam shall be in strict conformance with the plans and specifications contained in the plan package submitted under subsection 5.1 and approved by the Secretary. Any changes to the approved plans and specifications shall be submitted to and approved by the Secretary prior to implementation.
8.1.c. On-Site Documents - A copy of the certificate of approval, the approved plans and specifications, all outstanding notices to comply or orders to comply that have been issued by the Secretary, and the monitoring and emergency action plans prepared in accordance with the provisions of subsection 15.6 and subsection 15.7 shall be available at the project area office for reference by construction personnel and the Secretary.

8.1.d. Adverse Weather Conditions - Construction work shall be suspended on all or part of the project when adverse weather conditions (e.g., prolonged precipitation, extreme temperatures) jeopardize the performance of work in conformance with the approved plan package.

8.1.e. Clearing and Grubbing - Clearing and grubbing shall be performed in the foundation, borrow, and soil stockpile areas. Clearing is required in the maximum permanent pool area unless otherwise approved by the Secretary.

8.1.f. Foundation Preparation - Foundation preparation shall include installation of keyways and subdrains, removal of soft areas, and similar project area preparation operations dictated by the approved plans and specifications and by project area conditions. The foundation shall be inspected by the Secretary prior to placement of embankment materials. If foundation problems are discovered during this inspection, additional foundation preparation may be required by the Secretary.

8.1.g. Placement of Materials.

8.1.g.1. All fill shall be placed in accordance with the approved plans and specifications.

8.1.g.2. Compaction testing shall be completed as specified in the approved specifications; the results of such testing shall be reported in accordance with the provisions of subdivision 8.4.a.

8.1.g.3. Filter drains shall be constructed in accordance with the approved plans and specifications. Filter material shall be tested for compliance with design gradations; the results of such testing shall be reported in accordance with the provisions of subdivision 8.4.a. Filter materials shall be placed to prevent segregation and contamination and shall be concurrently covered to prevent contamination or damage.

8.1.h. Grading.

8.1.h.1. All fill shall be graded in accordance with the approved plans and specifications.

8.1.h.2. The working surface and outslopes of the fill shall be concurrently graded through all phases of embankment construction.

8.1.h.3. The top of the fill shall be crowned to provide positive drainage during construction.

8.1.h.4. Final grading shall be conducted in order to facilitate revegetation.

8.1.i. Spillways and Appurtenances.

8.1.i.1. Spillways and appurtenances shall be constructed in accordance with the approved plans and specifications.

8.1.i.2. When downslope placement of fill material is used in the construction of spillways, the fill material shall be compacted in horizontal layers to achieve the design configuration.
8.1.i.3. All riprap material shall be of hard, durable rock which is not acid-forming or toxic. Riprap shall be placed to prevent size segregation.

8.1.i.4. When bedding is used under riprap, the rock material shall be placed in a manner so as not to damage or contaminate the bedding.

8.1.i.5. When protective channel linings are specified, the linings shall be installed as soon as the channel is constructed to grade in accordance with the approved plans and specifications.

8.1.i.6. When concrete is used in construction of spillways and appurtenances, the concrete shall be placed, cured, and finished in accordance with the provisions of part 7.4.a.1.B.2. through part 7.4.a.1.B.4. Standard engineering tests shall be performed in accordance with the provisions of paragraph 8.2.b.1. and reported in accordance with the provisions of subdivision 8.4.a.

8.1.i.7. All pipes, risers, and appurtenances shall be installed in accordance with the approved plans and specifications. Compaction testing shall be completed to ascertain that fill material around pipes, risers, and appurtenances has been placed in accordance with the approved plans and specifications; the results of such testing shall be reported in accordance with the provisions of subdivision 8.4.a. Sufficient fill shall be placed over pipes so as to prevent damage by heavy equipment.

8.1.j. Minimum Stream Flow - An adequate flow of water may be required by the Secretary in the stream below the dam during construction and reservoir filling to maintain water quality in the stream and to support fish and other aquatic life. The Secretary may require stream flow augmentation in accordance with the provisions of subdivision 15.3.b.

8.1.k. Blasting - Blasting may only be utilized in accordance with and as specified in the approved plans and specifications. Blasting based upon unforeseen project area conditions not covered in the approved plan package shall not be performed prior to approval by the engineer with the concurrence of the Secretary.

8.1.l. Storm Water Discharge - The sequence of construction work shall be planned to maximize the safe discharge of storm water while minimizing the amount of water retained in the impoundment. Either the principal spillway structures, including inlets and outlets, shall be operable prior to placement of construction material above the original valley elevation or diversion channels approved by the Secretary shall be in place.

8.1.m. Erosion and Sediment Control.

8.1.m.1. General Requirements - Erosion and sedimentation must be controlled to prevent a degradation of land and streams below the dam or project area, including visible deposits of sediment, and to prevent any violation of State water quality standards. Erosion and sediment control measures shall, at the minimum, conform with current erosion and sediment control reference manuals and apply to the entire project area.

8.1.m.2. Specific Requirements - Cleared areas, borrow areas, disturbed areas along stream channels and waterways, and fills, whether complete or in progress, must be equipped with erosion and sediment control devices (i.e., diversions, waterways, sediment basins, straw bale dikes, or silt fences).

8.1.m.2.A. Location of Sediment Control Devices - Erosion and sediment control devices must be located as close to the disturbed area as practical. Effort must be made to contain the sediment load within the disturbed area in order to prevent the entry of sediments into the natural drainway or stream.
8.1.m.2.B. Removal of Sediment Control Devices - Erosion and sediment control devices must remain in place until permanent vegetation is established or the area is otherwise stabilized. Prior to the removal of the devices, trapped sediment must be removed and placed in a location approved by the Secretary. Straw bale dikes and silt fences must be removed when no longer needed; sediment basins or ponds must be abandoned in a manner approved by the Secretary. Barren and denuded areas remaining after the removal of a control device must be revegetated.

8.1.m.2.B.1. The Secretary may modify or waive the requirements of subparagraph 8.1.m.2.B. for erosion and sediment control devices that are located within the impoundment area of the dam.

8.1.m.2.C. Cleaning Frequency - Sediment control diversions, silt fences, straw bale dikes, and waterways must be inspected once each week, and after each rainfall, and accumulated sediment must be removed in order to maintain design capacity. Sediment ponds, basins, and traps must be restored to design capacity when sediment accumulation approaches sixty percent (60%) of design capacity, or more frequently if so specified by the Secretary in writing.

8.1.m.2.D. Temporary Seeding and Mulching - Temporary seeding and mulching shall be utilized on bare areas where no construction activity is anticipated for a period of three (3) or more weeks. Areas that shall receive seeding and mulching include the reservoir area, borrow areas, soil stock piles, and steep fill slopes where no further work is planned prior to final grading. Where seeding is not feasible due to severe slope or time of year, the Secretary may approve mulching alone at a rate of three (3) tons of straw or hay per acre, or equivalent.

8.1.m.2.E. Water Routing - Water that is pumped or drained from work areas (e.g., excavations, foundations, and below grade fills) must be routed to properly-sized sediment control devices so that any sediment contained in the water is removed prior to discharge of the water from the project area. Pump discharges may not cause erosion or suspension of additional solids. No untreated water may be pumped or drained to the natural stream or stream diversion channel.

8.1.m.2.F. In-Stream Treatment - Barriers, such as silt fences or straw bales, located in the natural drainway or stream will not be considered acceptable as the primary means of sediment control for the project area. Properly designed sediment basins or ponds may be used for sediment control in the natural drainway or stream if the location of the basin or pond does not cause significant additional disturbance in undisturbed downstream areas. Use of a starter dike or the dam under construction may be considered appropriate for sediment control of the reservoir area provided the necessary detention time is achieved.

8.1.m.2.G. Sediment Control During Construction - Erosion and sediment control measures must be in place prior to the beginning of dam construction activities. Clearing and grubbing or sediment control measures not specified for the beginning of construction must be implemented in a timely manner as needed.

8.1.m.2.H. Permanent Erosion Measures - Permanent measures (e.g., vegetation, grading, diversions, waterways, and outlet structures) shall be included on all completed or existing dams, where applicable, to prevent the erosion of embankments, abutments, stream channels, and waterways during the life and operation of the dam.


8.1.n.1. General Disposal Requirements - All waste materials that result from construction activities shall be disposed of in a manner approved by the Secretary.
8.1.n.2. Specific Disposal Requirements.

8.1.n.2.A. Surplus Waste Materials - Surplus soil and rock materials shall be deposited in waste disposal areas delineated in the approved plans.

8.1.n.2.B. Organic Waste Materials - Trees, brush, root masses, and construction-related wood materials may be either buried in waste disposal areas delineated in the approved plan package or burned in accordance with local and State burning ordinances.

8.1.n.2.C. Concrete Waste Materials - New or old waste concrete materials may be disposed of in areas approved by the Secretary for surplus soil and rock materials. New, unset waste concrete shall not be deposited in a location where it will enter watercourses, either directly or indirectly as a result of runoff. After it has set, the new waste concrete may be moved to waste disposal areas delineated in the approved plans.

8.1.n.2.D. Other Waste Materials - Chemicals, petroleum products, plastics, garbage, sewage, and any associated containers shall be disposed of in a manner approved by the Secretary.

8.1.n.2.E. Off-Site Waste Materials - No waste materials or soil waste may be transported to the project area for disposal.

8.1.o. Dust Abatement - The contractor shall fully suppress dust on haul and access roads and as necessary within the project area. Water, or an alternative dust palliative approved by the Secretary, shall be used for dust suppression; the use of oil or waste oil is prohibited.

8.1.p. Access Roads - A permanent access road shall be provided to each dam site. The road must be adequate for emergency vehicular traffic. Single lane unpaved roads are acceptable provided the roads are properly maintained. The access road must be designed and located as to not be unduly affected by stream or spillway flows during heavy rainfall events. The road may be secured with a locked gate provided that the key is available to dam monitors and State and local emergency personnel for emergency response.

8.2. Quality Control.

8.2.a. Construction Monitoring.

8.2.a.1. All construction activities shall be monitored by an engineer or his or her designated representative. Construction monitoring shall not be the responsibility of the construction contractor unless specifically approved by the Secretary in writing.

8.2.a.2. Responsibility for assessing the quality of the workmanship and ascertaining compliance with the approved plans and specifications shall be vested primarily in the owner's engineer. The Dam Safety Section shall also monitor construction activities and workmanship in order to ascertain compliance with the approved plans and specifications, in accordance with the provisions of W. Va. Code §22-14-9.

8.2.a.3. Critical phases of construction shall be monitored by the engineer or his or her designated representative constantly during active construction; noncritical phases of construction shall be checked at least once per day during active construction.

8.2.a.4. Additional supervision or testing will be required by the Secretary if evidence of inadequate construction supervision exists.
8.2.b. Materials Testing - Construction materials shall be periodically tested on-site to ascertain compliance with design specifications in the approved plan package. Final quality control testing shall not be the responsibility of the construction contractor.

8.2.b.1. Concrete Testing - Routine tests of slump, air entrainment, and temperature shall be performed on each truck delivery. Cylinder samples for compression testing shall be taken each day or every twenty-five (25) cubic yards of delivered concrete, whichever is more frequent, unless otherwise required by the Secretary.

8.2.b.2. Earth Fill Testing - Earth fill materials shall be tested for compaction and moisture content every alternate layer or each one thousand (1,000) cubic yards, whichever is more frequent. Random fill shall be evaluated for compliance with approved gradation specifications. Critical fill areas shall have gradation tests performed to evaluate compliance with the approved specifications.

8.2.b.3. Filter Materials Testing - Gradation tests shall be performed on filter materials. Close visual observation for signs of material segregation shall be performed. Additional tests may be required by the Secretary to determine durability and soundness of the filter material.

8.3. Construction Inspections.

8.3.a. Inspections During Construction.

8.3.a.1. A visual inspection for construction progress, unstable conditions, quality control, and conformance with the approved plans and specifications shall be held at least once each working day (or more frequently as determined by the engineer). The inspection shall be performed by an engineer or a person under the direct supervision of the engineer. The frequency of inspection may be changed by the Secretary depending upon specific project area conditions.

8.3.a.2. Additional inspections shall be held after each heavy rainfall event in order to detect problems and propose remedial measures. These inspections shall be performed by an engineer or a person under the direct supervision of the engineer.

8.3.a.3. Instrumentation shall be monitored every seven (7) days unless otherwise specified by the engineer. Monitoring shall be performed by an engineer or a person under the direct supervision of the engineer. The frequency of monitoring may be changed by the Secretary depending upon specific project area conditions.

8.3.b. Final Construction Inspection - Upon the completion of the construction or modification of a dam, a joint inspection shall be conducted by the Secretary and the engineer. The purpose of the inspection is to verify that all work has been accomplished in accordance with the approved plan package.

8.3.c. Acceptance of Construction - When the dam owner is advised by the Secretary that the construction appears satisfactory, the owner shall submit to the Secretary a certification by an engineer that all construction was in substantial conformance with the approved plans and specifications, including any modifications that have been approved by the Secretary. This certification shall be submitted within ninety (90) days of the Secretary's advisement. As-built drawings, including all variations from the original specifications and changes in location of borrow or waste disposal areas, shall be submitted with the engineer's certification. If substantial modifications of the original specifications have been made during the construction period, the Secretary may require that a corrected application form be submitted. Upon the receipt of the engineer's certification with the as-built drawings (and a corrected application form, if necessary), a letter of acceptance will be issued by the Secretary.
8.3.d. Completed Dams - After acceptance of construction by the Secretary, the dam and its appurtenances shall be inspected annually for a period of three (3) years by an engineer experienced in such inspections. The Secretary reserves the right to attend any inspection and require prior notification of the inspection by the owner of the dam. A report of each inspection shall be prepared and filed with the Secretary in accordance with the provisions of subdivision 15.5.a.

8.4. Construction Reporting Requirements.

8.4.a. Monthly Progress Reports During Construction - A written report containing the results of each inspection of construction progress shall be submitted to the Secretary every month while the dam and its appurtenances are under construction. The report shall include, but not be limited to, specific instrumentation readings, test results, freeboard, crest elevation, and specific construction or quality control problems with documentation of implemented solutions. Upon the completion of the construction or modification of the dam, notice shall be given by the dam owner to the Secretary so that a final construction inspection can be made in accordance with the provisions of subdivision 8.3.b.

8.4.b. Post-Construction Inspection Reports - A report shall be submitted to the Secretary by the dam owner reporting the findings of the final construction inspection required under subdivision 8.3.b. Certification by an engineer shall be submitted to the Secretary with the inspection report to verify that the dam and its appurtenances were constructed in substantial conformance with the approved plans and specifications and that the dam and its appurtenances are functioning as designed.


9.1. Application to Breach a Dam - The owner of a dam must obtain a certificate of approval from the Secretary prior to the breaching of the dam. A complete application in accordance with the provisions of subsection 5.1. must be submitted to and approved by the Secretary prior to the commencement of breaching activities.

9.1.a. Plan Package Requirements - The plan package submitted in order to breach a dam shall be in accordance with the applicable requirements of section 6 and must also include the specific requirements delineated in subsection 9.2 through subsection 9.10. Narratives, plans, or specifications required under section 6 which are clearly not applicable to the proposed breaching activities may be omitted from the submittal; however, the Secretary reserves the right to specify those items which must be included in the breaching plan package.

9.2. Breach Dimensions - The breach opening in the dam shall be designed so that any water resulting from design storm inflows that is temporarily impounded behind the residual structure shall be less than the height and storage requirements of a "dam" set forth in subsection 2.12. The breach shall be to original stream bottom level, except that a small impoundment of less than one (1) acre-foot storage may be retained for sediment control purposes.

9.3. Breach Channel - The embankment shall be breached with a designed channel having the capacity to carry the peak runoff from the design storm corresponding to the dam's hazard classification. The channel created by the breach shall have an erosion-preventive lining adequate to withstand the depth and velocity of the peak flows from a P100 rainfall event. The channel side slopes shall achieve a minimum stability factor of safety of 1.5.

9.4. Safety - Reservoirs shall be completely drained before breaching operations begin. Breaching work shall be scheduled during dry weather using National Weather Service advice and proceed quickly to reduce the potential for impounding water.
9.5. Blasting - If blasting is to be used in the breaching of a dam, a blasting plan shall be submitted to the Secretary for approval. The plan shall include the distance to existing structures and the measures that will be taken to minimize air blast and flying materials. A pre-blast survey of existing nearby structures and water wells which may be affected by blasting may be required by the Secretary.

9.6. Erosion and Sediment Control - Erosion and sediment control measures sufficient to comply with the provisions of paragraph 8.1.m. shall be implemented during the breaching operation. The following measures shall also be implemented:

9.6.a. Reservoir areas, and the sediment deposits therein, shall be protected from erosion after the impounding capability has been eliminated by the breaching of the dam;

9.6.b. Silt deposits and barren areas in the reservoir shall be stabilized and revegetated;

9.6.c. Disturbed areas, including the faces on any remaining embankment, must be protected by vegetation or other means approved by the Secretary;

9.6.d. A channel in the reservoir sediment may be required by the Secretary in order to reestablish a stream channel; and

9.6.e. Permanent sediment basins, subject to ongoing maintenance, may be required by the Secretary if the dam owner cannot demonstrate the effectiveness of other structural and vegetative measures in stabilizing the reservoir area and dam site.

9.7. Placement of Earthen Material - Material removed from the dam shall be placed in waste disposal areas delineated in the approved plan package. The material shall be graded and compacted as necessary and stabilized from erosion by vegetation or other means approved by the Secretary.

9.8. Placement of Non-Earthen Material - Concrete rubble and other rock material shall be placed in waste disposal areas delineated in the approved plan package. The material shall be placed in a manner to reduce hazardous conditions; protruding metal, wire, or bars are prohibited. The requirements of subdivision 8.1.n. shall apply to the disposal of any other waste materials generated by the breaching operation.

9.9. Galleries and Drains - The effect of flows through the breach and backwater pressure on galleries and drains shall be evaluated. The galleries and drains shall be vented or sealed as necessary to prevent failure of the remaining structure.

9.10. Safety of Remaining Structure - The remaining structure shall have sufficient strength to support the maximum hydraulic loading without failure. The engineer shall attempt to reduce or eliminate hazards associated with an "attractive nuisance."

9.11. Construction Practices - The requirements of section 8 shall apply when breaching a dam unless clearly not applicable to the breaching operation; however, the Secretary reserves the right to specify which requirements are applicable.

§47-34-10. Removal of a Dam.

10.1. Application to Remove a Dam - The owner of a dam must obtain a certificate of approval from the Secretary prior to the removal of the dam. A complete application in accordance with the provisions of subsection 5.1. must be submitted to and approved by the Secretary prior to the commencement of removal activities.
10.1.a. Plan Package Requirements - The plan package submitted in order to remove a dam shall be in accordance with the applicable requirements of section 6 and must also include the specific requirements delineated in subsection 10.2 through subsection 10.8. Narratives, plans, or specifications required under section 6 which are clearly not applicable to the proposed removal activities may be omitted from the submittal; however, the Secretary reserves the right to specify those items which must be included in the removal plan package.

10.2. Removal Requirements - Removal of a dam shall consist of the complete removal of the structure to the original ground except in special cases where it may be necessary or advantageous to leave small sections of the structure. Unless otherwise approved by the Secretary, the removal of a dam shall consist of complete removal of the structure to approximate original contour. A total of no more than ten percent (10%) of the length of the structure may remain at the abutment areas.

10.3. Safety - Reservoirs shall be completely drained before removal operations begin. Removal work shall be scheduled during dry weather using National Weather Service advice and proceed quickly to reduce the potential for impounding water.

10.4. Blasting - If blasting is to be used in the removal of a dam, a blasting plan shall be submitted to the Secretary for approval. The plan shall include distance to existing structures and the measures that will be taken to minimize air blast and flying materials. A pre-blast survey of existing nearby structures and water wells which may be affected by blasting may be necessary.

10.5. Erosion and Sediment Control - Erosion and sediment control measures sufficient to comply with the provisions of subdivision 8.1.m. shall be implemented during the removal operation. The following measures shall also be implemented:

10.5.a. Reservoir areas, and the sediment deposits therein, shall be protected from erosion after the impounding capability has been eliminated by the removal of the dam;

10.5.b. Silt deposits and barren areas in the reservoir shall be stabilized and revegetated;

10.5.c. Disturbed areas, including the faces on any remaining embankment, must be protected by vegetation or other means approved by the Secretary;

10.5.d. A channel in the reservoir sediment may be required by the Secretary in order to reestablish a stream channel; and

10.5.e. Permanent sediment basins, subject to ongoing maintenance, may be required by the Secretary if the dam owner cannot demonstrate the effectiveness of other structural and vegetative measures in stabilizing the reservoir area and dam site.

10.6. Placement of Earthen Material - Material removed from the dam shall be placed in waste disposal areas delineated in the approved plan package. The material shall be graded and compacted as necessary and stabilized from erosion by vegetation or other means approved by the Secretary.

10.7. Placement of Non-Earthen Material - Concrete rubble and other rock material shall be placed in waste disposal areas delineated in the approved plan package. The material shall be placed in a manner to reduce hazardous conditions; protruding metal, wire, or bars are prohibited. The requirements of subdivision 8.1.n. shall apply to the disposal of any other waste materials generated by the removal operation.
10.8. Safety of Remaining Structure - If any portion of the structure remains, that portion shall have sufficient strength to support the maximum hydraulic loading without failure. The engineer shall attempt to reduce or eliminate hazards associated with an "attractive nuisance."

10.9. Construction Practices - The requirements of section 8 shall apply when removing a dam unless clearly not applicable to the removal operation; however, the Secretary reserves the right to specify which requirements are applicable.

§47-34-11. Abandonment of a Dam.

11.1. Application to Abandon a Dam - The owner of a dam must obtain a certificate of approval from the Secretary prior to the abandonment of the dam. A complete application in accordance with the provisions of subsection 5.1. must be submitted to and approved by the Secretary prior to the commencement of abandonment activities.

11.2. Reservoir Elimination - The reservoir area shall be completely filled to the crest elevation of the dam with approved material to eliminate the impoundment of water. The maximum impounding capacity upon completion of final grading shall not exceed one (1) acre-foot of impounding capacity. The final top elevation of the reservoir fill shall be higher than, and sloped into, the diversion system required under subsection 11.4.

11.3. Embankment Stability - The remaining embankment shall be shown to achieve a minimum factor of safety in accordance with the provisions of subparagraph 7.4.b.1.D.

11.4. Diversion System - A diversion system designed for a P100 rainfall event shall be provided to capture the stream at the upstream end of the reservoir and convey stream water and embankment runoff water around the site. The diversion system shall outlet safely beyond the downstream toe of the embankment in a natural drainway capable of carrying the design storm without excessive erosion. The Secretary may require the installation of an energy dissipator in accordance with the provisions of subpart 7.4.b.4.B.2.(f).

11.5. Sealing Conduits - All conduits through the embankment, with the exception of underdrain conduits, shall be sealed with concrete at the upstream end prior to elimination of the reservoir. The Secretary may require pressure testing of conduits to determine seal adequacy.

11.6. Erosion and Sediment Control - Erosion and sediment control measures sufficient to comply with the provisions of subdivision 8.1.m. shall be implemented during the abandonment operation.

11.7. Soil and Vegetative Cover - A sufficient layer of topsoil shall be provided to permit long-term growth of vegetation. A seeding and mulching mixture shall be proposed in the abandonment application to accomplish revegetation of the project area.

11.8. Retention of Jurisdiction - The Secretary shall retain jurisdiction over the site for a minimum period of five (5) years after abandonment, during which time the dam and its appurtenances shall be inspected annually by an engineer experienced in such inspections. The inspections shall include measurement readings of instrumentation to determine the level and volume of saturation within the reservoir fill material. The Secretary may also require more frequent reading and reporting of instrument readings to determine seasonal fluctuations of saturation. A report shall be filed with the Secretary detailing the findings of each inspection and describing intended maintenance work. Should a major storm occur, a similar report shall be filed to detail the resultant condition of the structure.

11.9. Final Approval of Abandonment - At the completion of the five-year period, a final joint inspection by the engineer and the Secretary shall be conducted to determine the effectiveness of the
abandonment design and the potential need for continued maintenance. Should the Secretary determine as a result of this inspection that an additional inspection time period or maintenance work is required, a letter detailing these requirements shall be sent to the owner. The Secretary will review instrument records and annual inspection reports to determine if the saturation level of material within the reservoir has decreased in volume to less than the legal definition of a "dam." Should the Secretary determine as a result of the inspection and review of instrumentation records that the volume of saturated material is less than the legal definition of a "dam" and the abandonment design has been effective, a letter of acceptance shall be issued stating that the dam has been properly abandoned.

§47-34-12. Reduction or Enlargement of a Dam.

12.1. Reduction of Dam Height To Less Than Jurisdiction.

12.1.a. A person planning to reduce the height of a dam so that the remaining structure will no longer meet the definition of "dam" set forth in subsection 2.12. must obtain a certificate of approval from the Secretary.

12.1.b. A complete application in accordance with the provisions of subsection 5.1. must be submitted to and approved by the Secretary prior to the commencement of reduction activities. The application must also contain information showing that the remaining impounding structure will not cause loss of life or appreciable property damage downstream should that structure fail.

12.1.b.1. Plan Package Requirements - The plan package submitted in order to reduce the height of a dam shall be in accordance with the applicable requirements of section 6 and must also include the specific requirements delineated in subdivision 12.1.c. and subdivision 12.1.d. Narratives, plans, or specifications required under section 6 which are clearly not applicable to the proposed reduction may be omitted from the submittal; however, the Secretary reserves the right to specify those items which must be included in the reduction plan package.

12.1.c. The remaining structure shall have a properly designed spillway system capable of passing a Class 3 design storm without overtopping.

12.1.d. The remaining structure shall achieve a factor of safety in accordance with the provisions of subparagraph 7.4.b.1.C. or subparagraph 7.4.b.2.B. as appropriate to the type of structure.

12.1.e. The requirements of section 8 apply when reducing the height of a dam unless clearly not applicable to the reduction operation; however, the Secretary reserves the right to specify which requirements are applicable.

12.1.f. The Secretary shall retain jurisdiction over the remaining structure until the reduction operation is completed and a letter of acceptance has been issued by the Secretary.

12.2. Enlargement of a Structure to Jurisdiction.

12.2.a. A person planning to enlarge an existing structure so that the completed structure will meet the definition of "dam" set forth in subsection 2.12. must obtain a certificate of approval from the Secretary.

12.2.b. A complete application in accordance with the provisions of subsection 5.1. must be submitted to and approved by the Secretary prior to the commencement of enlargement activities.

12.2.b.1. Plan Package Requirements - The plan package submitted in order to enlarge a structure to jurisdiction shall be in accordance with the applicable requirements of section 6. Narratives,
plans, or specifications required under section 6 which are clearly not applicable to the proposed enlargement may be omitted from the submittal; however, the Secretary reserves the right to specify those items which must be included in the enlargement plan package.

12.2.c. The Secretary will require adequate drilling and testing of the existing structure and foundation to ascertain in place conditions.

12.2.d. The requirements of section 8 shall apply when enlarging a structure to jurisdiction unless clearly not applicable to the enlargement operation; however, the Secretary reserves the right to specify which requirements are applicable.


13.1. Complete Application Required - An application for a certificate of approval shall be submitted to the Secretary for all dams completed before July 1, 1973 which meet the definition of "dam" set forth in subsection 2.12. If the engineer can demonstrate that the dam meets the design requirements specified in this rule, an application for approval of an existing dam shall be submitted. If the dam requires modification to meet the requirements, an application for modification of an existing dam shall be submitted. If the above options are not exercised by the dam owner, an application to breach, remove, or properly abandon the dam pursuant to this rule shall be submitted.

13.2. Performance Requirements - All dams completed before July 1, 1973 shall meet the applicable design requirements of section 7. Those dams which do not meet the applicable design requirement of section 7 shall be modified, breached, removed, or properly abandoned pursuant to the provisions of this rule. In developing the required plans, specifications, and documentation necessary to bring the structure into conformity with section 7, the design engineer may consider in his or her submitted analyses, peculiarities and local conditions for each impounding structure with recognition of the many factors involved, some of which may not be precisely known. Existing construction documentation and the historical performance of the structure including documented storms and spillway flows may be considered by the engineer as part of the evaluation of the structure. Upon approval by the Secretary of the plans, specifications, and documentation submitted by the engineer, the Secretary may issue a certificate of approval.

13.3. Plan Package Requirements - The plan package submitted for approval or modification of an existing dam shall be in accordance with applicable requirements of section 6, except that testing and analysis results may be substituted for design specifications. If as-built drawings are not available, the engineer may substitute drawings prepared by him or her which represent the existing conditions at the dam as determined through the testing and analysis program.

§47-34-14. Sale or Transfer of a Dam.

14.1. Notification and Documentation - Within thirty (30) days after the sale or transfer of a dam, the Secretary must be notified of that transaction by the person who was issued the certificate of approval for the dam.

14.1.a. The seller of a dam must provide the following documentation to the Secretary:

14.1.a.1. The name and address of new owner;

14.1.a.2. A copy of the signed agreement between the previous and new owner acknowledging certificate of approval responsibility and including any warranties, insurance coverage, or liability agreements between the parties;
14.1.a.3. The effective date of the ownership or responsibility transfer; and

14.1.a.4. Documentation that a copy of the certificate of approval or the most recent Dam Control Act notice to comply or order -- if a valid certificate of approval does not exist -- has been entered in the deed or land records of the county in which the dam is located.

14.1.b. The Secretary may reissue a corrected certificate of approval reflecting the sale or transfer of a dam upon the receipt of appropriate documentation and fees.


15.1. Safe Operations - The owner of a dam shall ensure that his or her dam is operated in a safe and responsible manner so as not to endanger life or property.

15.2. Operations Plan - Owners of dams which require the operation of gates, penstocks, or other means of regulating the reservoir level or downstream flow shall develop and submit an operations plan to the Secretary for approval.

15.2.a. Plan Contents - The operations plan shall include, but not be limited to, normal and seasonal operational procedures for gates, penstocks, and other reservoir or downstream flow regulating devices. The name, address, and telephone number of each individual authorized to operate the dam shall also be included in the plan.

15.2.b. Plan Implementation - The operations plan shall be implemented immediately upon approval by the Secretary and shall be updated periodically as necessary to reflect any changes in personnel or operation procedures.

15.3. Releasing Water - The owner of a dam may release water or lower the reservoir elevation through the use of gates without prior approval of the Secretary provided that the release of water will not adversely affect the dam structure, property, or water quality or pose a hazard to human life.

15.3.a. Emergency Releases of Water - Under emergency conditions, the owner of a dam may release water at a rate which may violate the criteria established under subsection 15.3. provided that such emergency release will not pose an unjustifiable hazard to human life. Notification must be given of a pending emergency release of water in accordance with the provisions of subdivision 15.8.a. In accordance with the provisions of W. Va. Code §22-14-12, this regulatory provision shall not relieve the owner of the dam of any liabilities resulting from an emergency release of water.

15.3.b. Low Flow Augmentation - The Secretary may require the owner of a dam to maintain a specified stream flow below the dam or to augment the stream flow for appropriate in-stream uses.

15.4. Dam Safety Inspections - Periodic inspections of dams shall be performed to monitor and assess the condition of the dam. These scheduled safety inspections of completed dams shall be in the charge of an engineer.

15.4.a. Inspections by the Dam Owner - The owner of a dam or his or her agent shall perform safety inspections monthly or more frequently. Such inspections must survey the dam and its appurtenances to check for problems or changes since the last inspection. The owner or his or her agent shall inspect the dam more frequently than once per month during adverse weather conditions. The owner shall report any observed problems to the Secretary.

15.4.b. Inspections by the Secretary - The Secretary may inspect any dam at any time in accordance with the provisions of W. Va. Code §22-14-4(i).
15.4.c. Inspections by the Owner's Engineer - An engineering inspection shall be conducted annually for three (3) years after the completion of any dam, in accordance with the provisions of paragraph 8.3.d. Upon the conclusion of this three-year period, the dam shall be inspected by the owner's engineer at the frequency specified in subparagraph 15.4.c.1. through subparagraph 15.4.c.4. as appropriate to the hazard classification of the dam. The Secretary may require additional inspections based upon site conditions. The Secretary reserves the right to attend any inspection and require prior notification of the inspection from the owner of the dam.

15.4.c.1. Class 4 dams shall be inspected at least once every seven (7) years.

15.4.c.2. Class 3 dams shall be inspected at least once every five (5) years.

15.4.c.3. Class 2 dams shall be inspected at least once every three (3) years.

15.4.c.4. Class 1 dams shall be inspected at least once every two (2) years.

15.4.d. Inspection of Dams with Serious Problems - The Secretary may establish the frequency of inspection of dams with serious problems for both inspections by the dam owner under subdivision 15.4.a. and inspections by the owner's engineer under subdivision 15.4.c. The inspection of a dam with serious problems shall monitor slopes, seepage, bulges, scarps, vertical displacement, excessive erosion, piping, sudden changes in monitoring devices, and other visible factors which could indicate potential failure of the embankment, spillways, or other appurtenances. The Secretary reserves the right to attend any inspection and require prior notification of the inspection by the owner of the dam.

15.5. Dam Safety Inspection Reports.

15.5.a. Inspection Reports for Completed Dams - A written report containing the observations of each inspection that is required under subdivision 8.3.d. and subdivision 15.4.c. shall be submitted to the Secretary by the dam owner within thirty (30) days of the inspection. The report shall also describe maintenance work to be performed as a result of the inspection findings. Should a storm equal to or greater than a 50-year, 6-hour rainfall event occur, a similar report shall be filed to detail the resultant condition of the structure. Certification by an engineer shall be submitted to the Secretary with each inspection report to verify that the dam and its appurtenances are functioning as designed.

15.5.b. Inspection Reports for Dams with Serious Problems - A written report containing the observations of each inspection required under subdivision 15.4.d. shall be submitted to the Secretary by the dam owner within thirty (30) days of the inspection.

15.6. Monitoring Plans - Owners of Class 1 dams shall formulate and submit a monitoring plan to the Secretary for approval. Owners of Class 2 and 3 dams may be required by the Secretary to formulate and submit a monitoring plan for approval.

15.6.a. The monitoring plan developed by the dam owner must follow the format of the example plan provided by the Secretary and shall include, but not be limited to, the following:

15.6.a.1. A description of the dam, including appropriate drawings and location maps;

15.6.a.2. A listing of problems and deficiencies and any implemented repairs;

15.6.a.3. The inspection frequency under varying weather conditions;

15.6.a.4. A description of areas or items to be inspected;
15.6.a.5. Corrective actions to be taken;
15.6.a.6. The responsible persons' names, addresses, and telephone numbers;
15.6.a.7. The method of notification of the Secretary and county emergency services authorities; and
15.6.a.8. Other items required by the Secretary based upon site-specific conditions.

15.6.b. Monitoring plans shall be updated annually. More frequent updating of the plans may be required by the Secretary based upon rapidly changing personnel or site conditions. The monitoring plan shall be implemented immediately by the dam owner upon the approval of the plan by the Secretary.

15.7. Emergency Action Plans - Owners of Class 1 dams shall formulate and submit an emergency action plan to the Secretary for approval. Owners of Class 2 and 3 dams may be required by the Secretary to formulate and submit an emergency action plan for approval.

15.7.a. The emergency action plan developed by the dam owner must follow the format of the example plan provided by the Secretary.

15.7.b. The dam owner shall coordinate with county emergency service authorities in the development of the emergency action plan. The dam owner must provide copies of the inundation maps required under paragraph 3.5.c.2. to those authorities.

15.7.c. The dam owner shall provide county emergency services authorities with a copy of the monitoring plan, and all updates of that plan, approved by the Secretary pursuant to subsection 15.6.


15.8.a. Emergency Condition - If the owner of a dam determines that an emergency exists, he or she shall immediately notify any person who may be endangered if the dam should fail and then notify the appropriate county emergency services authorities and the Secretary. After providing notification of the emergency condition, the owner shall immediately take any remedial action, such as an emergency release of water, that is necessary to protect life and property. The Secretary may waive the requirement for a certificate of approval, as required under section 4, where it is necessary to accomplish repairs under emergency conditions.

15.8.b. Dangerous Condition - Should a dangerous condition develop, the Secretary shall be informed immediately. The owner of the dam shall immediately take any remedial action necessary to protect life and property. Emergency procedures developed in accordance with the provisions of subsection 15.6. and subsection 15.7. shall be implemented to protect life and property downstream. The site shall be inspected and monitored at least once every eight (8) hours until the emergency situation is alleviated. Continuous monitoring may be required by the Secretary when there is an imminent danger to the health, safety, or welfare of the public.

15.8.c. Evaluation of Dangerous Conditions - If a dangerous condition develops, an engineering evaluation shall be initiated as soon as possible to formulate a plan for permanent correction of the dangerous condition. The evaluation and corrective action plan shall be submitted to and approved by the Secretary prior to implementation.

15.9. Dam Owner Not Relieved of Responsibility - The Secretary's approval of a monitoring plan, or updates to such a plan, pursuant to subsection 15.6. or his or her approval of an emergency action plan
pursuant to subsection 15.7. shall not relieve the dam owner of his or her legal duties, obligations, or liabilities under W. Va. Code §§22-14-10 and 22-14-12.

§47-34-16. Dam Maintenance.


16.1.a. Required Maintenance - Each dam shall be maintained in accordance with the plans and specifications approved under the applicable certificate of approval. The Secretary may require maintenance to be performed on a dam, whether or not a certificate of approval has been issued for that dam.

16.1.b. Maintenance Plan - Owners of dams shall formulate and submit a written maintenance plan to the Secretary for approval. The maintenance plan shall include, but not be limited to, schedules for maintaining embankments, concrete structures, vegetative or rock covers, gates, gate mechanisms, penstocks, or other reservoir-regulating devices, spillways, and appurtenances. The maintenance plan shall be implemented immediately by the dam owner upon the approval of the plan by the Secretary. The maintenance plan shall be updated periodically as necessary to reflect changing site conditions.

16.2. Specific Maintenance Requirements.

16.2.a. All spillways and appurtenances shall be maintained to operate in accordance with the plans and specifications approved under the applicable certificate of approval.

16.2.b. All failures resulting from landslides or slope failures shall be corrected immediately if the failures significantly affect the safety or design capacity of the dam or its appurtenances. All failures shall be reported to the Secretary.

16.2.c. All pipes shall be repaired or replaced when damaged, or distorted, or if they otherwise fail to function properly in accordance with the plans and specifications approved under the applicable certificate of approval.

16.2.d. Leakage through joints, fissures, and cracks through or under the spillway channel shall be immediately investigated and repaired.

16.2.e. Any new gate which has been installed in a new dam or in the repair or modification of an existing dam, or any gate which has been opened within five (5) years prior to inspection by the Secretary, shall be opened to at least thirty-three percent (33%) of its maximum capacity at least once annually. Gates not meeting the above requirements may remain closed until operated for the purposes of the owner or to alleviate an emergency condition and shall thereafter be opened at least once annually. All gate mechanisms shall be lubricated annually regardless of the operational status of the gate.

16.3. Routine Maintenance.

16.3.a. Routine maintenance of spillways shall be performed. Such maintenance shall include the removal of sediment, brush, trees, obstructions, and rocks in stilling basins and the re-establishment of the structure to its original hydraulic design.

16.3.b. Routine inspections shall be made of all hydraulic structures in order to maintain proper operation. Special inspections shall be conducted whenever a significant flow through the structures has occurred.
16.3.c. If erosion on the embankment face or abutments occurs, the area shall be regraded and be provided with adequate drainage control or revegetation to prevent future occurrences.

16.3.d. All concrete structures and channel linings shall be maintained in accordance with the plans and specifications approved under the applicable certificate of approval. All cracks located in concrete channels shall be sealed immediately with a sealant approved by the Secretary.

16.3.e. Access roads shall be maintained in order to provide access for emergency inspections, vehicles, and equipment.

16.3.f. The embankment or concrete structure of a dam shall be kept clear of trees and shrubs. The downstream toe and abutments of the dam shall be cleared to natural ground for a lateral distance of at least twenty-five (25) feet. All dams with vegetative covers shall be mowed at least once annually. Grazing by farm animals shall be controlled to prevent animal trails or other damage to the vegetative cover.

16.3.g. The embankment shall be kept clear of burrowing animals.

16.3.h. All monitoring devices shall be routinely inspected and repaired or replaced as necessary so that the devices function properly.

§47-34-17. Dam Repairs.

17.1. General Repair Requirements - The Secretary may require repairs to be performed on a dam, whether or not the dam has a certificate of approval. Major repairs shall require a certificate of approval, issuance of which may or may not constitute final approval of the dam, as determined by the Secretary.

17.1.a. Routine Repairs (No Certificate Required) - Repairs conducted in accordance with the provisions of subsection 16.3. shall not normally require an application for a certificate of approval; however, the Secretary may require such an application based upon site-specific conditions.

17.1.b. Major Repairs (Certificate Required) - Any repairs to a dam other than routine repairs listed in subsection 16.3. shall require an application for a certificate of approval in accordance with the provisions of this rule.

17.2. Specific Repair Requirements.

17.2.a. Removal of Trees and Tree Roots - All trees shall be removed from the embankment and abutment areas, unless otherwise approved by the Secretary based upon site-specific conditions. Small trees with a base diameter of four (4) inches or less may be removed without removing the root system unless specific problems with the root system are evident. Larger trees may require special care in removal. The Secretary may require the removal of root systems of large trees if the potential for seepage along the root system exists. If removal of root systems requires extensive excavation of the embankment, the removal shall be considered a major repair requiring a complete application for a certificate of approval.

§47-34-18. Application and Annual Registration Fees.

18.1. Application Fees - Each application submitted to place, construct, enlarge, alter, repair, remove or abandon a dam shall include an application fee. No fee, however, shall be assessed for dams designed and constructed by the soil conservation service for soil conservation districts. The following application fees apply:
18.1.a. The application fee for placement, construction, alteration, enlargement, repair, or approval of a dam is three hundred dollars.

18.1.b. The application fee for breaching, or abandonment of a dam is two hundred dollars.

18.1.c. The application fee for removal of a dam is one hundred dollars.

18.2. Annual Registration Fees - Owners of existing dams holding certificates of approval shall be assessed an annual registration fee. In accordance with provisions of the Dam Control and Safety Act, West Virginia Code §22-14-7, existing certificates of approval will be extended for one year upon receipt of the annual registration fee, an inspection report in accordance with subsection 15.5., a monitoring and emergency action plan in accordance with subsection 15.6. and subsection 15.7., and a maintenance plan in accordance with subdivision 16.1.b.; Provided that where an approved, up-to-date: inspection report; monitoring and emergency action plan; and maintenance plan are on file in the Dam Safety Section, and where no outstanding violation(s) exist, then the certificate of approval will be extended without resubmission of the foregoing documents upon receipt of the annual registration fee. No fee shall be assessed, however, for dams designed and constructed by the soil conservation service for soil conservation districts. The following annual registration fees apply:

18.2.a. Class 4 dams shall be assessed twenty-five dollars.

18.2.b. Class 3 dams shall be assessed fifty dollars.

18.2.c. Class 2 dams shall be assessed seventy-five dollars

18.2.d. Class 1 dams shall be assessed one hundred dollars.

18.3. Any certificate of approval issued pursuant to W. Va. Code §22-14-7 and this rule is void without notification to the person holding the certificate of approval when the annual registration fee is more than one hundred eighty (180) days past due. Resubmission of an application in accordance with section 5 is required where a certificate has become void due to failure to pay the appropriate annual registration fee within one hundred eighty (180) days of the date due.

§47-34-19. Civil Administrative Penalties.

19.1. Enforcement Actions.

19.1.a. General - An authorized representative of the Secretary may commence an enforcement action for any observed violation.

19.1.b. Enforcement Action Procedures - An enforcement action shall be in writing, shall be signed by the Secretary or other authorized representative of the Secretary, and shall set forth with reasonable specificity:

19.1.b.1. The nature of the enforcement action with a reference to the section of the statute, rule, notice, order or certificate of approval term that was allegedly violated;

19.1.b.2. The time and date of the observance of the violation;

19.1.b.3. A reasonable description of the dam where the violation was observed, where within the operation or maintenance of the dam the observation was observed, and the condition or hazard determined by the Secretary;
19.1.b.4. The name, ownership and location of the dam and any identification number associated with it; and

19.1.b.5. In those instances where a notice or order has not been previously issued, the remedial action necessary to alleviate the violation and time limits for accomplishing the remedial action.

19.2. Penalty Assessment Procedures.

19.2.a. Review of Enforcement Action and Penalty Calculation - The Secretary shall review each enforcement action issued for civil administrative penalty assessment to determine:

19.2.a.1. The appropriateness of a civil administrative penalty;

19.2.a.2. The initial amount of penalty, if any, based upon the rates and methods given in subsection 19.5.;

19.2.a.3. The appropriateness of assessing a daily civil administrative penalty for continuing violations;

19.2.a.4. The total initial civil administrative penalty assessed; and

19.2.a.5. The appropriateness of assessing a separate civil administrative penalty against an individual person.

19.2.b. Notice of Civil Administrative Penalty - The Secretary shall provide the violator with a copy of the enforcement action and:

19.2.b.1. A notice of civil administrative penalty which shall include procedures for requesting an informal hearing and a notification of applicable time constraints; or

19.2.b.2. A notice of dismissal.

19.3. Hearings and Appeals.

19.3.a. Right to Informal Hearing - The violator has twenty (20) calendar days from his or her receipt of the notice of civil administrative penalty within which to request, in writing, an informal hearing before the assessment officer. If a hearing is requested, the assessment officer will hold the hearing within 60 days to deduce the actual facts and circumstances regarding the violation and, based thereon, will make a final recommendation of civil administrative penalty assessment to the Secretary. If no hearing is requested, the notice of civil administrative penalty becomes a final order after the expiration of the twenty-day period and the civil administrative penalty becomes due and payable.

19.3.b. Notice and Scheduling of Informal Hearing - If the violator requests an informal hearing within the twenty-day period, the assessment officer shall schedule a hearing in accordance with the following procedures:

19.3.b.1. The time and place the informal hearing is to be held is to be communicated to any authorized representative of the Secretary who filed an enforcement action bringing about the informal hearing, to the violator and to any person who has expressed an interest in writing concerning the enforcement action;

19.3.b.2. The communication shall be provided at least fifteen (15) calendar days prior to the time of the hearing; and
19.3.b.3. The assessment officer may continue the informal hearing only for good cause shown.

19.3.c. Informal Hearing Procedures - An informal hearing, as provided by this rule, is intended to be an informal discussion of the facts which gave rise to the issuance of an enforcement action and shall be conducted in the following manner:

19.3.c.1. The West Virginia Rules of Civil Procedure and West Virginia Rules of Evidence shall not apply;

19.3.c.2. A record of the informal hearing is not required but may be made by any party to the hearing at the party's expense; and

19.3.c.3. At formal review proceedings which may ensue, no evidence as to any statement made by one party at the informal hearing may be introduced as evidence by another party, nor may any statement be used to impeach a witness, unless the statement is or was available as competent evidence independent of its introduction during the informal hearing.

19.3.d. Written Decision - Within thirty (30) calendar days following the informal hearing, the Secretary shall issue and furnish to the violator a written decision affirming, increasing, decreasing, or dismissing the initial civil administrative penalty assessment and giving the reasons for the decision.

19.3.e. Request for Formal Hearing - Within thirty (30) calendar days after notification of the Secretary's informal hearing decision, the violator may request a formal hearing before the Environmental Quality Board. If no formal hearing is requested, the Secretary’s decision becomes a final order after the expiration of the thirty day period and the civil administrative penalty becomes due and payable.

19.4. Separate Civil Administrative Penalties.

19.4.a. The Secretary may assess a separate civil administrative penalty against any corporate director, officer, agent, or employee of a violator, or any other person, who authorizes, orders, or carries out a violation of the statute, rule, notice, order, or certificate of approval term or who fails or refuses to follow an order from the Secretary.

19.4.b. In determining the amount of a civil administrative penalty to be assessed against a person, consideration shall be given to the criteria specified in subsection 19.5.

19.4.c. The Secretary shall serve on each person to be assessed an administrative penalty a notice of separate civil administrative penalty assessment. For purposes of this subsection, service is considered sufficient if it satisfies Rule 4 of the West Virginia Rules of Civil Procedure for service of a summons and complaint. A notice of separate civil administrative penalty assessment shall include:

19.4.c.1. A reference to the section of the statute, rule, notice, order, or certificate of approval term allegedly violated;

19.4.c.2. A concise statement of the facts alleged to constitute the violation;

19.4.c.3. A statement of the amount of the separate civil administrative penalty to be imposed;

19.4.c.4. A copy of the underlying enforcement action; and
19.4.c.5. A statement of a person’s right to an informal hearing.

19.4.d. A person shall have twenty (20) calendar days from receipt of the notice of separate civil administrative penalty assessment in which to request, in writing, an informal hearing before the assessment officer. If no hearing is requested, the notice of separate civil administrative penalty becomes a final order after expiration of the thirty-day period and the separate civil administrative penalty becomes due and payable.

19.4.e. The informal hearing, if requested, will be scheduled and conducted pursuant to this section.

19.5. Civil Administrative Penalty Calculation Procedures.

19.5.a. Calculation - The Secretary shall calculate a civil administrative penalty by taking into account the seriousness of the alleged violation, good faith efforts on the part of the violator (as provided for in paragraph 19.5.c. of this section) and any history of violations by the violator.

19.5.b. History of Violations (HOV) - The Secretary shall take into account the violator's history of violations by determining if any enforcement actions concerning Certificate terms, requirements of the Act, rule requirements, notices to comply or any orders have been taken against the violator during twenty-four (24) months prior to the violation. Those enforcement actions which were withdrawn, dismissed, or vacated shall not be included in the determination. Any outstanding violation within the time period shall constitute a history of violations.

19.5.c. Good Faith Effort - Good faith effort shall be determined in accordance with Table B.

19.5.d. Maximum Assessed Penalty - The maximum assessment for a single violation shall not exceed five thousand dollars ($5,000) per day with a maximum cumulative total of twenty thousand dollars ($20,000) for this same violation. Multiple violations shall not exceed a maximum cumulative total of twenty thousand dollars ($20,000) per day. The amounts applicable to a single violation must be adhered to when developing the cumulative total for multiple days.

19.5.e. Penalty - The civil administrative penalty shall be determined through the use of Table A.

19.5.f. Penalty With Good Faith Efforts by Violator - The civil administrative penalty determined by Table A shall be reduced, if applicable, through the use of Table B.
TABLE A

Seriousness of Violation
(dollars/day-violation)

<table>
<thead>
<tr>
<th>Enforcement Action</th>
<th>No Hazard</th>
<th>Serious Problem</th>
<th>Dangerous Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No HOV</td>
<td>With HOV</td>
<td>No HOV</td>
</tr>
<tr>
<td>Certificate</td>
<td>250</td>
<td>625</td>
<td>750</td>
</tr>
<tr>
<td>Act</td>
<td>625</td>
<td>1250</td>
<td>1500</td>
</tr>
<tr>
<td>Rule</td>
<td>1250</td>
<td>1875</td>
<td>2125</td>
</tr>
<tr>
<td>Notice</td>
<td>1875</td>
<td>2500</td>
<td>3125</td>
</tr>
<tr>
<td>Order</td>
<td>2500</td>
<td>3125</td>
<td>3750</td>
</tr>
</tbody>
</table>

TABLE B

Good Faith by Violator

<table>
<thead>
<tr>
<th>Rating</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Reduction</td>
<td>0%</td>
<td>5%</td>
<td>10%</td>
<td>15%</td>
<td>20%</td>
<td>25%</td>
<td>30%</td>
<td>35%</td>
<td>40%</td>
</tr>
</tbody>
</table>

Good Faith Ratings:

0  Violator failed to take appropriate action
1-2 Violator took prompt, but insufficient action to fully comply with the violation within the required time period. Action was completed prior to end of extended time period.
3-4 Violator took prompt action and worked diligently to correct the violation. Conditions beyond the control of the violator prevented full compliance with the enforcement action and required that the compliance time period be extended for just cause.
5-6 Violator initiated compliance action immediately and expended all reasonable efforts to comply. Achieved compliance before the end of the original compliance time period.
7-8 Violator was already taking appropriate action at the time the violation was documented and expended exemplary effort in compliance action before the end of the compliance time period.

Determination of Penalty Assessment:

Enforcement Action Amount (Table A)  
Less Good Faith Percent (Table B)  
Total Assessment  

48
§47-34-20. State Deficient Dams Rehabilitation Assistance Program.

20.1. The Secretary shall establish a State Deficient Dams Rehabilitation Assistance Program to direct the distribution of loans from the Dam Safety Rehabilitation Revolving Fund created under the Act.

20.2. Use of Moneys in the Fund. -- Moneys in the Fund shall be used to make loans to persons to finance costs for engineering, design, alteration, improvement, repair, breaching or removal of a deficient dam necessary to correct or remove the deficiencies and other activities as authorized by a federal grant or a legislative appropriation. The Fund may also be utilized by the Secretary to repair, remove or take other remedial action with respect to a deficient dam under the authority in section 22 of the Act. The Fund may also be used to defray administrative costs incurred by the Secretary or the Authority.

20.3. Each loan shall be in an amount that covers the reasonable and necessary cost of a project for which funds are sought by the applicant and which are not provided by other available sources. Dam owners may use multiple programs or sources to fund the rehabilitation costs for a deficient dam, up to 100 percent of rehabilitation costs. Dam owners cannot exceed 100 percent funding from multiple programs or sources and must provide the Secretary with any multiple source accounting to verify that the loan amount plus the additional sources of funding do not exceed 100 percent.

20.4. List of Deficient Dams. -- A State List of Deficient Dams shall be developed and updated periodically by the Secretary utilizing a priority ranking system, including, but not limited to, the following factors: size of dam and reservoir; condition of dam and its appurtenances; and hazard potential to life and property.


The Secretary shall consider eligibility for loans to include, but not be limited to, the following criteria:

21.1. Only those dams on the List of Deficient Dams are eligible for a loan from the Dam Safety Rehabilitation Revolving Fund in accordance with the priority specified in the List of Deficient Dams, provided that a person meets the criteria under subsection 21.3.;

21.2. A person has submitted a complete application for a project with eligible costs;

21.3. A person is in a state of readiness to proceed to planning, design or construction and expend loan payments in a timely manner;

21.4. A person has demonstrated his or her ability to pay is less than the estimated cost of repair or removal of the dam;

21.5. A person has demonstrated his or her ability to repay a loan. The Secretary shall evaluate the borrower’s financial stability, financial needs, and ability to repay based upon an appropriate examination of financial information, including, but not limited to, income and credit histories, income tax returns, financial statements and collateral offered to secure the loan;

21.6. Rehabilitation costs for any deficient dam are eligible, except for dams owned by the federal government;

21.7. Costs for State agency-required fish passage are eligible only if they are part of an overall rehabilitation project;

21.8. Costs for lake-enhancement projects such as lake dredging, sediment removal projects, or boat
ramps, which do not enhance the safety of a deficient dam are not eligible to be funded through the Fund;

21.9. A person has provided an acceptable schedule for project initiation and completion; and

21.10. A person has demonstrated he or she has the financial, legal, and managerial capabilities to ensure adequate design, construction, completion of the project, and subsequent operation and maintenance of the dam. As a part of this demonstration, the person shall complete and submit to the Secretary financial capability worksheets supplied by the Secretary.

§47-34-22. Applications for Loans.

22.1. A person who meets the eligibility criteria in section 21 may apply for a loan.

22.2. The applicant shall request a pre-application meeting with the Secretary to discuss the requirements of the program, including eligibility. A pre-application package, in a form prescribed by the Secretary, shall be completed and submitted to the Secretary prior to this meeting.

22.3. The review and approval by the Secretary of the pre-application package, including any project plans, design drawings and specifications, or other documents is for administrative purposes only and does not relieve the applicant or his agents and employees from properly planning, designing, constructing, operating, and maintaining the project as required under applicable federal and state statutes and rules.

22.4. If the project will involve two (2) or more persons, the applicant shall submit an agreement among the parties to the Secretary in a form prescribed by the Secretary.

22.5. After the pre-application meeting, a person desiring a loan from the Fund may make a separate application to the Secretary, on a form prescribed by the Secretary, for each project for which a loan is desired.

§47-34-23. Loan Agreements.

Upon approval of an application for a loan, the Secretary shall specify the provisions that are required to be contained in the loan agreement, including:

23.1. The specific purposes for which the proceeds of the loan shall be expended, the cost of the project, the amount of the loan, and the terms of repayment of the loan and the security therefor, which may include a deed of trust or other appropriate security instrument creating a lien on such project or any other collateral the Secretary may require;

23.2. The procedures as to the disbursement of loan proceeds including an estimated monthly draw schedule, and the duties and obligations imposed upon the applicant in regard to the acquisition or construction of the project;

23.3. The agreement of the applicant to repay the obligations of such applicant under the loan agreement. Revenue may be pledged for the repayment of the loan together with all interest, fees, and charges thereon and all other financial obligations of the applicant under the loan agreement;

23.4. If notes or other interim obligations are being issued by the applicant, the agreement of the applicant to take other repayment actions as are required of the applicant under the loan agreement;

23.5. Payments of the principal and any interest on a loan shall be made by the applicant in accordance with the following:
23.5.a. Computation of Interest on Loans. -- Each loan shall bear interest from the date of the delivery of the notes of the applicant evidencing the loan to the applicant (or such other date as is determined by the Secretary) at a rate or rates per annum, either fixed or variable, as determined by the Secretary.

23.5.b. Fees and Charges. -- In addition to payments of principal and interest on a loan, each applicant shall agree in the loan agreement to pay fees and charges equal to the applicant's share of the administrative expenses of the Secretary and the Authority relating to the loan program or any bond program established by the Secretary and the Authority.

23.6. The agreement of the applicant to accept the Authority’s enforcement remedies under the Act in the event of any default under the loan; and

23.7. The agreement of the applicant to comply with all applicable federal and state statutes and rules and regulations and all applicable local ordinances pertinent to the financing, acquisition, design, construction, operation, maintenance and use of the project.


The obligation of the Authority to enter into loan agreements shall be conditioned upon the availability of moneys in the Fund in amounts and on terms and conditions, as at the direction of the Secretary, will enable the Authority to make loans.

§47-34-25. Disbursement of Loan Moneys.

25.1. Following the Secretary’s approval of a loan and conditions to be included in the loan agreement, the Authority shall provide the person with the loan agreement setting forth the specific terms of the loan. The loan agreement, following execution by the person, constitutes a binding commitment for moneys from the Fund.

25.2. Moneys shall be disbursed from the Fund only upon a written authorization from the Authority. On a monthly basis, there shall be disbursed to each recipient the amount certified as costs incurred for the project. Said certification shall be made on an approved form. Moneys will be dispensed from the Fund upon presentation of an executed payment request form.

25.3. Each person receiving a loan shall comply with all terms and conditions of the loan agreement or notes or other debt instruments evidencing the loan.

25.4. Prior to commencement of construction, the Secretary and recipient shall hold a pre-construction conference to review the activities that shall take place during construction of the project.

25.5. Interim inspections of the project shall be conducted by the Secretary periodically during construction. A final inspection shall be conducted by the Secretary after construction has been substantially completed and before the final construction loan payment is disbursed.

25.6. The Secretary may use moneys from the Fund in accordance with provisions of section 22 of the Act. Before seeking a requisition from the Fund, the Secretary shall provide the information required in Section 20 of the Act to the Authority. Costs recovered from an owner by civil action shall be promptly deposited in the Fund.

Once a loan has been granted under this rule, the owner or owners of a dam shall cooperate with the Secretary by:

26.1. Facilitating access to the dam and its appurtenances;

26.2. Making available all records maintained pursuant to the provisions of this rule for inspection by the Secretary upon request and where appropriate by the Authority;

26.3. Furnishing the Secretary with all plans, specifications, operation and maintenance data, instrumentation data, and other information pertinent to the dam and its appurtenances, or the loan;

26.4. Providing the Secretary with an operation and maintenance plan;

26.5. Maintaining the dam and appurtenances in the state of repair and operating condition required by the exercise of prudence; due regard for life or property; the application of sound and accepted engineering principles; and provisions of this rule;

26.6. Developing a monitoring and emergency action plan for the approval of the Secretary and implementing the plan upon approval;

26.7. Providing the Secretary with written, regularly scheduled reports describing progress toward repair or removal of the dam; and

26.8. Demonstrating the ability to appropriately operate and maintain the dam after rehabilitation is complete.

§47-34-27. Procurement Standards.

27.1. Procurement Standards for Publicly-Owned Dams. -- Owners of publicly-owned dams shall comply with all applicable State laws and rules pertaining to competitive bid and prevailing wage requirements.

27.2. Procurement Standards for Privately-Owned Dams. -- Owners of privately-owned dams shall obtain a minimum of three bids prior to design, construction, or major procurement items as determined by the Secretary, provided that the Secretary may grant an exception in situations that may cause loss of life or property.


28.1. Financial Management. -- A loan recipient shall establish and maintain a financial management system to account for all costs incurred related to a project. This system shall assure that generally accepted accounting principles and practices are consistently applied in all financial matters related to the project.

28.1.a. Financial management shall include the following elements:

28.1.a.1. The maintenance of ledgers containing accurate, current, and complete records of all financial actions related to the project;

28.1.a.2. The maintenance of records that identify the source and amount of all moneys used for the project and documentation of how such moneys were used; and

28.1.a.3. The maintenance of records that allow a comparison of actual project costs with
budgeted costs.

28.1.b. The recipient shall maintain an accounting system, which shall:

28.1.b.1. Establish a separate account for the project;

28.1.b.2. Record all transactions in a timely and verifiable manner;

28.1.b.3. Designate one (1) person who is not responsible for project operations to account for all project funds; and

28.1.b.4. Prepare and submit as directed, financial reports of the project.

28.2. Records. -- The recipient shall maintain official records for each loan received that include:

28.2.a. The loan application and loan approval documents;

28.2.b. All contracts and subagreements related to the project;

28.2.c. All documents related to financial management prescribed under subsection 28.1.;

28.2.d. A documentation of compliance with applicable federal and State statutes, rules, and regulations;

28.2.e. A documentation of the amount of moneys received and expended for the project;

28.2.f. A documentation of all property that was purchased for the project; and

28.2.g. Time records related to the project, if applicable.
E.49. Wisconsin
Chapter NR 333

DAM DESIGN AND CONSTRUCTION

NR 333.01 Purpose. The purpose of this chapter is to ensure that dams are designed, constructed and reconstructed so as to minimize the danger to life, health and property. This chapter is adopted pursuant to ss. 31.02 (2), 31.19 and 31.33, Stats.

History: Cr. Register, May, 1985, No. 353, eff. 6–1–85.

NR 333.02 Applicability. (1) The provisions of this chapter are applicable to dams not owned by the United States government that:

(a) Have a structural height of more than 6 feet and a maximum storage capacity of 50 acre–feet or more of water.

(b) Have a structural height of 25 feet or more and a maximum storage capacity of more than 15 acre–feet of water.

(c) Have a structural height of 6 feet or less or a maximum storage capacity of less than 50 acre–feet of water if the department determines that the dam is likely to endanger life, health or property if it is not designed, constructed or reconstructed in accordance with this chapter.

(2) All new and existing dams inspected, approved and licensed by a federal agency under 18 CFR Part 12, are exempt from the provisions of this chapter provided that the dam meets requirements which are at least as restrictive as the requirements of this chapter.

Note: Dams exempted from this chapter are still subject to the requirements of ch. 31, Stats., including, but not limited to, the requirements for permits and plan approvals.

History: Cr. Register, May, 1985, No. 353, eff. 6–1–85; CR 00–136: am. Register July 2001, No. 547 eff. 8–1–01.

NR 333.03 Definitions. (1) “Auxiliary spillway” means a secondary spillway designed to pass water only during flows exceeding the capacity of the principal spillway.

(2) “Base flow” means that part of the stream flow that is derived from groundwater and calculated as the 7–day low flow that occurs on an average of once in 2 years or has a 50% chance of occurring in any given year. The notation is Q7,2.

(3) “Dam” means any artificial barrier in or across a watercourse which has the primary purpose of impounding or diverting water. A dam includes all appurtenant works, such as a dike, canal or powerhouse.

(4) “Department” means the department of natural resources.

(5) “Development” means any artificial change to improved or unimproved real estate not related to allowable open space use including, but not limited to, the construction of buildings, structures or accessory structures; the construction of additions or substantial improvements to buildings, structures or accessory structures; the placement of buildings or structures; and campgrounds.

(6) “Floodplain with the dam nonexistent” means that area of land downstream from a dam that would be inundated by water during the regional flood if the dam did not exist.

(7) “Floodway” means the channel of a river or stream and those portions of the floodplain adjoining the channel which are required to carry the regional flood discharge.

(8) “Hydraulic shadow” means that area of land downstream from a dam that would be inundated by water upon failure of the dam during the regional flood.

(9) “Land use controls in place” means future development within the hydraulic shadow is required to conform to the criteria specified in a zoning ordinance adopted and approved pursuant to s. 87.30, Stats., and also consistent with land use plans developed under s. 66.1001, Stats., or through restrictive covenants, easements, or other appropriate legal arrangements between the owner of the dam and the owners of all property within the hydraulic shadow.

(10) “Maximum headwater” means the maximum water surface elevation before overtopping would occur.

(11) “Maximum storage capacity” means the volume of water in acre–feet capable of being stored behind a dam at the maximum water surface elevation before overtopping would occur.

(12) “Minimum tailwater” means the water level downstream from a dam at base flow.

(13) “Open space use” means a use which has a relatively low flood damage potential, such as uses associated with agriculture, recreation, parking, storage yards, or certain sand and gravel operations.

(14) “Overtopping” means the flow of water over parts of a dam which are not part of its spillway system.

(15) “Owner” means any individual, partnership, public utility, company, cooperative, trust, corporation, association, state or interstate agency, city, village, town, county or special purpose district such as a drainage district or a public inland lake protection and rehabilitation district which has title to or recorded easement for operation, maintenance and access to a dam or to the specific parcel of land on which a dam exists.

(16) “Principal spillway” means the primary structure for the discharge of normal flow through a dam.

(17) “Q10” means the flood flow having a recurrence interval of 10 years or a 10% chance of occurring or being exceeded in any given year.

(18) “Q50” means the flood flow having a recurrence interval of 50 years or a 2% chance of occurring or being exceeded in any given year.

(19) “Q100” means the flood flow having a recurrence interval of 100 years or a 1% chance of occurring or being exceeded in any given year.

(20) “Q500” means the flood flow having a recurrence interval of 500 years or a 0.2% chance of occurring or being exceeded in any given year.

(21) “Q1000” means the flood flow having a recurrence interval of 1000 years or a 0.1% chance of occurring or being exceeded in any given year.

(22) “Reconstruction” means alteration of an existing dam in a manner which affects its hydraulic capacity or structural integrity.

(23) “Regional flood” means a flood determined to be representative of large floods known to have occurred in Wisconsin and

Register, January, 2002, No. 553
NR 333.03

WISCONSIN ADMINISTRATIVE CODE

Unofficial Text (See Printed Volume). Current through date and Register shown on Title Page.

which may be expected to occur on a particular stream once in every 100 years.

Note: The regional flood is based upon a statistical analysis of stream flow records available for the watershed or an analysis of rainfall or runoff characteristics in the watershed or both. The flood frequency of the regional flood is once in every 100 years. In any given year, there is a 1% chance that the regional flood may occur or be exceeded.

24. "Structural height” means the difference in elevation in feet between the point of lowest elevation of the top of the dam before overtopping and the lowest elevation of the natural stream or lake bed at the downstream toe of the dam.

25. “Submerged” means that the difference between the water surface elevations upstream and downstream from a dam is one foot or less.

26. “Total spillway capacity” means the sum of the auxiliary spillway and principal spillway capacities of a dam.

History: Cr. Register, May, 1985, No. 353, eff. 6–1–85; am. (25), Register, April, 1987, No. 376, eff. 5–1–87; CR 00–136: renum. (1) to (4), (9), (13) to (16), (21) to (25), (27) and (28) to be (2) to (4), (1), (8), (14) to (17), (20) to (26), am. (1), (3), (15), (24) and (26), cr. (5), (8), (17), (20) and (26), cr. (5), (9) and (13) Register July 2001, No. 547 eff. 8–1–01; correction in (9) made under s. 13.93 (2m) (b) 7., Stats., Register January 2002 No. 553.

NR 333.04 Compliance schedules. (1) DAM HAZARD RATING. The department shall assign a dam hazard rating according to the criteria in s. NR 333.06 for all dams subject to the provisions of this chapter. The assignment of a hazard rating shall be based on the findings of a dam failure analysis provided by the owner, pursuant to the standards of s. NR 333.05, according to the following schedule:

(a) For new dams, prior to granting permission or approval to construct.

(b) For existing dams which are to be reconstructed, prior to granting permission or approval to reconstruct.

(c) After a dam failure analysis has been approved by the department or is adopted in a floodplain zoning ordinance pursuant to s. 87.30, Stats., and approved by the department.

(d) Upon issuance of a department directive in a dam safety inspection report pursuant to s. 31.19, Stats.

(2) COMPLIANCE. (a) New dams. The design and construction of all new dams shall be in compliance with the requirements of this chapter.

(b) Existing dams. The owners of all existing dams shall bring their dams into compliance with the requirements of this chapter within 10 years after being notified of the dam’s hazard rating pursuant to sub. (1), unless ordered to do so earlier under s. 31.19 (5), Stats.

(3) ENFORCEMENT. Administrative orders issued by the department under s. 31.19 (5), Stats., may be enforced under ss. 23.50, 23.79 (3), 30.03, 31.23 (2) and 31.25, Stats.

History: Cr. Register, May, 1985, No. 353, eff. 6–1–85; CR 00–136: r. and recr., Register July 2001, No. 547 eff. 8–1–01.

NR 333.05 Submission of plans, specifications and analyses. (1) PLANS AND SPECIFICATIONS. Plans and specifications prepared by a professional engineer registered in the state of Wisconsin shall be submitted to and approved by the department prior to the construction of a new dam or reconstruction of an existing dam.

(2) HYDRAULIC, HYDROLOGIC AND STABILITY ANALYSES. Hydraulic, hydrologic and stability analyses prepared by a professional engineer registered in the state of Wisconsin shall be submitted to and approved by the department prior to the construction of a new dam or the reconstruction of an existing dam. These analyses shall be conducted according to accepted engineering practice and unless the department determines otherwise shall be submitted in the form of a report which includes, at a minimum:

(a) Purpose of the report. Development of an emergency action plan, floodplain zoning or development of the hazard rating for the dam.

(b) Roles and participation of other agencies — DNR, DEG, community officials, other agencies.

(c) Data collection methods and sources of information — Development of cross sectional data, description of past flooding events, reference to previous studies, current floodplain zoning map.

(d) Methodologies and procedures — Operation of dam during high water, breach parameters, description of all spillway components, scenario for failure, failure conditions.

(e) Regional flood flows calculated in conformance with the standards in s. NR 116.07 (3).

(f) Hydraulic modeling — Determination and delineation of the following hydraulic conditions during the regional flood, using the standards in s. NR 116.07(4):

1. Hydraulic shadow — assuming that the dam is in existence and fails. Failure shall be considered to occur at the maximum upstream water elevation or at the point of overtopping, based upon the physical conditions at the dam.

2. Dam in place, no failure — assuming the dam operates in accordance with its department approved operation plan, if one is available, or not operated if there is no plan.

3. Dam nonexistent — assuming the dam has been removed and the natural stream cross-section is restored.

Note: For suggested dam breach parameters, see the National Weather Service “DAMBREK or FLOODWAY” Users Manuals.

(g) Comparison table — Summary by cross section of the maximum flood elevation for the 3 hydraulic conditions.

(h) Determination of the dam hazard rating using the criteria in s. NR 333.06.

(i) Design flood flows, based on the hazard rating and the hydraulic design standards in s. NR 333.07.

(j) Calculations for routing of the design flood through the structure. Starting conditions for the routing shall be at the normal pool and normal flow tailwater elevations.

(k) Stability analysis of the dam, which considers sliding, overturning and foundation failure during base flow conditions and at maximum load conditions, including ice loading, during routing of the design flood through the dam.

(L) Appendices:

1. Plan view of the dam.

2. Elevation view of the dam from downstream including breach geometry.

3. Pertinent elevations of the dam.

4. Stage vs. storage curve or area vs. volume curve, or both.

5. Spillway capacity rating curves or calculations, where appropriate.

6. Downstream water surface profiles and floodway data tables, for the dam failure, and the with and without dam conditions, during the regional flood.

7. Maps for the 3 modeled conditions, with cross section locations and structure identification adequate to determine the hazard rating for the dam, for the dam failure condition map, showing the floodway, and to an appropriate scale consistent with the community floodplain zoning map.

8. Cross section plots of actual field cross sections and comparison with dam break input cross sectional data.

9. Hard copy and data disk with computer input and output for all modeled conditions, including hydrology and hydraulic runs.

10. Other supporting calculations as the department deems necessary.

Note: Mapping; profiles and floodway data tables must be suitable for zoning purposes, as required in s. NR 116.07 (4).

(3) ESTIMATED COSTS. The estimated cost of construction of the new dam or reconstruction of the existing dam, and the estimated cost of removing the dam and restoring the channel to its...
unidentified hydraulic capacity shown in Table I:

(a) Low hazard. A low hazard rating shall be assigned to those dams that have no development unrelated to allowable open space use in the hydraulic shadow where the failure or mis-operation of the dam would result in no probable loss of human life, low economic losses (losses are principally limited to the owners property), low environmental damage, no significant disruption of lifeline facilities, and have land use controls in place to restrict future development in the hydraulic shadow.

(b) Significant hazard. A significant hazard rating shall be assigned to those dams that have no existing development in the hydraulic shadow that would be inundated to a depth greater than 2 feet and have land use controls in place to restrict future development in the hydraulic shadow. Potential for loss of human life during failure or mis-operation of the dam would result in no probable loss of human life but can cause economic loss, environmental damage, or disruption of lifeline facilities.

(c) High hazard. A high hazard rating shall be assigned to those dams that have existing development in the hydraulic shadow that will be inundated to a depth greater than 2 feet or do not have land use controls in place to restrict future development in the hydraulic shadow. This rating must be assigned if loss of human life during failure or mis-operation of the dam is probable.

(2) The owner of a dam may request that the department change the hazard rating of an existing or proposed dam by submitting adequate information which demonstrates that the land use and land use controls downstream from the dam meet the requirements for a different hazard rating. The department shall advise the owner of its action on the requested change within 90 business days after receiving the request.

Note:

A low hazard rating shall be assigned to those dams that have no development unrelated to allowable open space use in the hydraulic shadow where the failure or mis-operation of the dam would result in no probable loss of human life, low economic losses (losses are principally limited to the owners property), low environmental damage, no significant disruption of lifeline facilities, and have land use controls in place to restrict future development in the hydraulic shadow.

A high hazard rating shall be assigned to those dams that have existing development in the hydraulic shadow that will be inundated to a depth greater than 2 feet or do not have land use controls in place to restrict future development in the hydraulic shadow. Potential for loss of human life during failure or mis-operation of the dam would result in no probable loss of human life but can cause economic loss, environmental damage, or disruption of lifeline facilities.

A significant hazard rating shall be assigned to those dams that have no existing development in the hydraulic shadow that would be inundated to a depth greater than 2 feet and have land use controls in place to restrict future development in the hydraulic shadow. Potential for loss of human life during failure or mis-operation of the dam would result in no probable loss of human life but can cause economic loss, environmental damage, or disruption of lifeline facilities.

(2) REDUCED REQUIREMENTS. (a) Unless the department determines that public safety requires full compliance with the substantive requirements of this rule, all dams which will be submerged by flows less than the minimum hydraulic capacity specified in Table I shall be designed to pass the flow of the river at submergence.

(b) Any owner may provide documentation to justify a different spillway capacity from that specified in Table I. The department shall review such documentation and may approve the spillway capacity proposed by the owner if it determines that such capacity will not result in an additional hazard to life, health or property when compared to the capacity specified in Table I.

(3) SAFETY MEASURES. The owners of all new and existing dams shall comply with the following safety measures:

(a) The owner shall have an adequate operation, inspection and maintenance plan for the dam.

(b) The dam shall be structurally stable for any flow condition up to and including the design flood flow.

(c) An adequate emergency action plan shall be prepared for the area downstream from the dam in consultation with the local unit of government and concurred in by the division of emergency government. An adequate emergency action plan shall include, but is not limited to, the following information:

1. A notification flow chart identifying involved agencies, other dam owners both upstream and downstream and their phone numbers.

2. Emergency operation procedures.

3. An inundation map of the hydraulic shadow on a scale of 1" = 2000' or less that extends downstream to an elevation within one foot of the dam nonexistent profile.

4. Procedures for notification of all property owners affected by a dam failure and a list of their names, addresses and phone numbers.

(4) As-built plans shall be submitted to the department within 30 business days after the completion of construction or reconstruction of a dam.

History: Cr. Register, May, 1985, No. 353, eff. 6–1–85; CR 00–136: am. (1), remum. (2) to (4) to be to (3) and am. (1), (2), (3) and (d) and Table I, Register July 2001, No. 547 eff. 8–1–01.

NR 333.08 Construction. (1) Construction of a new dam or reconstruction of an existing dam may not begin until the department approves the plans and specifications submitted under s. NR 333.05.

(2) Alterations to any plans or specifications that were approved by the department under s. NR 333.05 which will affect the flood flow capacity or structural integrity of a dam shall be approved by the department before construction or reconstruction of the dam.

(3) All dams shall be constructed or reconstructed under the supervision of a professional engineer registered in the state of Wisconsin. The supervising engineer shall, within 10 days after completing the construction or reconstruction of a dam, submit a statement indicating that the dam was constructed or reconstructed in accordance with the plans and specifications approved by the department under s. NR 333.05.

(4) As-built plans shall be submitted to the department within 30 business days after the completion of construction or reconstruction of a dam.

History: Cr. Register, May, 1985, No. 353, eff. 6–1–85; CR 00–136: am. (3), Register July 2001, No. 547 eff. 8–1–01.

NR 333.09 Financial assurance. (1) GENERAL REQUIREMENT. (a) Except as provided in par. (b), the owner of a dam shall file a bond, escrow account, lien or other financial assurance satisfactory to the department prior to the commencement of construction or reconstruction of the dam. The amount of such financial assurance shall equal the estimated cost of removing the dam and restoring the stream channel to its natural condition or the cost of constructing or reconstructing the dam, whichever is less, based on the cost estimate submitted by the owner under s. NR 333.05 (3).

(b) Where the owner is a state or interstate agency or a city, county, village, special purpose district or other unit of government, financial assurance is not required if the owner demon-
strates to the department’s satisfaction that it has made or will make sufficient funds available to construct or reconstruct the dam or to remove the dam and restore the stream channel in its natural condition, whichever is less expensive.

(2) **Notification.** As part of its approval of the plans and specifications submitted pursuant to s. NR 333.05, the department shall notify the applicant of the required level of financial assurance.

(3) **Forfeiture Requirements.** (a) The financial assurance filed with the department shall be conditioned upon faithful performance of all of the requirements of ch. 31, Stats., the provisions of this chapter, and the conditions of any permit or order issued to the applicant for the dam pursuant to ch. 31, Stats.

(4) **Release.** The department shall release or authorize the release of the applicant’s financial assurance within 60 business days after the receipt of a request for release if the department finds that the construction or reconstruction has been completed in accordance with the plans and specifications approved by the department, the provisions of this chapter and the conditions of any permit or order issued to the owner of the dam pursuant to ch. 31, Stats.

**History:** Cr. Register, May 1985, No. 353, eff. 6–1–85; CR 00–136: am. Register July 2001, No. 547 ef. 8–1–01.
Chapter NR 335

DAM MAINTENANCE, REPAIR, MODIFICATION, ABANDONMENT AND REMOVAL AID PROGRAM

NR 335.01 Purpose. The purpose of this chapter is to establish procedures for implementation of the dam maintenance, repair, modification, or abandonment and removal aid program established under s. 31.385, Stats.

History: Cr. Register, April, 1991, No. 424, eff. 5–1–91.

NR 335.02 Applicability. (1) This chapter shall apply to all applications for state aid in the form of matching grants for dam maintenance, repair, modification, or abandonment and removal under s. 31.385, Stats.

(2) The provisions of this chapter are applicable to dams that:

(a) Are owned by a municipality or public inland lake protection and rehabilitation district; and

(b) Are not inspected, approved and licensed by a federal agency under 18 CFR Part 12.

History: Cr. Register, April, 1991, No. 424, eff. 5–1–91.

NR 335.03 Definitions. For the purpose of this chapter:

(1) “Abandonment” means the removal of a dam in compliance with ch. 31, Stats.

(2) “Approval” means the written approval of the department.

(3) “Authorized representative” means the official or employee designated by resolution of the governing body of a municipality or lake district to act on behalf of the owner under this chapter.

(4) “Dam” means any artificial barrier in or across a waterway which has the primary purpose of impounding or diverting water. A dam includes all appurtenant works, such as a dike, canal or powerhouse.

(5) “Department” means the department of natural resources.

(6) “Directives” means the requirements for repair, maintenance, modification or abandonment established by the department in the inspection report sent to the owner.

(7) “Grantee” means the municipality or lake district which receives a grant award from the state under this chapter.

(8) “Hydraulic shadow” means that area of land downstream from a dam that would be inundated by water upon failure of the dam during the regional flood.

(9) “Investigation” means an inspection performed by the department after the owner has received either directives in an inspection report or an order, to determine whether the owner may be eligible for a grant under this chapter for work that remains to be performed on the dam.

(10) “Lake district” means a public inland lake protection and rehabilitation district formed under ch. 33, Stats.

(11) “Land use controls” means a floodplain zoning ordinance adopted and approved pursuant to s. 87.30, Stats., or restrictive covenants, easements or other appropriate legal arrangements between the owner of the dam and the owners of all property within the dam’s hydraulic shadow.

(12) “Large dam” means a dam that has either a structural height of more than 6 feet and a maximum storage capacity of more than 50 acre–feet or a structural height of 25 feet or more and a maximum storage capacity of more than 15 acre–feet.

(13) “Maximum headwater” means the maximum water surface elevation in an impoundment before overtopping would occur.

(14) “Maximum storage capacity” means the volume of water in acre–feet capable of being stored behind a dam at maximum headwater.

(15) “Modification” means any physical change to a dam, other than maintenance or repair of the existing components, that results in a change in the dam’s hydraulic capacity or structural stability.

(16) “Municipality” means any town, village, city or county in this state.

(17) “Order” means an enforcement order issued by the department under s. 31.19 (5), Stats., to an owner to repair or abandon a dam.

(18) “Overtopping” means the flow of water over parts of a dam which are not part of its spillway system.

(19) “Owner” means any municipality or lake district which has title to a dam or to the specific piece of land on which a dam is physically located.

(20) “Principal spillway” means the primary structure for the discharge of normal flow through a dam.

(21) “Regional flood” means a flood determined to be representative of large floods known to have occurred in Wisconsin and which may be expected to occur on a particular stream once in every 100 years.

Note: The regional flood is based upon a statistical analysis of stream flow records available for the watershed or an analysis of rainfall or runoff characteristics in the watershed or both. The flood frequency of the regional flood is once in every 100 years. In any given year, there is a 1% chance that the regional flood may occur or be exceeded.

(22) “Repayment” means work performed on a dam, including maintenance, which is required to provide proper operation or continued structural integrity of the dam and does not change the dam’s hydraulic capacity.

(23) “Structural height” means the difference in elevation in feet between the point of lowest elevation of a dam before overtopping and the lowest elevation of the natural stream or lake bed at the downstream toe of the dam.

History: Cr. Register, April, 1991, No. 424, eff. 5–1–91.

NR 335.04 Eligibility for a state grant. (1) Any municipality or lake district that owns a dam in Wisconsin may apply for state aid for repair, modification or abandonment of the dam upon compliance with sub. (2).

(2) To be eligible to receive a grant under this chapter, the owner shall:
NR 335.04  WISCONSIN ADMINISTRATIVE CODE

Unofficial Text (See Printed Volume). Current through date and Register shown on Title Page.

(a) Request, in writing, financial assistance under this chapter within 6 months after receiving directives or an order for repair, modification or abandonment of the dam resulting from a department investigation or inspection of the dam, or have received a directive from the department or have been under order by the department to repair, modify or abandon the dam, on or before August 9, 1989; and

(b) Comply with all applicable requirements of this chapter.

History: Cr. Register, April, 1991, No. 424, eff. 5–1–91.

NR 335.05  State share. The state share may not exceed 50% of the total eligible project costs nor exceed $200,000 for any one dam.

History: Cr. Register, April, 1991, No. 424, eff. 5–1–91.

NR 335.06  Application and award procedures. Aid available under this program shall be awarded to those projects with the highest points on a priority list, as determined by the criteria in s. NR 335.09, and in accordance with the procedures in this section. Projects on the priority list shall be funded within the limits of available funds. Applications with identical point totals shall be assigned priority based upon the date the complete application was received by the department with highest priority given to the earliest received complete application.

(1) All applications for a grant under this chapter shall be received by the department no later than April 1 of each year.

(2) The department shall establish a priority list by June 1 of each year which ranks all complete applications received by the April 1 deadline. Applicants shall be notified of their placement on the priority list and the probability of approval for funding. The ranking of applicants shall be made available upon written request.

(3) Applicants receiving a commitment for funding shall submit plans and specifications to the department, for approval, prior to October 1 of the same year the application is made.

(4) Applicants receiving a commitment for funding shall submit construction bids for the proposed work to the department within 60 days of department approval of plans and specifications. Following submission to the department, the owner may rebid the project without losing eligibility if the original bid is deemed too high or inappropriate. The applicant shall rebid the project within 60 days of receipt of the original bid. The department shall direct the owner to rebid the project if it deems the bid inappropriate. The applicant shall rebid the project within 60 days of receiving notification from the department that the department deems the bid inappropriate.

(5) The department shall issue, in writing, a notice of grant award within 30 days of receipt of an acceptable construction bid.

(6) All complete applications received after April 1 shall be considered for funding during the next year in which money becomes available. To be considered, any amendment to a late application shall be received by the department no later than the next April 1 application deadline.

(7) If there are insufficient funds to award aid to all eligible applicants on the priority list, the remaining projects shall be considered for funding during the next year in which money becomes available. To be considered, any amendments to unfunded applications shall be received by the department no later than the next April 1 application deadline.

History: Cr. Register, April, 1991, No. 424, eff. 5–1–91.

NR 335.07  Grant application. (1) Procedure. (a) A separate grant application shall be submitted to the department for each individual dam for which financial assistance is requested under this chapter.

(b) The department shall review each application received for completeness and shall advise the applicant of any deficiencies, omissions or errors in the application in writing. Incomplete applications may not be considered if all information is not received by the department by April 1.

(2) Contents of application. An application for a grant under this chapter shall be made on forms furnished by the department. In addition to the application form, the application shall include the following:

(a) Certified copies of the following resolutions of the governing body of the municipality or lake district:

1. A resolution designating an authorized representative, and authorizing the representative to apply for a grant under s. 31.385, Stats., and this chapter, on behalf of the owner.

2. A resolution stating that the owner agrees to pay a share of the eligible costs which is equal to the total project cost minus the state share.

3. Proof of receipt of a letter sent by certified mail, from the owner to the municipality responsible for the implementation of land use controls, informing the municipality that a change in the land use controls may be necessary to secure the hazard rating for the dam.

(b) All data and calculations to show that dams to be repaired or modified will meet all requirements of ch. NR 333 where applicable. All owners shall provide the following with the application:

1. A dam failure analysis including maps suitable for the purpose of implementing land use controls below the dam.

2. A conceptual design and cost estimate for the construction phase of the project defining the eligible project costs.

3. A cost estimate for the engineering work required to complete the project, including preparation of all documents required under this chapter.

(c) All data and calculations to show that dams to be abandoned will meet the requirements of ch. 31, Stats. All owners shall provide the following with the application:

1. An application, under ch. 31, Stats., for a permit or approval to abandon the dam.

2. All information necessary for the municipality responsible for implementation of land use controls to implement controls in the area flooded during the regional flood without the dam in place.

3. A project description and cost estimate for the construction portion of the project defining eligible project costs.

4. A cost estimate for the engineering work required to complete the project, including preparation of all documents required under this chapter.

Note: Application forms are available from the department by writing to the Wisconsin Department of Natural Resources, Bureau of Water Regulation and Zoning, P.O. Box 7921, Madison, WI 53707.

History: Cr. Register, April, 1991, No. 424, eff. 5–1–91.

NR 335.08  Eligible and ineligible costs. (1) Eligible costs. The following project costs, whether incurred under contract or in the form of salaries and benefits, may be reimbursed under this chapter, if the grant is awarded:

(a) Actual and reasonable engineering costs incurred in preparing the studies and application form required under s. NR 335.07 (2) (b) and (c);

(b) Actual and reasonable engineering costs incurred in preparing plans and specifications as required in s. NR 335.06 (3), the operation, inspection and maintenance plan, and the emergency action plan;

(c) Actual and reasonable construction costs incurred in the repair, modification or abandonment of the dam, including labor and materials; and

(d) Actual and reasonable engineering costs involved in the on–site inspection of the repair, modification or abandonment of the dam. On–site inspection by an engineer registered in the state of Wisconsin is required during critical stages of construction.

(2) Ineligible costs. Ineligible costs include:
NR 335.09 Criteria for priority ranking. The following criteria shall be used by the department to rank proposed projects for the purpose of determining funding priority:

1. Dam hazard rating based on current development in the hydraulic shadow:
   a. High hazard rating, 20 points;
   b. Significant hazard rating, 10 points; or
   c. Low hazard rating, 5 points.

2. Adequate land use controls currently in effect or dam to be abandoned:
   a. Adequate land use controls in the hydraulic shadow, 20 points;
   b. Adequate land use controls in place within the 100 year floodplain, 10 points;
   c. No land use controls or inadequate land use controls in place, 0 points; or
   d. Dam to be abandoned, 20 points.

3. Financial need (add the points for each column and divide by 2):

<table>
<thead>
<tr>
<th>Points Applicable to Each Column</th>
<th>*Per Capita Income, Per cent of State Average</th>
<th>*Local Share of Project Cost Plus Current Long Term Non School Indebtedness as a Percent of Statutory Limitation Based on Equalized Valuation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>*Local Share of Project Cost Plus Current Long Term Non School Indebtedness as a Percent of Statutory Limitation Based on Equalized Valuation</td>
<td></td>
</tr>
<tr>
<td>1 135 and over</td>
<td>Less than 10%</td>
<td></td>
</tr>
<tr>
<td>2 100 to less than 135</td>
<td>10% to less than 20%</td>
<td></td>
</tr>
<tr>
<td>3 89 to less than 100</td>
<td>20% to less than 30%</td>
<td></td>
</tr>
<tr>
<td>4 80 to less than 89</td>
<td>30% to less than 40%</td>
<td></td>
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<tr>
<td>5 72 to less than 80</td>
<td>40% to less than 50%</td>
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<td>6 65 to less than 72</td>
<td>50% to less than 60%</td>
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<td>7 59 to less than 65</td>
<td>60% to less than 70%</td>
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<td>8 54 to less than 59</td>
<td>70% to less than 80%</td>
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<tr>
<td>9 50 to less than 54</td>
<td>80% to less than 90%</td>
<td></td>
</tr>
<tr>
<td>10 less than 50</td>
<td>90% to less than 100%</td>
<td></td>
</tr>
</tbody>
</table>

NR 335.10 Construction period. (1) All construction performed on an eligible project shall be completed in accordance with s. NR 335.12 within one year from the date of the grant award, unless the department extends that period for good cause. If an extension is warranted by the circumstances and is requested in writing by the grantee before the end of the initial one-year construction period, the department may extend the construction period for up to 2 additional years.

(2) If the grantee fails to comply with sub. (1), the grantee may not receive any further state funds and shall reimburse the department for any state funds already received under this chapter. The department may use the funds available for any purpose it considers appropriate.

NR 335.11 Final project approval. After the project is complete and approved by the owner, the owner shall submit 3 copies of as-constructed plans and specifications, monthly inspection reports prepared by the inspecting engineer on the project, and written certification from the owner’s engineer stating that the project was completed in compliance with s. 31.12 (4), Stats. The department shall conduct a final inspection of the project within 60 days after receiving the as-constructed plans and specifications, inspection reports, and certification. A project approval letter shall be sent to the owner within 30 days of final inspection by the department.

NR 335.12 Grant payments. The grantee shall be paid the state share of those eligible project costs which have prior department approval in the following installments:

1. If the dam is repaired or modified:
   a. 50% of the state share of total eligible costs, of the engineering contract and the construction bids, shall be paid to the grantee, following 50% completion of the project, within 90 days after the department has received a written request and supporting documentation from the owner or the owner’s authorized representative. The department shall inspect the project, review the supporting documentation, and determine that the owner has expended at least 50% of the state share of total eligible costs and that the work meets the requirements of this chapter prior to making payment to the owner; and
   b. If the emergency action plan and inspection, operation and maintenance plan are approved by the department prior to the completion of the project, the state share of the remaining eligible costs, based on the final audited project cost, shall be paid to the grantee within 90 days after the department has conducted a final audit and has determined the final audited eligible costs. A final

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audit shall be conducted within 90 days after the project has been completed and approved by the owner and the department pursuant to s. NR 335.11; or

(c) If the emergency action plan and inspection, operation and maintenance plan are not approved by the department prior to the completion of the project, the state share of the remaining eligible costs less 10%, based on the final audited project cost, shall be paid to the grantee within 90 days after the department has conducted a final audit and has determined the final audited eligible costs. A final audit shall be conducted within 90 days after the project has been completed and approved by the owner and the department pursuant to s. NR 335.11. The remaining state share of eligible costs shall be paid to the grantee within 60 days after the grantee has received approval, by the department, of an emergency action plan and an inspection, operation and maintenance plan.

(2) If the dam is abandoned:

(a) 50% of the state share of total eligible costs, based on the engineering contract and the construction bids, shall be paid to the grantee, following 50% completion of the project, within 90 days after the department has received a written request and supporting documentation by the owner’s authorized representative. The department shall inspect the project, review the supporting documentation, and determine that the owner has expended at least 50% of the state share of total eligible costs and that the work meets the requirements of this chapter prior to making payment to the owner; and

(b) The state share of the remaining eligible costs, based on the final audited project cost, shall be paid to the grantee within 90 days after the department has conducted a final audit and has determined the final audited eligible costs. A final audit shall be conducted within 90 days after the project has been completed and approved by the owner and the department pursuant to s. NR 335.11.

History: Cr. Register, April, 1991, No. 424, eff. 5–1–91.

NR 335.14 Grantee accountability. (1) RECORDS MANAGEMENT. Each grantee shall maintain an accounting system that accurately reflects all fiscal transactions, incorporates appropriate controls and safeguards, and provides good audit trails, particularly to source or original documents.

(a) Accounting procedures. Financial schedules and statements filed with grant applications and payment requests shall be based on records maintained under generally accepted accounting principles which meet the following minimum requirements:

1. Accounts shall separate grant receipts and eligible project costs from those allocable to other programs and activities.

2. Payments received under another state or federal cost sharing or grant program or from another municipality or any other outside funding source and expenditures shall be listed in sufficient detail to provide a basis for accurate and complete reporting.

3. Supporting records for all expenditures shall be itemized in sufficient detail to reflect the nature and propriety of each. Proof of payment, such as cancelled checks or receipts from vendors, shall be maintained.

4. If the owner uses its own labor force, payroll records shall be maintained that reflect actual program hours worked by each employee as well as allocable gross wages and fringe benefits paid. Time and attendance records describing the work performed, specifying project hours worked by day, and both signed by the employee and bearing evidence of management approval, shall be maintained, along with computations showing hourly pay rates and allocation of fringe benefits.

(b) Fiscal controls. 1. Any consultant, construction or service contract totalling $10,000.00 or more annually shall be covered by a formal contract or agreement specifying financial terms, contract duration, and services to be rendered.

2. Allowable rates for use of an owner’s own equipment shall be limited to the county–wide rates established annually by the department of transportation (DOT). Eligibility of the use of specialized equipment for which DOT rates are not available shall be based on the allocable portion of depreciation plus normal and reasonable operation expenses attributable to project activities.

(2) RECORDS RETENTION AND AUDITING. The grantee’s records, and the records of contractors and engineers which are pertinent to a specific state grant award, shall be subject at all reasonable times to inspection, copying and audit by the department for a period of 7 years from the date of final payment.

History: Cr. Register, April, 1991, No. 424, eff. 5–1–91.
CHAPTER 31
REGULATION OF DAMS AND BRIDGES AFFECTING NAVIGABLE WATERS

31.01 Definitions. Terms used in this chapter are defined as follows:

1. "Corporation" means a private corporation organized under the laws of this state.
2. "Department" means the department of natural resources.
3. "Grantee" means the person, firm, corporation or municipality to whom a permit is granted, and all subsequent owners of the grant.
4. "Municipality" means any town, village, city or county in the state.
5. "Navigable waters" means all waters declared navigable by ch. 30.
6. "Permit" means the permission granted by a permit to construct, operate and maintain a dam in or across navigable waters, or under s. 31.06 to continue the operation and maintenance of a dam so situated which was constructed before such legislative permits were required.

History: 1983 a. 189.

31.02 Powers and duties of department. (1) The department, in the interest of public rights in navigable waters or to promote safety and protect life, health and property may regulate and control the level and flow of water in all navigable waters and may erect, or may order and require bench marks to be erected, upon which shall be designated the maximum level of water that may be impounded and the lowest level of water that may be maintained by any dam heretofore or hereafter constructed and maintained and which will affect the level and flow of navigable waters; and may by order fix a level for any body of navigable water below which the same shall not be lowered except as provided in this chapter; and shall establish and maintain gauging stations upon the various navigable waters of the state and shall take other steps necessary to determine and record the characteristics of such waters.

(2) The department may investigate and determine all reasonable methods of construction, operation, maintenance, and equipment for any dam so as to conserve and protect all public rights in navigable waters and so as to protect life, health, and property; and the construction, operation, maintenance and equipment, or any or all thereof, of dams in navigable waters shall be subject to the supervision of the department and to the orders and regulations of the department made or promulgated under this chapter.

(3) The department or any member or any agent or employee thereof shall at all times be accorded free access to any and all parts of any dam and appurtenances constructed or maintained in navigable waters and may enter upon any property to investigate a waterway or use of water from any lake or stream.

(4) The department may order and require any dam heretofore or hereafter constructed to be equipped and operated, in whole or in part, as follows:

(a) With slides and chutes for the passage of logs and timber products.
(b) With a lock, boat hoist, marine railway or other device of a size and construction sufficient to accommodate navigation.
(c) With good and sufficient fishways or fish ladders, or in lieu thereof the owner may be permitted to enter into an agreement with the department to pay for or to supply to the state of Wisconsin annually such quantities of game fish for stocking purposes as may be agreed upon by the owner and the department.
(d) With spillways or flood gates capable of permitting the passage through or over the same of freshets and floods during all seasons of the year.
(e) With booms, pier or other protection works ample to safeguard flood gates from trash or other floating material.

(4g) The department may not impose the requirement under sub. (4) (c) on an owner of a dam unless all of the following apply:

(a) The rules promulgated under sub. (4r) are in effect.
(b) The federal government or the state implements a program to provide cost-sharing grants to owners of dams for equipping dams with fishways or fish ladders and a grant is available to the dam owner under the program.

(4r) The department shall promulgate rules specifying the rights held by the public in navigable waters that are damned. The rules shall include provisions on the rights held by the public that affect the placement of fishways or fish ladders in navigable waters that are damned.

(5) The department shall give written notice to the public service commission of any hearing under this chapter involving public utilities.
31.02 DAMS AND BRIDGES

(6) Except as provided in sub. (7m), the department may operate, repair and maintain the dams and dikes constructed across drainage ditches and streams in drainage districts, in the interest of drainage control, water conservation, irrigation, conservation, pisciculture and to provide areas suitable for the nesting and breeding of aquatic wild bird life and the propagation of fur-bearing animals.

(7) The department shall confer with the drainage commissioners in each drainage district on the formation of policies for the operation and maintenance of the dams; in districts having no commissioners, the department shall confer in like manner with the committee appointed by the county board, if any, to represent either such drainage district, or in the event that the drainage district is dissolved, to represent the interests of the county in all matters whatsoever pertaining to water conservation and control within the area which therefore constituted such drainage district. This subsection does not apply to the Duck Creek Drainage District.

(7m) The drainage board for the Duck Creek Drainage District shall operate, repair and maintain dams, dikes and other structures in district ditches that the board operates in the Duck Creek Drainage District in compliance with ch. 88 and any rules promulgated by the department of agriculture, trade and consumer protection under ch. 88. If a county drainage board fails to perform its duties under this subsection, the department of natural resources may exercise its authority under subs. (6), (8) and (9).

(8) The department shall give careful consideration to the suggestions of the drainage commissioners or committee of the county board, but the final decision in all matters under consideration shall rest with the department.

(9) So far as seems practicable, the department may designate or employ the drainage commissioners of any drainage district, or the committee of the county board above referred to, to operate the dams in such district or area formerly comprising a drainage district or perform services in the repair and maintenance of the dams, dykes and other works.


Cross-reference: See also chs. NR 333 and 333, Wis. adm. code. Ordering a riparian owner to excavate and maintain a ditch to regulate lake levels was an unconstitutional taking of property. Otte v. DNR, 142 Wis. 2d 222, 418 N.W.2d 16 (Ct. App. 1987).


31.03 Permits for the Lower Wisconsin State Riverway. For activities in the Lower Wisconsin State Riverway, as defined in s. 30.40 (15), no person obtaining a permit under this chapter may start or engage in the activity for which the permit was issued unless the person obtains any permit that is required for the activity under s. 30.44 or 30.445.

History: 1989 a. 31, 359.

31.04 Permits for dams. Permits to construct, operate and maintain dams may be granted to persons, corporations or municipalities under this chapter.

31.05 Permits for dams that affect drained lands. (1) The name of the navigable waters in or across which a dam is proposed to be constructed and a specific description of the site for the proposed dam.

(2) The purpose or purposes for which the proposed dam is to be constructed, operated and maintained.

(3) In case the application is for a permit to construct, operate and maintain a dam for a private purpose, proof satisfactory to the department that the applicant owns or has an enforceable option to purchase the described dam site and at least 65% of the land to be flowed, or the flowage rights on at least 65% of such land. This subsection shall not apply to a person who has the power of eminent domain.

(4) A general description of the proposed dam, of the material to be used in the construction thereof, and a general description of all booms, piers, and other protection works to be constructed in connection therewith.

(5) The approximate amount of hydraulic power that the proposed dam is capable of developing.

(6) The name of the city, village or town in which the site of the proposed dam will be located and the name of the nearest existing dam above and below the site of the proposed dam.

(7) A map on the scale of not less than one inch per 1,000 feet showing the lands that may be affected by the construction, operation or maintenance of the proposed dam, or by any flowage that may be caused thereby and approximately the outline of such flowage, which map shall indicate the ownership of each tract of land within the flowage.

(8) Such additional information of any nature that may be required by the department.

History: 1975 c. 349; 1993 a. 246.

31.06 Hearing. (1) Upon receipt of an application for a permit under s. 31.05 the department may order a hearing or it may mail a notice that it will proceed on the application without public hearing unless a request for a public hearing is filed as provided in this section. The notice shall be mailed to the clerk of each municipality directly affected by the proposed dam. The department may give further or other notice as it considers proper. The department shall mail a copy of the notice to the applicant who shall cause the notice to be published in each county in which affected riparian lands are located as a class I notice, under ch. 985. If a hearing is not requested in writing within 30 days after mailing of the notice, the department may waive the hearing.

(2) (a) If a hearing is ordered, the department shall, not less than 10 days before such hearing, mail written notice thereof to each person notified under sub. (1).

(b) The department shall require the applicant to publish a class I notice under ch. 985, of the hearing in each county in which affected riparian lands are located, and may require the applicant to mail such other notices as it deems necessary. Proof of publication and proof of mailing under this subsection and sub. (1) shall be filed with the department.

(3) (a) At a hearing under this section, or any adjournment of the hearing, the department shall consider the application and take evidence offered by the applicant and other persons supporting or opposing the proposed dam. The department may require the amendment of the application.

(b) If it appears that the construction, operation or maintenance of the proposed dam is in the public interest, considering ecological, aesthetic, economic and recreational values, the department shall so find and grant a permit to the applicant, provided the department also finds that the applicant has complied with s. 31.14 (2) or (3) and, where applicable, with s. 31.05 (3), based on the department’s own estimate of the area of the flowage.

(c) 1. The enjoyment of natural scenic beauty and environmental quality are declared to be public rights to be considered along with other public rights and the economic need of electric power for the full development of agricultural and industrial activity and other useful purposes in the area to be served. In consider-
ing public rights to the recreational use and natural scenic beauty of the river, the department shall investigate the potentialities of the lake and lakeshore created by the flowage and shall weigh the recreational use and scenic beauty of the lake and lakeshore against the known recreational use and scenic beauty of the river in its natural state. The department shall further weigh the known recreational use and scenic beauty of the particular section of river involved against the known recreational use and scenic beauty of other sections of the same river and other rivers in the area remaining in their natural state without regard to plans of other dams subsequently filed or to be filed.

2. The department shall deny the permit if it finds any of the following:

a. It appears that the river in its natural state offers greater recreational facilities and scenic value for a larger number of people than can by proper control of the flowage level be obtained from the use of the lake and lakeshore and that the remaining sections of the river and other rivers in the area in their natural state provide an insufficient amount of recreational facilities and scenic beauty, and it further appears that the economic need of electric power is less than the value of the recreational and scenic beauty advantages of the river in its natural state.

b. The permit will cause environmental pollution, as defined in s. 299.01 (4).

(4) Not more than 20 days after receiving notice as provided in sub. (1) each county clerk may and upon request of the chairperson of the county board shall give written notice as provided in s. 59.11 (2) of a special meeting of the county board to be held at a time and place set by the county clerk, not less than 2 weeks nor more than 3 weeks after mailing of such notice, for the purpose of making findings as hereinafter provided. The county clerk shall give notice of the time, place and purpose of such special meeting to the department and to the applicant, who shall cause the same to be published in the county, as a class 2 notice, under ch. 985, and the applicant shall cause a copy thereof to be mailed at least 7 days prior to such special meeting to every person interested in any lands that will be affected by the proposed dam and whose post–office address can by due diligence be ascertained. Proof of such publication and notice shall be filed with the county clerk. At such special meeting the county board shall hear evidence offered by the applicant and other persons and shall find and determine by a majority vote of the county board members–elect whether the lake and lake shore created by the flowage or the river in its natural state offers greater recreational facilities and scenic beauty advantages for the larger number of people. The county clerk shall forthwith certify such finding and determination to the department. The jurisdiction and findings of each county board shall apply to that part of the proposed dam and flowage which is within the county.

(5) If a hearing on the application for a permit is conducted as a part of a hearing under s. 293.43, the notice and hearing provisions in that section supersedes the notice and hearing provisions of this section.

History: 1971 c. 273; 1973 c. 90; 1979 c. 34 s. 2102 (39) (g); 1979 c. 221; 1983 a. 192; 1993 a. 201, 227; 1999 a. 83.

Cross-reference: See also ch. NR 305, Wis. adm. code.

31.07 Applications for permits to operate and maintain existing dams. Any person, firm, corporation or municipality desiring a permit to operate and maintain a dam constructed in or across navigable waters without legislative permission prior to July 10, 1915, shall file with the department a written application therefor setting forth:

(1) The name of the navigable waters in or across which such dam was constructed and a specific description of the dam site.

(2) The year in which the construction of the dam was completed, and a detailed description of the dam and equipment, including the maximum height or head of water that may be main-

tained thereby and the kind and character of material of which the dam is constructed.

(3) The purpose for which the dam was theretofore operated and is operated at the time application hereunder is made, and the purpose for which it is proposed to operate and maintain the dam.

(4) The approximate amount of hydraulic power developed thereby.

(5) The name of the city, village or town in which the dam site is located and the name of the nearest existing dam above and below the dam site.

(6) Such additional information of any nature whatsoever as may be required by the department.

History: 1993 a. 246.

31.08 Hearing. Upon receipt of an application under s. 31.07 procedure shall be had substantially as required by s. 31.06, and if the department finds that such operation and maintenance does not materially obstruct existing navigation or violate other public rights and will not endanger life, health or property, a permit is hereby granted to the applicant, provided the department also finds that the applicant has complied with s. 31.14 (2) or (3).

Cross-reference: See also ch. NR 305, Wis. adm. code.

31.09 Proposals to accompany applications. Each applicant for a permit to construct, operate and maintain a dam for the purpose of developing power or for the purpose of aiding in the development of power by other dams through the creation of reservoirs or otherwise, and each applicant for a permit to construct, operate and maintain a dam for any other purpose whatsoever, which is capable of developing 50 theoretical horsepower or more available for 50% of the time throughout the year, shall file with an application for a permit, in addition to the requirements of s. 31.05 or s. 31.07, as the case may be, the following proposals:

(1) That the department prior to the time the permit is granted shall value the dam site and all flowage rights and other property necessary for the purposes set forth in the application for the permit, whether the same or any part thereof are owned by the applicant or not.

(2) That the department shall audit all outlays for property and for the construction of the dam, buildings, and other structures and works constructed, maintained, and operated and used and useful under the permit.

(3) That the permit, if granted, shall be granted and accepted subject to the express condition that the state of Wisconsin, if it shall have the constitutional power, or any municipality, on not less than one year’s notice, at any time after the expiration of 30 years after the permit becomes effective, may acquire all of the property of the grantee, used and useful under the permit, by paying therefor, the cost of reproduction in their then existing condition of all dams, works, buildings, or other structures or equipment, used and useful under the permit, as determined by the department, and by paying in addition thereto the value of the dam site and all flowage rights and other property as determined by the department prior to the time the permit was granted, as provided in sub. (1), plus the amounts paid out for additional flowage rights, if any, acquired after the valuation made by the department as provided in sub. (1); and that the applicant waives all right to any further compensation.

History: 1991 a. 316.

31.095 Water power permits, condition precedent.

(1) Except where the stream to be improved forms a boundary line between this and another state, no permit shall be granted or transferred in accordance with this chapter until the applicant has filed with both the department and the public service commission, in addition to all other things required by law to be filed, an agreement setting forth:
31.095 DAMS AND BRIDGES

(a) That, in the event any electric energy generated under said permit shall be transmitted or conveyed beyond the confines of this state to be there sold, the applicant will furnish to any resident of this state or any corporation domiciled therein electric energy at reasonable rates to be determined by the commission, provided that the commission after public hearing shall find that public convenience and necessity require such service.

(b) That the rate as determined by the commission shall in no event exceed the rate charged by applicant for similar service supplied under like conditions for the energy so transmitted outside the state.

(2) The commission may hold hearings, fix rates and do all things necessary and convenient to carry out the purposes of sub. (1).

31.10 Permit not to be valued. Each and every permit is granted, and shall be conclusively deemed to be accepted, subject to the condition that no element of value whatever shall ever attach to or be allowed for such permit in and of itself in the sale or acquisition of the property used and useful under such permit otherwise.

31.11 Certificate of terms and forfeiture of permits. The department shall issue to every grantee of a permit a certificate evidencing a grant of the permit allowed by law. Every permit, and every franchise heretofore granted by the legislature, to construct, maintain and operate a dam shall become null and void, unless the dam thereby authorized be completed within 5 years from the time when the permit or the franchise was granted; but the department, for good cause, may extend such time for a period not exceeding 2 years.

31.12 Map, profile and plans. (1) The grantee of a permit under s. 31.06, to construct, maintain and operate a dam, before commencing any work of construction authorized by the permit, shall submit to the department a complete map and profile on the scale of not less than one inch per 1,000 feet showing the land that may be affected by the construction and maintenance of the dam, or by any flowage that may be caused thereby, and the outline of the flowage, and such other hydrographic and topographic data as the department may prescribe, and shall also file complete detailed plans and specifications for the proposed dam, including all booms, piers, or other protection works.

(2) The department shall examine the map, profile, plans and specifications; shall hear the grantee thereon and may reject the plans and specifications are satisfactory and complete, or, if the plans and specifications are unsatisfactory or incomplete, may suggest and require modifications thereof. If the map, profile and plans and specifications are satisfactory and complete, or, if the same shall be modified as suggested and required, the department shall so find and approve the same, and thereupon the grantee may construct the proposed dam in accordance therewith, but the department may, at any time during the construction of any dam and in the interest of the public safety, or of any public rights in navigable waters, authorize, order or require such changes in the plans and specifications and the construction of the dam as shall be necessary.

(3) If the department, in the case of an application for a permit to construct a dam with a capacity of less than 250 hydraulic horsepower at ordinary stage of water, shall find that the information and data furnished in the original or amended application is sufficient, the applicant shall not be required to furnish the additional or more detailed information or data specified in subs. (1) and (2). The department may, however, at any time during the construction of any such dam authorize, order or require changes in the construction or the method or plan of construction thereof, as provided in sub. (2).

(4) Within 10 days after the completion of any dam the grantee shall file with the department a verified statement that the same was constructed in accordance with the plans and specifications approved by the department; or in case no plans and specifications were required to be filed, then that the dam was constructed in accordance with the description contained in the application.

Cross-reference: See also ch. NR 353 and s. NR 335.11, Wis. adm. code.

31.13 Raising or enlarging existing dams. (1) If the owner of any existing dam wishes to raise or enlarge the same, the owner may apply to the department for permission so to do, but the permission granted under this section shall be in amendment of any existing franchise, license, or permit previously granted authorizing the construction or maintenance of such dam only to the extent of giving the right so to raise or enlarge such dam, and shall in no way enlarge, alter, abridge or nullify property rights, privileges or obligations as to such dam, or the maintenance or operation thereof theretofore acquired or incurred. In addition to the requirements of s. 31.05 (1), (6) and (7), the owner’s application shall state:

(a) The year in which the dam was completed.

(b) If constructed by legislative permission, a statement of the act of the legislature authorizing the same.

(c) A detailed description of the dam, including the maximum height or head of water that may be maintained thereby and the kind and character of material of which the same is constructed.

(d) The purpose for which such dam has been and is now used and the purpose for which it is proposed to use the same.

(e) The approximate amount of hydraulic power developed thereby.

(f) Such additional information of any nature whatsoever as the department may require.

(2) Upon receipt of an application under this section procedure shall be had substantially as required by s. 31.06; and if the department finds that the dam, raised or enlarged or rebuilt, or rebuilt, enlarged and raised in accordance with the application, will not materially obstruct existing navigation or violate other public rights, and will not endanger life, health or property, and that the applicant has complied with s. 31.14 (2) or (3), permission is hereby granted to raise or enlarge or rebuild, or rebuild, enlarge and raise the same in accordance with the application.

History: 1991 a. 316.

Cross-reference: See also ch. NR 305, Wis. adm. code.

31.14 Proof of ability to maintain dams required. (1) It is the policy of this section to preserve public rights in navigable waters, including those created by dams, and to provide a means of maintaining dams and the developments which have been made adjacent to the flowage of such dams.

(2) Except as provided in sub. (3), a permit shall not be granted under s. 31.06, 31.08 or 31.13:

(a) Unless the applicant furnishes to the department proof of ability to operate and maintain the dam in good condition, either by the creation of a special assessment district under ss. 31.38 and 66.0703, or by any other means which in the department's judgment will give reasonable assurance that the dam will be maintained for a reasonable period of time not less than 10 years; or

(b) If a majority of the municipalities in which 51% or more of the dam or flowage is or will be located files with the department, prior to the granting of the permit, their objections to the granting of such permit in the form of resolutions duly adopted by the governing bodies of such municipalities.

(3) Subsection (2) does not apply if the applicant complies with each of the following requirements:

(a) Furnishes proof satisfactory to the department that the applicant owns or has an enforceable option to purchase all the land which is or will be flowed by the impoundment, together with the shoreline and an immediately adjacent strip of land at least 60 feet in width, but the department may in a particular case permit a narrower strip where the 60-foot minimum is impractical and may, in accordance with the policy stated in sub. (1), require ownership of a wider strip.

(b) Files with the department a writing in such form as the department requires in which the applicant agrees that following...
the initial filling of the proposed pond the applicant will not convey the dam to another without first obtaining department approval. The department may require from an applicant who does not have the power of eminent domain a bond or other reasonable assurances that the applicant will adhere to such agreement.

(4) No person may assume ownership of a dam after October 21, 1961, or the ownership of that specific piece of land on which a dam is physically located after April 27, 1982, without first complying with sub. (2) or (3). The transfer of the ownership of a dam or the ownership of a specific piece of land on which a dam is physically located made without complying with sub. (2) or (3) is void unless a permit to abandon the dam was granted under s. 31.185 or unless the transfer occurred by operation of law. Every person who accepts ownership by operation of law is subject to

(5) The additional fill of the proposed pond by the applicant will not convey the dam to another without first obtaining department approval. The department may require from an applicant who does not have the power of eminent domain a bond or other reasonable assurances that the applicant will adhere to such agreement.

(6) No person may assume ownership of a dam after October 21, 1961, or the ownership of that specific piece of land on which a dam is physically located after April 27, 1982, without first complying with sub. (2) or (3). The transfer of the ownership of a dam or the ownership of a specific piece of land on which a dam is physically located made without complying with sub. (2) or (3) is void unless a permit to abandon the dam was granted under s. 31.185 or unless the transfer occurred by operation of law. Every person who accepts ownership by operation of law is subject to

(7) The initial filling of the proposed pond the applicant will not convey the dam to another without first obtaining department approval. The department may require from an applicant who does not have the power of eminent domain a bond or other reasonable assurances that the applicant will adhere to such agreement.

(8) No person may assume ownership of a dam after October 21, 1961, or the ownership of that specific piece of land on which a dam is physically located after April 27, 1982, without first complying with sub. (2) or (3). The transfer of the ownership of a dam or the ownership of a specific piece of land on which a dam is physically located made without complying with sub. (2) or (3) is void unless a permit to abandon the dam was granted under s. 31.185 or unless the transfer occurred by operation of law. Every person who accepts ownership by operation of law is subject to

(9) The additional fill of the proposed pond by the applicant will not convey the dam to another without first obtaining department approval. The department may require from an applicant who does not have the power of eminent domain a bond or other reasonable assurances that the applicant will adhere to such agreement.

(10) No person may assume ownership of a dam after October 21, 1961, or the ownership of that specific piece of land on which a dam is physically located after April 27, 1982, without first complying with sub. (2) or (3). The transfer of the ownership of a dam or the ownership of a specific piece of land on which a dam is physically located made without complying with sub. (2) or (3) is void unless a permit to abandon the dam was granted under s. 31.185 or unless the transfer occurred by operation of law. Every person who accepts ownership by operation of law is subject to

31.18 Obligations of owners of bridges and dams.

(1) The grantee of any permit, the owner of any dam constructed before permits were required by law, and the owner of any bridge at the city of Portage or at any point above that city, over the Wis-

31.185 Permits to abandon dams.

(1) No owner of any dam may abandon or remove or alter the dam without first obtaining a permit from the department. No person may transfer ownership of a dam or the ownership of the specific piece of land on which a dam is physically located without first obtaining a permit from the department.

(2) An application for a permit to abandon, remove or alter a dam or an application for a permit to transfer ownership of a dam or the ownership of a specific piece of land on which a dam is physically located shall be made to the department upon forms prescribed by it and shall contain the owner’s name and address, a brief description of the dam and its location and other information as the department requires for the purpose of enabling it to act on the application.

(3) Section 31.06 governs procedure upon all applications hereunder.

(4) Prior to the hearing the department shall have its staff make its own investigation of the dam and, on the basis of such investigation, shall make recommendations as to the type of requirements, if any, which it would impose on the applicant under sub. (5) as a condition to granting the permit. Such recommendations shall be presented at the hearing. If no one registers opposition to the application at the hearing, the department shall grant the permit, subject to such conditions as it deems necessary under sub. (5). If someone registers opposition to the abandonment at the hearing and such opposition is not withdrawn, the department shall defer action on the application for a period of 120 days after the hearing. Within a reasonable time after the expiration of such period, the department shall deny the permit, or grant the permit, subject to such conditions as it imposes under sub. (5), unless, within such 120-day period, one or more municipalities or other persons or associations have agreed to acquire ownership of the dam and have furnished satisfactory proof of intent to comply with s. 31.14 (2) or (3).

(5) As a prerequisite to the granting of a permit under this section, the department may require the applicant to comply with such conditions as it deems reasonably necessary in the particular case to preserve public rights in navigable waters, to promote safety, and to protect life, health and property.

History: 1973 c. 90; 1981 c. 246.

Cross-reference: See also ch. NR 305, Wis. adm. code.

Sub. (5) is not directed to the removal of a dam by the DNR. It creates a different procedure for a private party who seeks to remove a dam. Froebel v. DNR, 217 Wis. 2d 652, 579 N.W.2d 774 (Ct. App. 1998), 97–0844.

31.187 Abandoned dams.

(1) The department may remove or cause to be removed, in such manner as it deems fit, old and abandoned dams in streams in this state, upon giving 60 days’ notice in writing to the owner thereof, if the owner can be found. If the owner of the dam is unknown or cannot, by due diligence, be found, the department shall publish a class 3 notice, under ch. 985, in the county in which the dam is situated.

(2) Whenever the department determines that the conservation of any species or variety of wild animals will be promoted thereby, the department may maintain and repair any dam located wholly upon lands the title to which is in the state either as proprietor or in trust for the people after giving due consideration to fixing the level and regulating of the flow of the public waters.

History: 1983 a. 27 s. 687; Stats. 1983 s. 31.187; 1991 a. 316.
31.187 DAMS AND BRIDGES

This section, and not s. 31.185 or 283.31, governs removal of a dam by the DNR. There is no statutory authority to grant injunctive relief against the DNR when it causes damages during a dam removal. Froelvel v. DNR, 217 Wis. 2d 652, 579 N.W.2d 774 (Ct. App. 1998), 97-0844.

31.19 Inspection of dams; orders. (1g) Definitions. In this section:

(a) “High hazard dam” means a large dam the failure of which would probably cause loss of human life.

(b) “Low hazard dam” means a large dam the failure of which would probably not cause significant property damage or loss of human life.

(c) “Significant hazard dam” means a large dam the failure of which would probably cause significant property damage but would probably not cause loss of human life.

(1m) Determination of dam size. For the purposes of this section, a dam is considered to be a large dam if either of the following applies:

(a) It has a structural height of 25 feet or more and impounds more than 15 acre-feet of water.

(b) It has a structural height of more than 6 feet and impounds 50 acre-feet or more of water.

(2) LARGE DAM INSPECTION. (a) Inspection by the department. At least once every 10 years the department shall conduct a detailed inspection of each high hazard dam and each significant hazard dam.

(ag) Owner responsibility. 1. Owners of each high hazard dam, each significant hazard dam, and each low hazard dam shall engage a professional engineer registered under s. 443.04 to inspect the dam as specified in this paragraph.

2. An owner of a high hazard dam shall cause the dam to be inspected at least 4 times between each inspection conducted by the department under par. (a). An owner of a significant hazard dam shall cause the dam to be inspected at least 2 times between each inspection conducted by the department under par. (a). An owner of a low hazard dam shall cause the dam to be inspected at least once every 10 years.

3. The owner of a dam required to be inspected under this paragraph shall submit to the department, no later than 90 days after the date of the inspection, a report of the results of the inspection. The report shall include information on any deficiencies in the dam, recommendations for addressing those deficiencies, and recommendations on improving the safety and structural integrity of the dam.

(ar) Dam classification. The department shall classify each dam in this state as a high hazard, significant hazard, or low hazard dam for the purpose of this section.

(b) Exemption for federally inspected dams. Notwithstanding the inspection requirements under pars. (a) and (ag), an inspection under par. (a) or (ag) is not required if the dam is inspected periodically by or under the supervision of a federal agency in a manner which is acceptable to the department and if the results of each inspection are made available to the department.

(3) INSPECTION UPON COMPLAINT. If the department receives a complaint in writing from the mayor of a city, supervisor of a town or the president or trustee of a village which alleges that a dam maintained or operated in or across any navigable or nonnavigable waters or a reservoir is in an unsafe condition or if the department receives a complaint in writing from a person which alleges that the person’s property or any property under the person’s control is endangered by a dam or reservoir, the department shall investigate or cause an investigation to be made of the complaint.

(4) DISCRETIONARY INSPECTION. The department may inspect or cause an inspection to be made of any dam or reservoir.

(5) ORDER; REDUCTION IN WATER LEVEL. If the department finds pursuant to an investigation that a dam or reservoir is not sufficiently strong or is unsafe and that the dam or reservoir is dangerous to life or property, it shall determine what alterations, additions or repairs are necessary and shall order the owner or person having control of the dam or reservoir to cause those alterations, additions or repairs to be made within a time specified in the order. If the department finds pursuant to an investigation that a dam or reservoir is not sufficiently strong or is unsafe and that the dam or reservoir is dangerous to life or property, it may cause to be drawn off, in whole or in part, the water in the reservoir or impounded by the dam if it determines that this action is necessary to prevent impending danger to persons or property.

History: 1975 c. 349, 421; 1983 a. 27, 1989 a. 31; 2009 a. 28.

Cross-reference: See also ch. NR 333, Wis. adm. code.

31.21 Transfer of permit. (1) No transfer or assignment of any permit granted under s. 31.06 or 31.08 shall be of any effect whatsoever unless it is in writing and a certified copy thereof within 10 days after the execution thereof, is filed with the department and unless such transfer or assignment is approved in writing by the department; and no such transfer or assignment shall be approved by the department except after an investigation and a finding that the transfer or assignment is not made or intended to be made for a purpose or to create a condition prohibited by s. 196.665 and that the transferee or assignee has complied with s. 31.14 (2) or (3). No permit shall be transferred or assigned to a foreign corporation, nor shall any permit granted to a municipality be assigned or transferred to any person, otherwise than as security for a loan made in good faith and concurrently with and as consideration for such transfer or assignment, and no foreign corporation shall have power to acquire title to any such permit, nor shall any person have power to acquire title to a permit granted to or acquired by a municipality, otherwise than in the enforcement of such security, and in no case shall any such foreign corporation hold title to or operate under any such permit for a period longer than 3 years.

(2) No municipality shall make or execute any lease or other contract with any person, firm, or corporation for the sale or use of hydraulic or hydroelectric power developed or generated by such municipality under a permit granted under s. 31.06 or 31.08 for a period longer than 10 years, unless the same shall be first approved by the department, after investigation and upon a finding that such lease or contract will not impair or interfere with the purpose or uses for which such dam was acquired or constructed by the municipality.

Cross-reference: See also ch. NR 305, Wis. adm. code.

31.23 Forfeitures; private bridges and dams. (1) Every person who constructs or maintains in navigable waters or aids in the construction or maintenance therein of any bridge or dam not authorized by law, shall forfeit for each such offense, and for each day that the free navigation of such waters are obstructed by such bridge or dam a sum not exceeding $50.

(2) Every person or corporation violating any of the provisions of this chapter, other than those mentioned in sub. (1), or violating any order made by the department pursuant to this chapter, shall forfeit for such violation not more than $1,000.

(3) (a) There shall be no forfeiture under this section in any case where a bridge is built by a private citizen across any navigable waters having a width of 35 feet or more, providing such bridge does not impair the rights of the public for purposes of navigation or fishing.

(b) No such bridge shall be maintained unless its construction shall first be approved by the department after public hearing and on not less than 10 days’ written notice to the applicant and to the county and town clerks of the county and town wherein all or a portion of the proposed bridge is to be located.

(c) Each applicant who shall apply to the department for a permit to construct any such bridge shall state in the application the proposed location of the bridge, the depth of the water to be spanned, the materials to be used in the construction of the bridge, the plans of the proposed bridge, together with such other facts as the department may require.

Text from the 2007-08 Wis. Stats. database updated by the Legislative Reference Bureau. Only printed statutes are certified under s. 35.18 (2), stats. Statutory changes effective prior to 11-2-10 are printed as if currently in effect. Statutory changes effective on or after 11-2-10 are designated by NOTES. Report errors at (608) 266-3561, FAX 264-6948, http://www.legis.state.wi.us/rsb/stats.html
(d) Every such bridge used by the public shall at all times be maintained in a safe condition by the owners of the land abutting the approaches of the bridge, and the owners shall make such repairs as are reasonably necessary therefor. The town shall not become liable for any damages resulting from the insufficiency or want of repairs of such bridge. If the department upon inspection finds that such bridge is in need of repairs, it shall notify the owners responsible for the repairs thereof, and also send a copy of such notice to the town board, to make all repairs as are reasonably necessary therefor. If such repair work as ordered by the department is not commenced within 60 days after receipt of such notice, the department may close such bridge until it is so repaired. Whenever any owner responsible for such bridge shall fail to repair or maintain the bridge in a good and safe condition, after having been notified to do so by the department for 60 days after such notification, such town board upon its own initiative may make such required repairs on such bridge, and the cost thereof shall be paid by the owners responsible therefor, and the town clerk shall enter such amount of the cost of repairs upon the next tax roll of the town.

History: 1991 a. 316.
Cross-reference: See also chs. NR 301, 305, and 320, Wis. adm. code.
Sub. (1) provides no substantive rule for which a violation would initiate the abatement procedures under s. 31.25. The remedy provided is limited to the forfeiture provided under sub. (1). Capt. Soma Boat Line, Inc. v. Wisconsin Dells, 56 Wis. 2d 838, 203 N.W.2d 369 (1973).

31.25 Nuisances, abatement. Every dam, bridge or other obstruction constructed or maintained in or upon any navigable waters of this state in violation of this chapter, and every dam not furnished with a slide, chute or other equipment prescribed by the department, is hereby declared to be a public nuisance, and the construction thereof may be enjoined and the maintenance thereof may be abated by action at the suit of the state or any citizen thereof.

Section 31.23(1) provides no substantive rule for which a violation would initiate the abatement procedures under this section. Capt. Soma Boat Line, Inc. v. Wisconsin Dells, 56 Wis. 2d 838, 203 N.W.2d 369 (1973).

31.253 Dam removal; opportunity for hearing. (1) OPPORTUNITY FOR HEARING PRIOR TO DEPARTMENT ACTION. Except as provided under sub. (4), prior to seeking or causing the removal of a dam under this chapter, the department shall hold a public informational hearing on the proposed removal or publish a class 2 notice under ch. 985 stating that it will seek or cause the removal of the dam without holding a public informational hearing unless a hearing is requested in writing within 30 days after the last publication of the notice. The department may hold further hearings or give further notice as it deems appropriate.

(2) OPPORTUNITY FOR HEARING PRIOR TO COURT ACTION. Except as provided under sub. (4), a court may not order or authorize the removal of a dam in an enforcement action under this chapter unless a public informational hearing or an opportunity for a public informational hearing was provided.

(3) PUBLIC INFORMATIONAL HEARING. If the department conducts a public informational hearing under this section, the department shall explain the basis for its decision to seek or cause the removal of the dam, the procedures which will be followed and opportunities for citizen involvement in those procedures and the department shall provide an opportunity for citizens to present comments, testimony and evidence concerning the removal of the dam. Notwithstanding s. 227.42, this hearing may not be converted or treated as a contested case.

(4) EXCEPTIONS. (a) This section does not apply if the department or a court determines that a dam constitutes an immediate and significant hazard to persons or property.

(b) This section does not apply to an application under s. 31.185 or departmental action under s. 31.185.

History: 1983 a. 507; 1985 a. 182 s. 57.

31.26 Civil liabilities. (1) The owner of any dam or of any privately owned bridge across the Wisconsin River or the Black River or any of their tributaries shall be liable for all damages occasioned to property by a failure to provide such dam or bridge with slides, booms and chutes as required by s. 31.18 (1). The person or party suffering any such damage shall have a lien upon the dam and all mills, machinery and appurtenances of such owner erected thereon, or served with water thereby, and on the lands adjoining, not exceeding 40 acres; or, as the case may be, a lien upon such bridge and its approaches.

(2) The claimant of such lien shall file a notice thereof in writing in the office of the clerk of the circuit court of the county in which the dam or bridge is located within 60 days after sustaining such damages and shall commence an action to enforce the lien within 6 months after filing such notice. Such lien shall accrue upon the filing of such notice and failure to file the same or to commence such action within the times specified therefor respectively shall operate as a waiver of the lien. Judgment for the plaintiff for the recovery of damages and declaring such lien may be enforced by an execution sale of the property affected as in ordinary actions at law, and upon such sale all rights to maintain such dam or bridge shall pass to the purchaser.

(3) In case of any personal injury by reason of any such neglect or failure the damages sustained thereby may be recovered and a lien and judgment enforced in like manner; and if death results an action may be maintained by the representatives of the deceased in the manner provided in other cases of death resulting from negligence or wrong.

(4) No common law liability, and no statutory liability provided elsewhere in these statutes, for damage resulting from or growing out of the construction, maintenance or operation of any dam is released, superseded, or in any manner affected by the provisions of this chapter; and this chapter creates no liability on the part of the state for any such damages.

31.29 May employ hydraulic engineer and assistants. The department may employ and fix the salaries of a competent hydraulic engineer and other assistants necessary to carry out the provisions of this chapter.

31.30 Dams on Brule River. It is declared to be the policy of the state to prohibit forever the building or maintaining of any dam or dams across the Brule River or any of its tributaries in Douglas County, except that a dam with an adequate fishway may be constructed across said Brule River at each of the 3 sites hereinafter described, or at such other sites as are selected by the department in place of any or all of the sites hereinafter mentioned, the purpose of which shall be to provide a method whereby fish declared to be undesirable for said stream by the department may be eliminated or prevented from ascending the stream, and to permit said stream to be developed for trout in different stretches thereof; site No. 1 known as Clevedon site in the southeast quarter of the northwest quarter of section 10, township 49 north, range 10 west; site No. 2 known as the Old Mill site in the northwest quarter of the southeast quarter, section 11, township 47 north, range 10 west; and site No. 3, known as the Upper or Rock dam site in the northeast quarter of the southeast quarter of section 22, township 47 north, range 10 west; and all rights, privileges, and franchises granted prior to June 26, 1905, to any person or corporation to improve said Brule River or any of its tributaries in said county for any purpose whatever, are repealed and annulled. No domestic corporation organized subsequent to such date shall exercise any of the powers or privileges authorized or conferred by ss. 180.15 to 180.19, 1925 stats., in, across or along said river or any of its tributaries in Douglas County.

Cross-reference: See s. 30.25 for similar prohibition of dams on the Wolf River.

31.305 Dams in the Lower Wisconsin State Riverway. No dam may be constructed in the lower Wisconsin River as defined in s. 30.40 (14).
31.307 DAMS AND BRIDGES

31.307 Dam on Milwaukee River. (1) The department shall conduct, or shall cause to be conducted, an environmental and engineering study concerning the removal of the North Avenue dam in the city of Milwaukee from the Milwaukee River. (2) Upon completion of the study under sub. (1), the city of Milwaukee may apply for a permit to abandon the dam under s. 31.185 or the department may proceed under ss. 31.187 and 31.253 to cause the removal of the dam. (4) For purposes of s. 30.92 (4) (b) 6., moneys expended from the appropriation under s. 20.370 (5) (cq) for the study under sub. (1) shall be considered as amounts expended for projects considered necessary without regard to location. History: 1991 a. 39; 1995 a. 27.

31.309 Portage levee system and canal. (1) CITY OF PORTAGE LEVEE. (a) The department shall provide a grant in the 1995–97 fiscal biennium from the appropriation under s. 20.370 (5) (cq) to the city of Portage for the amount necessary for the renovation and repair of the city of Portage levee in the Portage levee system. The grant under this paragraph may not exceed $800,000 in fiscal year 1995–96 and $800,000 in fiscal year 1996–97. (ag) The department shall provide a grant of $350,000 in fiscal year 2001–2002 and a grant of $350,000 in fiscal year 2002–2003 from the appropriation under s. 20.370 (5) (cq) to the city of Portage for the renovation and repair of the Portage canal. (am) The city of Portage may use any amounts from the grant awarded under par. (a) for the renovation and repair of the Portage canal. (b) When the department determines that the renovation and repair described under par. (a) are complete, the city of Portage shall assume the maintenance of the city of Portage levee in the Portage levee system in a manner that will best protect the surrounding area from the overflow of the Wisconsin River. (2) LEWISTON AND CALEDONIA LEVEES. (a) The department shall maintain the Lewiston and Caledonia levees in the Portage levee system in a manner that will best protect the surrounding area from the overflow of the Wisconsin River. (b) The department may expend in fiscal year 1995–96, from the appropriation under s. 20.370 (5) (cq), up to $400,000 for a study concerning the future of strengthening and maintaining the Lewiston and Caledonia levees in the Portage levee system. The study shall include a management plan for these 2 levees. History: 1995 a. 27 ss. 1698, 1699, 1700 to 1706; Stats. 1995 a. 31; 1999 a. 9; 2001 a. 16.

31.31 Dams on nonnavigable streams. Any person may erect and maintain upon that person’s land, and, with the consent of the owner, upon the land of another, a water mill and a dam to raise water for working it upon and across any stream that is not navigable in fact for any purpose whatsoever upon the terms and conditions subject to the regulations hereinafter expressed; and every municipality may exercise the same rights upon and across such streams that they may exercise upon or across streams navigable for any purpose whatsoever. History: 1991 a. 516.

31.32 Dams not to injure other dams or sites. No such dam shall be erected to the injury of any mill lawfully existing, either above or below it on the same stream; nor to the injury of any mill site on the same stream on which a mill or milldam shall have been lawfully erected and used or is in the process of erection, unless the right to maintain a mill on such last-mentioned site shall have been lost or defeated by abandonment or otherwise; nor to the injury of any such mill site which has been occupied as such by the owner thereof, if such owner, within a reasonable time after commencing such occupation, completes and puts in operation a mill for the working of which the water of such stream shall be applied.

31.33 Jurisdiction of department. (1) DAMS HERETOFOR OR HEREFORTH CONSTRUCTED. ACTION FOR DAMAGES. All mills and milldams lawfully erected or constructed, on streams not navigable at the time, under chapter 48, territorial laws of 1840, chapter 62, laws of 1857, ch. 56, R.S. 1858, ch. 146, R.S. 1878, ch. 146, R.S. 1898, ch. 146, 1911 stats., ch. 146, 1913 stats., ch. 146, 1915 stats., or any special, private or local act, or under any other act whatsoever, that are not now abandoned but are still in existence and use, and all dams heretofore or hereafter erected or constructed on streams not navigable in fact for any purpose, shall be subject to and regulated and controlled, so far as applicable, by ss. 31.02, 31.12, 31.18, 31.19, 31.25, 31.26 and 196.665, except that these sections do not prevent the owner of any land flooded or otherwise injured by any milldam from recovering by action at law, full compensation for all damages resulting to him or her in times past and that will result to him or her in the future in consequence of that flooding and injury but no damages suffered more than 3 years before the commencement of the action shall be recovered. The amount recovered constitutes a first lien upon the milldam and upon the mill, if any, and the lien may be enforced by execution sale of the property affected. In every such action the amount paid or secured to be paid under prior laws as damages shall be considered and proper allowance made therefor. The authority granted under this subsection to bring the action does not preclude the owner from proceeding under ch. 32. The owner may not exercise his or her option to bring the action after condemnation proceedings have been commenced against his or her property under ch. 32. (2) LICENSE. A license is granted to each owner of any such milldam now in existence and use, and to each owner of any such milldam hereafter constructed, to maintain and use the same to operate mills or machinery, or for any other lawful private or public purpose, but subject, however, to the supervision of the department acting under ss. 31.02, 31.12, 31.18, 31.19, 31.25, 31.26 and 196.665. The right created by the license shall follow the title to the milldam and a conveyance of the latter shall transfer the right to the grantee. (3) INTERPRETATION. Whenever ss. 31.02, 31.12, 31.18, 31.19, 31.25, 31.26 and 196.665 are applied to mills or milldams specified in sub. (1) every reference in any of them to a "permit" or to a "grantee" of a permit shall be regarded as referring respectively to a license granted by this section and to the owner of such a mill or milldam. (4) HEIGHT. The height to which water may be raised by any such milldam and the length or period of time for which it may be kept up each year, may be restricted and regulated by the orders of the department. (5) VIOLATION OF ORDERS, PENALITIES. Every person, firm or corporation violating any of the orders respecting any such mill or milldam made by the department shall forfeit for each such violation a sum not exceeding $500 which may be recovered by civil action as provided by ch. 778. History: 1979 c. 32 s. 92 (8); 1981 c. 390; 1989 a. 31. Cross-reference: See also ch. NR 333, Wis. adm. code. This section applies to nonnavigable artificial waterways insofar as is necessary to protect navigable waters and owners of flooded waters. 63 Atty. Gen. 493. Wisconsin’s Milldam Act: Drawing New Lessons From Old Law. Martini. 1998 WLIR 1305. 31.34 Flow of water regulated. Each person, firm or corporation maintaining a dam on any navigable stream shall pass at all times at least 25% of the natural low flow of water of such stream, except as otherwise provided by law. This section, however, shall not apply to a plant or dam where the water is discharged directly into a lake, mill pond, storage pond or cranberry marsh, nor shall it apply to cases where in the opinion of the department such minimum discharge is not necessary for the protection of fish life. Any person, firm or corporation violating this section shall be fined not less than $50 nor more than $1,000. 31.35 Dams in areas leased by county; restrictions; control by circuit judge; when. (1) Dams controlling the water elevations in areas covered by leases made under s. 59.01 shall be operated in such manner as not to divert waters or with-
31.36 Levee commissioners. (1) The right-of-way for such levees, if any additional are found necessary, shall be furnished by the municipalities in which they are located, and no construction work shall be begun until such right-of-way are provided.

(2) Whenever levee commissioners under either general or special act are charged with the expenditure of money appropriated by the state or by any municipality for the construction, extension, improvement or repair of any levee or breakwater along the shore or bank of a river, stream or lake, s. 31.38 shall apply for the purpose of acquisition and condemnation of lands for such purposes and such commissioners have all the powers conferred by s. 31.38 for such purposes. Condemnations shall comply with s. 66.0703, so far as applicable. Commissioners may procure by condemnation lands for right-of-way, earth material, borrow pits, quarry, timber and brush privileges as they may, in their judgment, deem necessary for such purposes.

(3) Whenever said levee commissioners are not vested with power to buy rights-of-way, earth material, borrow pits, quarry, timber and brush privileges from money appropriated by the state they may receive from any person or municipality donations of land and moneys to pay for lands and privileges condemned hereunder and for the expenses of such condemnation proceedings.

(4) This section does not modify or repeal s. 31.35.

31.38 Municipal authority to construct and maintain dams. (1) Every municipality may, subject to this chapter, authorize the acquisition, construction, maintenance or repair of dams across any lake or stream adjoining or within the limits of such municipality, and may locate such dam within or without such limits.

(2) Whenever it is deemed necessary to acquire, construct, maintain or repair any such dam, a plan therefor, with specifications and cost estimates, shall be prepared and presented to the governing body of the municipality for adoption. Cost estimates may include the estimated cost of maintenance for a period of years. When adopted by the governing body, the plan shall, where required, be submitted to the department or proper officer of the United States for approval. No work shall be done in pursuance of such plan until it has been so approved.

(3) For the purpose of this section, a municipality may purchase or condemn lands within and, when necessary, without its limits in order to protect any property situated within such limits.

(4) The municipality shall proceed in accordance with s. 66.0703 to make special assessments to property on account of benefits resulting to the property from the improvement mentioned in sub. (2) or from the acquisition and maintenance of a dam. If the excess of benefits over damages accruing to property within the assessment district is not sufficient to pay the cost of the improvement, the municipality may pay the balance, either out of its general fund or out of any special fund created for that purpose. The municipality may issue its negotiable bonds, as provided in ch. 67, to pay for such improvement. The department upon request of a municipality shall assist in engineering, surveying and determination of charges necessary in establishing special assessment districts under this section, cost of which shall be advanced by the requesting municipality and later charged against the various parcels of the special assessment district in direct proportion to the assessed benefits of each parcel in the district.

(5) Whenever 2 or more municipalities propose to cooperate in acquiring, constructing, maintaining or repairing a dam, their governing bodies shall first meet and adopt a method of proceeding and a plan of apportioning to each its share of the entire cost. Such method of proceeding and plan of apportionment shall be embodied in a resolution adopted by the governing bodies of the cooperating municipalities acting jointly and later such resolution shall be adopted by each of the governing bodies acting separately.

(6) Whenever a county or town acts under this section, the references in s. 66.0703 to a city or village or clerk thereof mean the county or town or clerk thereof, as the case may be.

31.385 Dam safety; aid program. (1b) In this section “dam safety project” means the maintenance, repair, modification, abandonment or removal of a dam to increase its safety or any other activity that will increase the safety of a dam.

(1m) The department shall promulgate the rules necessary to administer a financial assistance program for dam safety projects under which financial assistance shall be provided as follows:

(a) To municipalities and public inland lake protection and rehabilitation districts for any type of dam safety projects.

(b) To private owners for the removal of dams.

(c) To any persons for the removal of abandoned dams.

(2) The following standards shall apply to financial assistance under this section for dam safety projects:

(a) 1. Except as provided in subd. 2., financial assistance for a dam safety project is limited to the sum of the following:

   a. No more than 50% of the first $400,000 of costs of the project.

   b. No more than 25 percent of the costs of the project that exceed $400,000.

   2. A project to remove a dam shall not be subject to the cost limits under subd. 1.

   3. Financial assistance is limited to no more than $400,000 for each dam safety project.

   (ag) Of the amounts appropriated under s. 20.866 (2) (TL) and (tx), at least $250,000 shall be used for projects to remove dams. A project to remove a dam may include restoring the stream or river that was dammed.

   (ar) Of the amounts appropriated under s. 20.866 (2) (TL) and (tx), at least $100,000 shall be used for the removal of abandoned dams. The amounts required to be used under this paragraph are in addition to the amounts required to be used for the removal of dams under par. (ag).

   (b) The department shall determine which projects shall receive funding priority.

   (bm) The department may provide financial assistance for an activity other than the maintenance, repair, modification, abandonment or removal of the dam only if the cost of that activity will be less than the cost of the maintenance, repair, modification or removal of the dam.

   (c) No financial assistance may be provided under this section for a dam safety project unless at least one of the following applies:

   1. The department conducts an investigation or inspection of the dam under this chapter and the owner of the dam requests financial assistance under this section within 6 months after having received department directives, based on the department’s investigation or inspection of the dam, for the repair, modification or abandonment and removal of the dam or for another activity to increase the safety of the dam.

   2. The municipality, public inland lake protection and rehabilitation district or other person applying for state financial assis-
tance under this section has received directives from the depart-
ment or is under order by the department to maintain, repair,
modify, abandon or remove a dam on August 9, 1989.

(3) The department shall coordinate the financial assistance program under this section with other related state and federal programs.

(4) (a) The department shall maintain an inventory of all dams in the state that require a dam safety project under this section. The inventory shall list the dam safety projects in the chronological order in which they are required to be undertaken. For each dam safety project on the inventory, the department shall include a statement of which parts of the dam safety project are required to protect the rights held by the public in the navigable waters contained by the dam.

(b) The department shall provide notice to the owner of a dam that is included in the inventory. The department shall by rule establish a notice and hearing process for a dam owner to object to the inclusion of the owner’s dam on the list. The department shall use this notice and hearing each time a dam is included in the inventory. The process shall include a public hearing in the city, village or town in which the dam is located, a public comment period, and an appeals process.

(5) Notwithstanding the limitations under sub. (2) (a) and the funding allocation requirements under sub. (2) (ag) and (ar), the department shall provide financial assistance to the village of Cazenovia in the amount necessary for a dam safety project to repair a dam that is located in the portion of the village that is in Richland County. The amount of the financial assistance may not exceed $250,000. The village need not contribute to the repair costs, and sub. (2) (c) does not apply to this dam safety project. The repair of this dam need not be included as a dam safety project under the inventory maintained by the department under sub. (4) for the village to receive financial assistance under this section.

(6) (a) Notwithstanding the limitations under sub. (2) (a) and the funding allocation requirements under sub. (2) (ag) and (ar), the department shall provide financial assistance to all of the following:

1. Adams County for a dam safety project for Easton Dam in the amount necessary for the project, but not to exceed $150,000.
2. The city of Stanley for a dam safety project for Stanley Dam in the amount necessary for the project, but not to exceed $150,000.
3. The city of Montello for a dam safety project for Montello Dam, in the amount necessary for the project, but not to exceed $150,000.
4. Eau Claire County for dam safety projects for Lake Altoona Dam, for Lake Eau Claire Dam, and for a dam located in Coon Fork Lake County Park, in the amount necessary for the projects, but not to exceed $27,000.

(b) The counties and cities need not contribute to the costs of the dam safety projects under par. (a) 1. to 4., and sub. (2) (c) does not apply to these projects. The dam safety projects under par. (a) 1. to 4. need not be included as dam safety projects under the inventory maintained by the department under sub. (4) in order to receive financial assistance under this subsection.


Cross-reference: See also chs. NR 335 and 336, Wis. adm. code.

31.387 Dam rehabilitation projects. The department shall establish and administer a grant program under which the department shall provide grants to counties to rehabilitate dams located in those counties. The department may only provide a grant for a project under this section to match federal funds provided for the project under the federal Watershed Protection and Flood Prevention Act of 1953 (Public Law 83–566).

History: 2001 a. 16.

31.39 Fees for permits, approvals and hearings. (1) FEES REQUIRED. The department shall charge a permit or approval fee for carrying out its duties and responsibilities under ss. 31.02 to 31.185 and 31.33 to 31.38. The permit or approval fee shall accompany the permit application or request for approval.

(2) AMOUNT OF FEES. (a) For fees charged for permits and approvals under ss. 31.02 to 31.185 and 31.33 to 31.38, the department shall classify the types of permits and approvals based on the estimated time spent by the department in reviewing, investigating and making determinations whether to grant the permits or approvals. The department shall then set the fees as follows:

1. For a permit or approval with an estimated time of less than 3 hours, the fee shall be $30.
2. For a permit or approval with an estimated time of more than 3 hours but less than 9 hours, the fee shall be $100.
3. For a permit or approval with an estimated time of more than 9 hours, the fee shall be $300.

(b) For conducting a hearing on an application for which notice is provided under s. 31.06 (1), the person requesting the hearing for the permit or approval shall pay a fee of $25.

(2m) ADJUSTMENTS IN FEES. (a) The department shall refund a permit or approval fee if the applicant requests a refund before the department determines that the application for the permit or approval is complete. The department may not refund a permit or approval fee after the department determines that the application is complete.

(b) If the applicant applies for a permit or requests an approval after the project is begun or after it is completed, the department shall charge an amount equal to twice the amount of the fee that it would have charged under this section.

(c) If more than one fee under sub. (2) (a) or s. 30.28 (2) (a) or 281.22 is applicable to a project, the department shall charge only the highest fee of those that are applicable.

(d) The department, by rule, may increase any fee specified in sub. (2).

(2r) FEES FOR EXPEDITED SERVICE. (a) The department, by rule, may charge a supplemental fee for a permit or approval that is in addition to the fee charged under this section if all of the following apply:

1. The applicant requests in writing that the permit or approval be issued within a time period that is shorter than the time limit promulgated under par. (b) for that type of permit or approval.
2. The department verifies that it will be able to comply with the request.

(b) If the department promulgates a rule under par. (a), the rule shall contain a time limit for each type of permit or approval classified under sub. (2) (a) for determining whether the department will grant the permit or approval.

(3) EXEMPTIONS. This section does not apply to any federal agency or state agency.

History: 1977 c. 29; 1979 c. 221; 1981 c. 346; 1989 a. 31, 324; 1995 a. 27, 227; 1997 a. 27.

Cross-reference: See also ch. NR 300, Wis. adm. code.

31.399 Parties to a violation. (1) Whoever is concerned in the commission of a violation of this chapter for which a forfeiture is imposed is a principal and may be charged with and convicted of the violation although he or she did not directly commit it and although the person who directly committed it has not been convicted of the violation.

(2) A person is concerned in the commission of the violation if the person:

(a) Directly commits the violation;
(b) Aids and abets the commission of it; or

Text from the 2007–08 Wis. Stats. database updated by the Legislative Reference Bureau. Only printed statutes are certified under s. 35.18 (2), stats. Statutory changes effective prior to 11–2–10 are printed as if currently in effect. Statutory changes effective on or after 11–2–10 are designated by NOTES. Report errors at (608) 266–3561, FAX 264–6948, http://www.legis.state.wi.us/rsb/stats.html
(c) Is a party to a conspiracy with another to commit it or advises, hires or counsels or otherwise procures another to commit it.

History: 1975 c. 365.
E.50. Wyoming
STATE OF WYOMING

SAFETY OF DAMS

PROGRAM

The purpose of this brochure is to provide you with information concerning the Wyoming Safety of Dams Program and basic knowledge of the terminology used around dams.

Enclosed for your information is a copy of the Safety of Dams Law, (Wyoming Statutes 41-3-307 through 41-3-318), which authorized the Wyoming Safety of Dams Program and Glossary of Terms accompanied with illustrations. A summary of the Safety of Dams Program is presented below, but we urge you to review the enclosed material and become familiar with all aspects of the Law.

The Safety of Dams Program can be broken into two areas of emphasis:

1) The Safety of Dams Law stipulates that duplicate plans and specifications showing the proposed work on any facility, meeting the criteria of the Safety of Dams Law, shall be prepared by or under the direction of a registered professional engineer licensed in Wyoming and experienced in dam design and construction. These plans and specifications must be submitted to the State Engineer for review and approval. No work shall begin until the submitted plans and specifications are approved by the State Engineer. The term "work" includes the following activities, among others: construction of a new facility and any repair, alteration, or rehabilitation which may affect the safety or size of an existing facility.

Once the plans and specifications have been approved by the State Engineer, a qualified engineer shall be in charge of and responsible for the proposed work. The engineer in charge shall inspect the work and submit reports to the Safety of Dams office detailing the information obtained during the inspection and on the progress of the work.

2) Periodic Safety Inspections of existing facilities, meeting certain criteria, are authorized and required by the Safety of Dams Law. If the facility is found to be defective or, in the judgement of the State Engineer, the facility constitutes a menace to the public, the State Engineer may place restrictions on the use of the facility until the owner returns the facility to a safe condition, as approved by the State Engineer.
In case of an emergency, the State Engineer may order breaching of a facility or any repairs deemed necessary to safeguard life and property.

The owner is responsible for safe operation and maintenance of a facility. No aspect of the Safety of Dams Program shall be construed to relieve the owner of a facility of any legal duties, obligations, or liabilities incident to their ownership or operation of it. The owner is solely liable for any damages resulting from the leakage or overflow of water or for floods resulting from failure or rupture of the fill or structure for such works.

If you discover conditions, which you feel are undesirable and could lead to failure of a facility, please promptly contact this office at the address or phone number listed below and/or your local Water Commissioner or Superintendent. We will promptly send someone to access the situation.

In the event of an emergency, where flooding is expected due to either failure of a dam or large releases of water from a reservoir, you must contact one of the following agencies:

1. Your local law enforcement agency;
2. Wyoming Highway Patrol - 1-307-777-4321 (24 Hours) or 1-800-442-9090;
3. Wyoming Emergency Management Agency
   1-307-777-4900 (Days) or the Wyoming Highway Patrol 1-307-777-4321 (evenings, weekends and holidays)
4. State Engineer's Office
   Herschler Building - 4th Floor East
   Cheyenne, Wyoming 82002
   Phone Number - 1-307-777-6153 or 6154 (Days)
STATE OF WYOMING

SAFETY OF DAMS - STATE STATUTES

41-3-307 through 41-3-318, 1992

41-3-307. Definitions.

(a) As used in this act unless the context otherwise requires:

(i) "Alterations" or "repairs" means only such alterations or repairs as may directly affect the safety of the dam or DIVERSION SYSTEM, as determined by the state engineer or his designated representative;

(ii) "Appurtenant works" include, but are not limited to, such structures as spillways, either in the dam or separate therefrom, the reservoir and its rim, low level outlet works, and water conduits such as tunnels, pipelines or penstocks, either through the dam or its abutments;

(iii) "Dam" means any artificial barrier, including appurtenant works, used to impound or divert water and which is or will be greater than twenty (20) feet in height or with an impounding capacity of fifty (50) acre-feet or greater. "DAM" SHALL NOT INCLUDE ARTIFICIAL BARRIERS INCLUDING APPURTENANT WORKS:

(A) SIX (6) FEET IN HEIGHT OR LESS, REGARDLESS OF STORAGE CAPACITY; OR

(B) WHICH IMPOUND LESS THAN FIFTEEN (15) ACRE-FEET, REGARDLESS OF HEIGHT.

(iv) "Days" used in establishing deadlines means calendar days, including Sundays and holidays;

(v) "Diversion system" means any CHANNEL DIVERSION, HEADGATE or DIVERSION STRUCTURE with a carrying capacity in excess of fifty (50) cubic feet of water per second of time;

(vi) "Emergency" means any threat to life or property caused by the condition of any dam, reservoir or diversion system, or by present or imminent floods which threaten the safety or structural integrity of any dam or diversion system;
(vii) "EMERGENCY RESPONSE AGENCY" MEANS ANY AGENCY WHICH THE DAM OWNER MAY BE REQUIRED TO NOTIFY IN CASE OF AN EMERGENCY, SUCH AS SHERIFF'S OFFICE, HIGHWAY PATROL OR LOCAL EMERGENCY COORDINATOR;

(viii) "Enlargement" means any change in or addition to an existing dam or reservoir which raises or may raise the water storage elevation of the water impounded by the dam;

(ix) "Inspection" means visual or mechanical checks, measures, borings and any other methods necessary for determination of the adequacy of construction techniques, conformity of work with approved plans and specifications, and the safety and operating performance of a dam or diversion system and appurtenant works;

(x) "Owner" includes any of the following who own, control, operate, maintain, manage or propose to construct a dam or reservoir:

   (A) The state and its departments, institutions, agencies and political subdivisions;

   (B) Every municipal or quasi-municipal corporation;

   (C) Every public utility;

   (D) Every district;

   (E) Every person;

   (F) THE FEDERAL GOVERNMENT AND ITS DEPARTMENTS, INSTITUTIONS, AGENCIES AND POLITICAL SUBDIVISIONS;

   (G) The duly authorized agents, lessees or trustees of any of the foregoing; and

   (H) Receivers or trustees appointed by any court for any of the foregoing.

(xi) "Person" means any person, firm, association, organization, partnership, business trust, corporation or company;

(xii) "Reservoir" means any basin which contains or will contain impounded water;

(xiii) "This act" means W.S. 41-3-307 through 41-3-317.

41-3-308. Plans to be prepared by professional engineer; approval of plans and specifications by state engineer; industrial siting permits.
(a) Plans and specifications of any proposed construction, enlargement, major repair, alteration or removal of a dam or diversion system shall be prepared by or under the direction of a registered professional engineer licensed to practice in the state of Wyoming and experienced in dam design and construction, and shall be submitted to the state engineer for approval. It is unlawful to commence construction, enlargement, repair, alteration or removal until the plans and specifications have been approved by the state engineer. At the request of the state engineer, the professional engineer responsible for the plans and specifications shall carry out any revisions of the plans and specifications or provide such additional information as is necessary to justify or clarify the design.

(b) A copy of all plans and specifications submitted under this section shall be kept on file in the state engineer's office.

(c) In the event that a proposed dam or diversion system is related to a facility which requires an industrial siting permit pursuant to W.S. 35-12-106:

(i) The plans and specifications of the proposed dam or diversion system shall be submitted to the state engineer at the same time that the application for an industrial siting permit is submitted to the industrial siting administration pursuant to W.S. 35-12-108;

(ii) The state engineer shall approve or reject the plans and specifications of the proposed dam or diversion system prior to the public hearing conducted pursuant to W.S. 35-12-109 (b) (i);

(iii) The approval or rejection of the plans and specifications of the proposed dam or diversion system shall be binding on the industrial siting council for the purposes of issuing an industrial siting permit. Source: Laws 1977, ch. 120, 1.

(d) The state engineer shall provide for the regulation and supervision of all dams, diversion systems and reservoirs by the state to the extent required to protect the public safety and property. The state engineer is authorized and directed to promulgate regulations and standards for the design, construction, enlargement, alteration, abandonment, maintenance, monitoring, operation, repair and removal of dams, reservoirs, and diversion systems as are necessary and proper to carry out the purposes of this Act. The state engineer may waive any or all of the requirements of this Act in instances where the dam or diversion system is located in a remote area where there is no threat to the public safety or property.

41-3-309. Inspections performed and reports submitted to state engineer by professional engineer.
(a) A registered professional engineer licensed to practice in the state of Wyoming shall be in charge of and responsible for the construction, enlargement, repair, alteration or removal of any dam or diversion system.

(b) The engineer in charge shall provide for inspections at such intervals as deemed necessary to insure conformity with the approved plans and specifications, either by himself or by a person qualified to perform the inspections and for whose work the engineer stands personally responsible.

(c) All information obtained from, during or as the result of such inspection shall be made part of a report, certified to by the engineer in charge, which shall be submitted to the state engineer at such time or times as may be set by the state engineer.

(d) All reports submitted under this section shall be FILED in the state engineer's office.

41-3-310. Inspections by state engineer or assistant engineer; cost.

(a) If the state engineer believes that inspections carried out under W.S. 41-3-309 are inadequate or that additional inspections are necessary, the state engineer may inspect personally or appoint an assistant engineer to inspect the construction, enlargement, repair, alteration or removal of any dam or diversion system. If after any inspection the state engineer or his representative finds that amendments, modifications or changes are necessary in order to insure the security and integrity of the work and structure, the protection of property or the public safety, the state engineer may order the owner or owners of the dam or diversion system to revise the plans and specifications, or order work stopped. It is unlawful to proceed with or continue THE work until any revisions have been approved by the state engineer.

(b) Any inspections required by this section shall be made at state expense, provided the assistant engineer performing such inspections is an employee of the state of Wyoming.

(c) If the assistant engineer is not a regular employee of the state of Wyoming, inspections shall be made at the expense of the owner. The owner shall be furnished with an estimate of the cost prior to performance of any inspections, but the state engineer is not precluded from collecting any or all additional costs which result from performance of THE inspections. Costs to be paid by the owner shall include, but are not limited to, ALL work or tests as are necessary to fully provide any information and data required by the state engineer or his appointed representative. IF THE OWNER REFUSES OR NEGLECTS TO TURN OVER THE FUNDS WITHIN THIRTY (30) DAYS, AFTER THE PRESENTATION OF THE BILL OF COSTS, THE COSTS SHALL
CONSTITUTE A LIEN UPON THE WORKS OR OTHER PROPERTIES OF THE OWNER OR OWNERS AND MAY BE COLLECTED BY APPROPRIATE ACTION IN ANY COURT OF COMPETENT JURISDICTION. IN ORDER TO HAVE A VALID, ENFORCEABLE LIEN UNDER THIS SECTION, A LIEN STATEMENT SWORN TO BEFORE A NOTARY PUBLIC SHALL BE FILED BY THE CLAIMANT WITH THE COUNTY CLERK OF THE COUNTY IN WHICH THE PROPERTY IS LOCATED. THE COUNTY CLERK SHALL FILE THE STATEMENT AND INDEX BY DATE, NAME OF CLAIMANT AND PROPERTY OWNER, AND BY LEGAL DESCRIPTION. THE LIEN STATEMENT SHALL CONTAIN THE FOLLOWING:

(i) THE NAME AND ADDRESS OF THE GOVERNING BODY SEEKING TO ENFORCE THE LIEN;

(ii) THE NAME AND ADDRESS OF THE PERSON AGAINST WHOSE PROPERTY THE LIEN IS FILED; AND

(iii) THE LEGAL DESCRIPTION OF THE PROPERTY TO WHICH THE LIEN ATTACHES.

(d) All funds paid by the owner to the state engineer shall be deposited in the state engineer's HOLDING account from which account the costs incurred as a result of any inspections or other work deemed necessary under this section SHALL BE PAID. Any funds not so expended shall be returned to the person or persons advancing the funds.

41-3-311. Periodic inspections.

(a) Any dam subject to the terms of this act shall be inspected at least once every TEN (10) years or as often as deemed necessary based on the hazards of the dam to insure the continued protection of public safety and property.

(b) Inspections referred to in subsection (a) of this section shall be performed by the state engineer or his appointed representative who shall have right of entry upon private or government lands and is authorized to inspect the owner's technical data and other documentation as may be necessary to perform these inspections. All information obtained as a result of the inspections shall be filed in the state engineer's office.

(c) Inspections required under this section shall be made at state expense except as provided in W.S. 41-3-312 when a dam, reservoir or diversion system is found to be unsafe by the state engineer. Source: Laws 1977, ch. 120, 1.

(d) IF INSPECTIONS PERFORMED UNDER THIS SECTION DISCLOSE DEFECTS IN THE WORKS WHICH IN THE JUDGMENT OF THE STATE ENGINEER OR HIS AUTHORIZED AGENT CONSTITUTE A THREAT TO LIFE OR PROPERTY, THE STATE ENGINEER MAY, WITHOUT INcurring ANY LIABILITY, ORDER THE DRAINING OF ANY RESERVOIR INVOLVED, OR THE LIMITATION OR CESSATION OF ITS
USE OR THE USE OF ANY DEFECTIVE WORKS UNTIL SUCH TIME AS THE OWNER OF THE RESERVOIR OR OTHER WORKS RETURNS THE WORKS TO A SAFE CONDITION AS APPROVED BY THE STATE ENGINEER.

41-3-312. Inspections at any time or at request of other party or parties; cost; limitation against unsafe structures.

(a) The state engineer may, or upon written request from any person or persons residing on or owning land near any dam, reservoir or diversion system, shall order an inspection of those works at any time other than the time set for regular inspections as provided for in W.S. 41-3-311(a). Before ordering an inspection, the state engineer may require any person or persons requesting the inspection to deposit a sum of money sufficient to pay the expenses of the inspection into the state engineer's HOLDING ACCOUNT. If after the inspection the dam, reservoir or diversion system is determined to be in a safe and usable condition, the state engineer may cause the whole or part of the expenses of the inspection to be paid out of the state engineer's HOLDING account. ANY EXCESS FUNDS SHALL BE RETURNED TO THE PERSON OR PERSONS ADVANCING THE FUNDS.

(b) If the dam, reservoir or diversion system is found to be defective, ANY FUNDS DEPOSITED BY THE PERSON OR PERSONS REQUESTING THE INSPECTION SHALL BE RETURNED AND the state engineer may require the person or persons owning the dam, reservoir or diversion system in question to pay the whole or any part of the expenses of inspection. If the state engineer requires a payment, he shall present a bill of costs to the owner or owners, and if the owner or owners refuse or neglect to pay the costs within thirty (30) days after the presentation of the bill of costs, the costs shall constitute a lien upon the works or other properties of the owner or owners and may be collected by appropriate action in any court of competent jurisdiction. If the inspection discloses defects in the works which in the judgment of the state engineer or his authorized agent constitute a THREAT to life or property, the state engineer may, without incurring any liability, order the draining of any reservoir involved, or the limitation or cessation of its use or the use of any defective works until such time as the owner of the reservoir or other works returns the works to a safe condition as approved by the state engineer. THE LIEN SHALL BE FILED AS PROVIDED BY W.S. 41-3-310(c).

41-3-313. Outlets; maintenance; draining by breaching.

(a) All dams AND reservoirs hereafter constructed, with or without a controlled inlet, shall contain an outlet controlled by a HEADGATE or other control works. The HEADGATE or control works shall be maintained in an operable condition at all times and in a manner that water impounded by or within a dam OR reservoir may be
evacuated or maintained at any water level which may be required by
the state engineer.

(b) All dams constructed prior to the effective date of this act
which have no outlet or means for lowering the reservoir water
level in an expeditious manner, may be drained by breaching at the
owner's expense when the public safety so requires.

(c) The state engineer and anyone working under his direction and
control shall not be held liable for any damages or loss of water
resulting from the draining or imposed restrictions as to the use
of a reservoir, DAM or diversion system.

(d) If within thirty (30) days after presentation of an itemized
statement the owner fails to reimburse the state engineer for
expenses incurred under this section, any unpaid balance of such
expense shall automatically constitute a lien upon lands or other
properties of the owner. Source: Laws 1977, ch. 120, 1.

41-3-314. Emergency repairs or breaching.

(a) In case of an emergency where the state engineer or his
authorized representative declares that repairs or breaching of a
dam or diversion system are immediately necessary to safeguard life
and property, the necessary repairs or breaching shall be started
immediately by the owner or by the state engineer or his
representative at the owner's expense, if the owner fails to do so.
The state engineer AND EMERGENCY RESPONSE AGENCIES shall be
notified at once of any CHANGES IN THE PHYSICAL CONDITIONS OF THE
DAM, DIVERSION SYSTEM, OR RESERVOIR WHICH SIGNIFICANTLY INCREASE
THE PROBABILITY OF FAILURE OF THE DAM OR DIVERSION WORKS OR THE
DANGER TO LIFE OR PROPERTY, proposed emergency repairs or breaching
to be instituted by the owner. THESE REPORTING REQUIREMENTS SHALL
APPLY ONLY TO CASES IN WHICH AN EMERGENCY HAS BEEN DECLARED
PURSUANT TO THIS SUBSECTION.

(b) If emergency repairs have been made and the emergency
situation has passed, the owner shall commence all repairs
necessary to return the dam or diversion system to a safe and
usable condition, as provided in W.S. 41-3-308 through 41-3-310.

(c) All costs incurred by the state engineer during an emergency
shall be payable by the owner or owners on receipt of the bill of
costs from the state engineer. Costs not paid within thirty (30)
days after presentation of the bill shall constitute a lien upon
the dam or diversion system or other properties of the owner or
owners and may be collected by appropriate action in any court of
competent jurisdiction. THE LIEN SHALL BE FILED AS PROVIDED BY
W.S. 41-3-310 (c).
41-3-315. Other reservoirs; enforcement reservoirs 20 feet or less in height or impounding less than 50 acre-feet.

FOR ANY RESERVOIR the state engineer may enforce any sections of this act in such manner and by such means as may be necessary to insure the safety of the public and protection of property.

41-3-316. Actions brought against state, state engineer or employees prohibited.

(a) No action shall be brought against the state or the state engineer or any of his agents or employees for the recovery of damages caused by the partial or total failure of any dam, reservoir or DIVERSION SYSTEM or damages caused by virtue of the operation of any dam, reservoir or DIVERSION SYSTEM upon the ground that such defendants are liable by virtue of any of the following:

(i) The approval of the dam, reservoir or DIVERSION SYSTEM or approval of flood handling plans during construction;

(ii) The issuance or enforcement of orders relative to maintenance or operation of any dam or reservoir;

(iii) Control and regulation of any dam, reservoir or DIVERSION SYSTEM;

(iv) Measures taken to protect against failure during an emergency; or

(v) Failure to take an action required by the provisions of this act. Source: Laws 1977, ch. 120, 1.

41-3-317. Liability of reservoir owners.

Nothing in this act shall be construed to relieve an owner or owners of any reservoir, dam or diversion system of any legal duties, obligations or liabilities incident to their ownership or operation of or any damages resulting from the leakage or overflow of water or for floods resulting from the failure or rupture of the fill or structure for such works. Source: Laws 1977, ch. 120, 1.

41-3-318. Penalties; cancellation of permit for failure to comply with sections 41-3-308 through 41-3-314.

Failure to comply with the provisions of W.S. 41-3-308 THROUGH 41-3-314 shall subject the permit to cancellation at any time. FAILURE TO COMPLY WITH ANY VALID ORDER ISSUED BY THE STATE ENGINEER PURSUANT TO W.S. 41-3-308 THROUGH 41-3-314, SHALL SUBJECT THE
PERMIT HOLDER TO A PENALTY NOT TO EXCEED FIVE HUNDRED DOLLARS ($500,000) PER DAY FOR EACH DAY THE VIOLATION CONTINUES. The state engineer is authorized to cancel any permit wherein the provisions of the above sections have not been, or are not being, complied with, and the cancellation shall operate as a forfeiture of all rights acquired under and by virtue of any permit theretofore approved by the state engineer. An appeal from any decision of the state engineer may be made to the board of control, and from the decision of the board of control appeal may be taken to the district court. Source: Laws 1903, ch. 69, 6; C.S. 1910, 748; C.S. 1920, 869; R.S. 1931, 122-1507; C.S. 1945, 71-607; W.S. 1957, 41-32; Laws 1977, ch. 120, 2.
CHAPTER 2

GLOSSARY

i. Definitions

This chapter provides basic terminology used in this guidebook. It is not a complete list but is meant to introduce some basic terminology. Other terminology may be obtained from dam safety books.

**Abutment** - That part of the valley side or concrete walls against which the dam is constructed. See Page 15. Right and left abutments are those on respective sides of an observer when viewed looking downstream.

**Alterations** - Such changes in the design of the dam as may directly affect the integrity of the dam and thereby affect the safety of persons, property or natural resources.

**Appurtenant Works** - The structures or machinery auxiliary to dams which are built to operate and maintain dams; such as outlet works, spillway, powerhouse, tunnels, etc.

**Berm** - A horizontal step or bench in the sloping profile of an embankment dam. See Pages 15 and 17.

**Breach** - A break, gap or opening (failure) in a dam which releases impoundment water. See Page 17.

**Core** - A zone of material of low permeability in an embankment dam. See Page 17.

**Dam** - A barrier built for impounding or diverting the flow of water.

**Dike (Levee)** - An embankment, usually applied to embankments or structures built to protect land from flooding. See Page 17.

**Drain, Layer or Blanket** - A layer of pervious material in a dam to facilitate drainage. Includes toe drain, seephole and chimney drain. See Page 15.

**Drawdown** - The resultant lowering of water surface level due to release of water from the impoundment.

**Embankment** - Fill material, usually earth or rock, placed with sloping sides. See also Embankment Dam and Page 17.

**Embankment Dam (Fill Dam)** - Any dam constructed of excavated natural materials or of industrial waste materials. See Page 17.
Homogeneous Earth Fill Dam  - An embankment constructed of similar earth material throughout, except for possible inclusion of drains. Used to differentiate from a zoned earth fill dam.

Zoned Embankment Dam  - An embankment dam is composed of zones of selected materials having different degrees of porosity, permeability and density.

Emergency Action Plan  - A predetermined plan of action to be taken to reduce the potential for property damage and loss of lives.

Engineer  - A licensed or registered engineer in a given state; offers experience and expertise in the design and inspection of dams.

Failure  - An incident resulting in the uncontrolled release of water from a dam.

Freeboard  - The vertical distance between a stated water level and the top of a dam. See Page 15.

Gate or Valve  - In general, a device in which a leaf or member is moved across the waterway to control or stop the flow.

Impoundment  - Water or wastewater held back by a dam.

Instrumentation  - Permanent devices which are installed in/near a dam to allow monitoring of the dam and impoundment. These devices may include a staff gage (to measure impoundment levels), piezometers, observation wells, settlement or alignment points, rain gage, etc. See Page 16.

Maintenance  - The upkeep necessary for efficient operation of dams and their appurtenant works. It involves labor and materials, but is not to be confused with alterations or repairs.

Operator  - The owner, or an agent or employee of the owner.

Outlet  - An opening through which water can freely discharge for a particular purpose from an impoundment. See Page 15.

Owner  - Any person who owns, leases, controls, operates, maintains or manages a dam or impoundment.

Phreatic Surface  - The upper surface of saturation in an embankment. See Page 15.

Piping  - The progressive development of internal erosion by seepage, appearing downstream as a hole or seam discharging water that contains soil particles.

Plunge Pool  - A natural or sometimes artificially created pool that dissipates the energy of free-falling water. The pool is
located a safe distance downstream of the structure from which water is being released. See Stilling Basin and Page 15.

Repair - To essentially restore a dam to its approved design condition.

Riprap - A layer of large stones, broken rock or precast blocks placed in a random fashion on the upstream slope of an embankment dam, on a reservoir shore, or on the sides of a channel as a protection against wave and ice action. See Page 15.

Silt/Sediment - Soil particles and debris in an impoundment.

Slump Area - A portion of earth embankment which moves downslope, sometimes suddenly, often with cracks developing. See Page 17.

Spillway System - A structure over or through which flows are discharged. If the flow is controlled by gates, it is considered a controlled spillway; if the elevation of the spillway crest is the only control, it is considered an uncontrolled spillway. See Pages 15 and 17.

Emergency Spillway - A secondary spillway designed to operate only during exceptionally large floods.

Principal spillway - The main spillway for normal and flood flows.

Stilling Basin - A basin constructed to dissipate the energy of fast-flowing water, eg. from a spillway or bottom outlet, and to protect the river bed from erosion. See Plunge Pool. See Page 15.

Stoplogs - Logs or timbers, steel or concrete beams placed on top of each other with their ends held in guides on each side of a channel or conduit.

Toe of Embankment - The junction of the face of the dam with the ground surface.

Trash Rack - A structure of metal or concrete bars located in the waterway at an intake to prevent the entry of floating or submerged debris.

Source: Dam Safety Guidebook
Prepared by: STS Consultants, Ltd.
3340 Ranger Road
Lansing, MT 48906

Through a grant from the
Federal Emergency Management Agency
embankment dam

profile along crest dam

section thru dam
homogeneous earth fill dam

zoned embankment dam

stoplogs

slump area

controlled drawdown

uncontrolled breach

berm

dike (levee)
ARTICLE 3 - RESERVOIRS

41-3-301. Application for reservoir construction permit; contents; procedure.

(a) Any person, corporation, association, or organization, of any nature whatsoever, hereafter intending to store or impound, for beneficial uses, any of the unappropriated waters of the state of Wyoming, shall, before commencing construction of any works for such purpose, or performing any work in connection with said proposed construction, make an application to the state engineer, for a permit to construct a reservoir. The application must set forth the name and post office address of the applicant; the source of the water supply; the nature of the proposed use; the location and description of the proposed work; the time within which it is proposed to begin construction, and the time required for the completion of construction. Maps and plans shall conform with the provisions of W.S. 41-4-510. In case of reservoirs where the storage is for stock purposes only and the capacity does not exceed twenty (20) acre-feet and the height of dam does not exceed twenty (20) feet, the state engineer may issue a permit without the filing of a map; however the state engineer may require certain information be submitted on special forms to be furnished or designated by him. Any violation of subsection (a) of this section shall be punishable pursuant to W.S. 41-3-616 with the exception that the owner of any unpermitted reservoir with a capacity of twenty (20) acre-feet or less and a dam height of twenty (20) feet or less shall have forty-five (45) days after receipt of the written notice of violation pursuant to W.S. 41-3-616(a), to submit an application for a permit. The application shall meet the requirements of the state engineer's office. Each day of the forty-five (45) days shall not be counted as a separate violation if the application for a reservoir permit is received during this forty-five (45) day period.

(b) For reservoir permits issued in conjunction with the national pollutant discharge elimination system (NPDES) for mining operations, the state engineer shall promptly review the application and advise the applicant in writing if it is complete, within thirty (30) days. If the application is complete, or is resubmitted to the satisfaction of the state engineer, it shall be approved or denied within forty-five (45) days of this determination:

(i) For the purpose of this subsection "complete" means that the application contains all the essential and necessary elements and is acceptable for further review for substance and compliance with the provisions of this chapter.

41-3-302. Application for construction permit; conditions; secondary permit; certificate of appropriation.
All applications under this article shall be subject to the provisions of W.S. 41-4-502 through 41-4-510, 41-4-517 and 41-3-615, which set forth the duties and authority of the state engineer and provide for the protection of the rights of applicants; provided that an enumeration of any lands proposed to be irrigated under this article shall not be required in the primary permit, provided, further, that any party or parties desiring to appropriate such stored water to particular lands may file with the state engineer an application for permit to be known herein as the secondary permit, in compliance with the provisions of W.S. 41-4-501 through 41-4-510 and 41-4-517. In the event secondary permit may be desired, said application shall refer to such reservoir for a supply of water and the state engineer shall not approve of said application and issue secondary permit until the applicant thereunder shall show to such state engineer by documentary evidence that he has entered into an agreement with the owners of the reservoir for a permanent and sufficient interest in said reservoir to impound enough water for the purposes set forth in said application. When beneficial use has been completed and perfected under the said secondary permit the division superintendent shall take the proof of the water user under such permit and the final certificate of appropriations shall refer to both the ditch described in the secondary permit and the reservoir described in the primary permit.

41-3-303. Use of stored water.

The use of water stored under the provisions of this chapter may be acquired under such terms as shall be agreed upon by and between the parties in interest. Lands entitled to the use of water in any reservoir may use the water stored therein, and to which they are entitled, at such times and in such amounts as the water users may elect, provided that a beneficial use of water is made at all times.

41-3-304. Use of bed of stream.

Whenever the owner, manager or lessee of a reservoir, constructed under the provisions of this act, shall desire the use of the bed of the stream, or other water course, for the purpose of carrying stored or impounded water from the reservoir to the consumer, or shall desire the use of any ditch to carry, convey or transmit any of the stored or impounded water for the benefit of any person having the right to have the reservoir water carried, conveyed or transmitted through the ditch under the laws of this state, he shall, in writing notify the water commissioner of the district in which the stored or impounded water is to be used, giving the date when it is proposed to discharge water from the reservoir, its volume in acre feet and the names of all persons and ditches entitled to its use, and other
matters as may be necessary to properly distribute the water. It shall then be the duty of the water commissioner to so adjust the headgates of all ditches of ditch companies or appropriators from the stream or water course, and the division boxes of individual consumers of water, not entitled to the use of the stored water, as will enable those having the right to secure the volume of water to which they are entitled. The commissioner shall not in any other manner interfere with the headgates or division boxes, except as otherwise provided by law. The water commissioner shall keep a true and just account of the time spent by him in the discharge of his duties as defined in this section, and it shall be the duty of the water commissioner or division superintendent to present a bill of one-half (1/2) the expense so incurred to the reservoir owner, manager or lessee, and if the owner, manager, or lessee shall neglect for three (3) days, after the presentation of the bills of costs, to pay the costs, the costs shall be made a charge upon the reservoir and shall be collected as delinquent taxes until the complete payment of the bill of costs has been made. Costs recovered under this section shall be paid into the general fund.

41-3-305. Direct flow storage.

The holder or owner of an adjudicated water right to the direct use of the natural unstored flow of any surface stream of the state may store such direct flow so long as no other Wyoming appropriator or user is injured or affected thereby. Prior to the commencement of the storage of water under a direct flow water right, the appropriator shall submit a request for such storage in writing to the state engineer and shall obtain the approval of the state board of control. The state board of control may permit storage at any time so long as there is no interference with existing water rights or uses. The state engineer is authorized and empowered to prescribe such rules and regulations as may be necessary or desirable to enable him to effectively administer the provisions of this section.

41-3-306. Instream stock use.

In the administration of water rights on any stream and in the consideration of any applications for permits, the state engineer may require that water be provided to meet reasonable demands for instream stock use.

41-3-307. Alterations or repairs of dams or diversion systems; definitions.

(a) As used in this act unless the context otherwise requires:
(i) "Alterations" or "repairs" means only such alterations or repairs as may directly affect the safety of the dam or diversion system, as determined by the state engineer or his designated representative;

(ii) "Appurtenant works" include, but are not limited to, such structures as spillways, either in the dam or separate therefrom, the reservoir and its rim, low level outlet works, and water conduits such as tunnels, pipelines or penstocks, either through the dam or its abutments;

(iii) "Dam" means any artificial barrier, including appurtenant works, used to impound or divert water and which is or will be greater than twenty (20) feet in height or with an impounding capacity of fifty (50) acre-feet or greater. "Dam" shall not include artificial barriers including appurtenant works:

(A) Six (6) feet in height or less, regardless of storage capacity; or

(B) Which impound less than fifteen (15) acre-feet, regardless of height.

(iv) "Days" used in establishing deadlines means calendar days, including Sundays and holidays;

(v) "Diversion system" means any channel diversion, headgate or diversion structure with a carrying capacity in excess of fifty (50) cubic feet of water per second of time;

(vi) "Emergency" means any threat to life or property caused by the condition of any dam, reservoir or diversion system, or by present or imminent floods which threaten the safety or structural integrity of any dam or diversion system;

(vii) "Emergency response agency" means any agency which the dam owner may be required to notify in case of an emergency, such as sheriff's office, highway patrol or local emergency coordinator;

(viii) "Enlargement" means any change in or addition to an existing dam or reservoir which raises or may raise the water storage elevation of the water impounded by the dam;

(ix) "Inspection" means visual or mechanical checks, measures, borings and any other methods necessary for determination of the adequacy of construction techniques, conformity of work with approved plans and specifications, and the safety and operating performance of a dam or diversion system and appurtenant works;
"Owner" includes any of the following who own, control, operate, maintain, manage or propose to construct a dam or reservoir:

(A) The state and its departments, institutions, agencies and political subdivisions;

(B) Every municipal or quasi-municipal corporation;

(C) Every public utility;

(D) Every district;

(E) Every person;

(F) The federal government and its departments, institutions, agencies and political subdivisions;

(G) The duly authorized agents, lessees or trustees of any of the foregoing; and

(H) Receivers or trustees appointed by any court for any of the foregoing.

"Person" means any person, firm, association, organization, partnership, business trust, corporation or company;

"Reservoir" means any basin which contains or will contain impounded water;

"This act" means W.S. 41-3-307 through 41-3-317.

41-3-308. Alterations or repairs of dams or diversion systems; plans and specifications; duties of state engineer.

(a) Plans and specifications of any proposed construction, enlargement, major repair, alteration or removal of a dam or diversion system shall be prepared by or under the direction of a registered professional engineer licensed to practice in the state of Wyoming and experienced in dam design and construction, and shall be submitted to the state engineer for approval. It is unlawful to commence construction, enlargement, major repair, alteration or removal until the plans and specifications have been approved by the state engineer. At the request of the state engineer, the professional engineer responsible for the plans and specifications shall carry out any revisions of the plans and specifications or provide such additional information as is necessary to justify or clarify the design.
(b) A copy of all plans and specifications submitted under this section shall be kept on file in the state engineer's office.

(c) In the event that a proposed dam or diversion system is related to a facility which requires an industrial siting permit pursuant to W.S. 35-12-106:

(i) The plans and specifications of the proposed dam or diversion system shall be submitted to the state engineer at the same time that the application for an industrial siting permit is submitted to the industrial siting administration [industrial siting council] pursuant to W.S. 35-12-108;

(ii) The state engineer shall approve or reject the plans and specifications of the proposed dam or diversion system prior to the public hearing conducted pursuant to W.S. 35-12-110(f)(i);

(iii) The approval or rejection of the plans and specifications of the proposed dam or diversion system shall be binding on the industrial siting council for the purposes of issuing an industrial siting permit.

(d) The state engineer shall provide for the regulation and supervision of all dams, diversion systems and reservoirs by the state to the extent required to protect the public safety and property. The state engineer is authorized and directed to promulgate regulations and standards for the design, construction, enlargement, alteration, abandonment, maintenance, monitoring, operation, repair and removal of dams, reservoirs, and diversion systems as are necessary and proper to carry out the purposes of this act. The state engineer may waive any or all of the requirements of this act in instances where the dam or diversion system is located in a remote area where there is no threat to the public safety or property.

41-3-309. Alterations or repairs of dams or diversion systems; inspections performed and reports submitted to state engineer by professional engineer.

(a) A registered professional engineer licensed to practice in the state of Wyoming shall be in charge of and responsible for the construction, enlargement, major repair, alteration or removal of any dam or diversion system.

(b) The engineer in charge shall provide for inspections at such intervals as deemed necessary to insure conformity with the approved plans and specifications, either by himself or by a person qualified to perform the inspections and for whose work the engineer stands personally responsible.
(c) All information obtained from, during or as the result of such inspection shall be made part of a report, certified to by the engineer in charge, which shall be submitted to the state engineer at such time or times as may be set by the state engineer.

(d) All reports submitted under this section shall be filed in the state engineer's office.

41-3-310. Alterations or repairs of dams or diversion systems; inspections by state engineer or assistant engineer; cost.

(a) If the state engineer believes that inspections carried out under W.S. 41-3-309 are inadequate or that additional inspections are necessary, the state engineer may inspect personally or appoint an assistant engineer to inspect the construction, enlargement, repair, alteration or removal of any dam or diversion system. If after any inspection the state engineer or his representative finds that amendments, modifications or changes are necessary in order to insure the security and integrity of the work and structure, the protection of property or the public safety, the state engineer may order the owner or owners of the dam or diversion system to revise the plans and specifications, or order work stopped. It is unlawful to proceed with or continue the work until any revisions have been approved by the state engineer.

(b) Any inspections required by this section shall be made at state expense, provided the assistant engineer performing such inspections is an employee of the state of Wyoming.

(c) If the assistant engineer is not a regular employee of the state of Wyoming, inspections shall be made at the expense of the owner. The owner shall be furnished with an estimate of the cost prior to performance of any inspections, but the state engineer is not precluded from collecting any or all additional costs which result from performance of the inspections. Costs to be paid by the owner shall include, but are not limited to, all work or tests as are necessary to fully provide any information and data required by the state engineer or his appointed representative. If the owner refuses or neglects to turn over the funds within thirty (30) days, after the presentation of the bill of costs, the costs shall constitute a lien upon the works or other properties of the owner or owners and may be collected by appropriate action in any court of competent jurisdiction. In order to have a valid, enforceable lien under this section, a lien statement sworn to before a notarial officer shall be filed by the claimant with the county clerk of the county in which the property is located. The county clerk shall file the statement and index by date, name of claimant and property owner, and by legal description. The lien statement shall contain the following:
(i) The name and address of the governing body seeking to enforce the lien;

(ii) The name and address of the person against whose property the lien is filed; and

(iii) The legal description of the property to which the lien attaches.

(d) All funds paid by the owner to the state engineer shall be deposited in the state engineer's holding account from which account the costs incurred as a result of any inspections or other work deemed necessary under this section shall be paid. Any funds not so expended shall be returned to the person or persons advancing the funds.

41-3-311. Alterations or repairs of dams or diversion systems; periodic inspections.

(a) Any dam subject to the terms of this act shall be inspected at least once every ten (10) years or as often as deemed necessary based on the hazards of the dam to insure the continued protection of public safety and property.

(b) Inspections referred to in subsection (a) of this section shall be performed by the state engineer or his appointed representative who shall have right of entry upon private or government lands and is authorized to inspect the owner's technical data and other documentation as may be necessary to perform these inspections. All information obtained as a result of the inspections shall be filed in the state engineer's office.

(c) Inspections required under this section shall be made at state expense except as provided in W.S. 41-3-312 when a dam, reservoir or diversion system is found to be unsafe by the state engineer.

(d) If inspections performed under this section disclose defects in the works which in the judgment of the state engineer or his authorized agent constitute a threat to life or property, the state engineer may, without incurring any liability, order the draining of any reservoir involved, or the limitation or cessation of its use or the use of any defective works until such time as the owner of the reservoir or other works returns the works to a safe condition as approved by the state engineer.

41-3-312. Alterations or repairs of dams or diversion systems;
(a) The state engineer may, or upon written request from any person or persons residing on or owning land near any dam, reservoir or diversion system shall, order an inspection of those works at any time other than the time set for regular inspections as provided for in W.S. 41-3-311(a). Before ordering an inspection, the state engineer may require any person or persons requesting the inspection to deposit a sum of money sufficient to pay the expenses of the inspection into the state engineer's holding account. If after the inspection the dam, reservoir or diversion system is determined to be in a safe and usable condition, the state engineer may cause the whole or part of the expenses of the inspection to be paid out of the state engineer's holding account. Any excess funds shall be returned to the person or persons advancing the funds.

(b) If the dam, reservoir or diversion system is found to be defective, any funds deposited by the person or persons requesting the inspection shall be returned and the state engineer may require the person or persons owning the dam, reservoir or diversion system in question to pay the whole or any part of the expenses of inspection. If the state engineer requires a payment, he shall present a bill of costs to the owner or owners, and if the owner or owners refuse or neglect to pay the costs within thirty (30) days after the presentation of the bill of costs, the costs shall constitute a lien upon the works or other properties of the owner or owners and may be collected by appropriate action in any court of competent jurisdiction. If the inspection discloses defects in the works which in the judgment of the state engineer or his authorized agent constitute a threat to life or property, the state engineer may, without incurring any liability, order the draining of any reservoir involved, or the limitation or cessation of its use or the use of any defective works until such time as the owner of the reservoir or other works returns the works to a safe condition as approved by the state engineer. The lien shall be filed as provided by W.S. 41-3-310(c).

41-3-313. Alterations or repairs of dams or diversion systems; outlets; maintenance; draining by breaching.

(a) All dams and reservoirs hereafter constructed, with or without a controlled inlet, shall contain an outlet controlled by a headgate or other control works. The headgate or control works shall be maintained in an operable condition at all times and in a manner that water impounded by or within a dam or reservoir may be evacuated or maintained at any water level which may be required by the state engineer.
(b) All dams constructed prior to the effective date of this act which have no outlet or means for lowering the reservoir water level in an expeditious manner, may be drained by breaching at the owner's expense when the public safety so requires.

(c) The state engineer and anyone working under his direction and control shall not be held liable for any damages or loss of water resulting from the draining or imposed restrictions as to the use of a reservoir, dam or diversion system.

(d) If within thirty (30) days after presentation of an itemized statement the owner fails to reimburse the state engineer for expenses incurred under this section, any unpaid balance of such expense shall automatically constitute a lien upon lands or other properties of the owner.

41-3-314. Alterations or repairs of dams or diversion systems; emergency repairs or breaching.

(a) In case of an emergency where the state engineer or his authorized representative declares that repairs or breaching of a dam or diversion system are immediately necessary to safeguard life and property, the necessary repairs or breaching shall be started immediately by the owner or by the state engineer or his representative at the owner's expense, if the owner fails to do so. The state engineer and emergency response agencies shall be notified at once of any changes in the physical conditions of the dam, diversion system, or reservoir which significantly increase the probability of failure of the dam or diversion works or the danger to life or property, proposed emergency repairs or breaching to be instituted by the owner. These reporting requirements shall apply only to cases in which an emergency has been declared pursuant to this subsection.

(b) If emergency repairs have been made and the emergency situation has passed, the owner shall commence all repairs necessary to return the dam or diversion system to a safe and usable condition, as provided in W.S. 41-3-308 through 41-3-310.

(c) All costs incurred by the state engineer during an emergency shall be payable by the owner or owners on receipt of the bill of costs from the state engineer. Costs not paid within thirty (30) days after presentation of the bill shall constitute a lien upon the dam or diversion system or other properties of the owner or owners and may be collected by appropriate action in any court of competent jurisdiction. The lien shall be filed as provided by W.S. 41-3-310 (c).
41-3-315. Alterations or repairs of dams or diversion systems; enforcement of provisions.

For any reservoir the state engineer may enforce any sections of this act in such manner and by such means as may be necessary to insure the safety of the public and protection of property.

41-3-316. Alterations or repairs of dams or diversion systems; actions brought against state, state engineer or employees prohibited.

(a) No action shall be brought against the state or the state engineer or any of his agents or employees for the recovery of damages caused by the partial or total failure of any dam, reservoir or diversion system or damages caused by virtue of the operation of any dam, reservoir or diversion system upon the ground that such defendants are liable by virtue of any of the following:

   (i) The approval of the dam, reservoir or diversion system or approval of flood handling plans during construction;

   (ii) The issuance or enforcement of orders relative to maintenance or operation of any dam or reservoir;

   (iii) Control and regulation of any dam, reservoir or diversion system;

   (iv) Measures taken to protect against failure during an emergency; or

   (v) Failure to take an action required by the provisions of this act.

41-3-317. Alterations or repairs of dams or diversion systems; liability of owners.

Nothing in this act shall be construed to relieve an owner or owners of any reservoir, dam or diversion system of any legal duties, obligations or liabilities incident to their ownership or operation of or any damages resulting from the leakage or overflow of water or for floods resulting from the failure or rupture of the fill or structure for such works.

41-3-318. Penalties, cancellation of permit, for failure to comply with W.S. 41-3-308 through 41-3-314.
Failure to comply with the provisions of W.S. 41-3-308 through 41-3-314 shall subject the permit to cancellation at any time pursuant to W.S. 41-3-616(c). Failure to comply with any valid order issued by the state engineer pursuant to W.S. 41-3-308 through 41-3-314, shall subject the permit holder to penalty pursuant to W.S. 41-3-616(b).

41-3-319. Owners of ditches and reservoirs; general rights.

Each owner of a share or shares of the capital stock in an incorporated ditch company existing for the purpose of distributing water through such company's ditch to the owners of such stock, shall have the right to carry, convey and transmit reservoir water, supplementing other water rights he may possess, through the ditch of such ditch company in which he may have such stock, to the full extent of the carrying capacity represented by such stock, but no greater. Each partner in a partnership ditch owned or used for a like purpose, shall have the right to carry, convey and transmit reservoir water, supplementing other water rights he may possess, through such partnership ditch, to the full extent of the carrying capacity represented by his interest, as a partner, in such ditch, but no greater. Every such person carrying, conveying and transmitting water through such ditch, or having the same done for his benefit, shall pay all expenses incurred by reason of all extra labor in cleaning such ditch, change of division boxes, and other additional expenses made necessary by reason of carrying such reservoir water through any such ditch. The right herein granted to any person, shall also extend to the owner, manager or lessee of a reservoir, who desires to use any such ditch to carry, convey or transmit water through such ditch for the benefit of any such person to whom the right herein mentioned has been granted as aforesaid.

41-3-320. Owners of ditches and reservoirs; sale or lease of impounded water.

Except as otherwise provided by deed or other written instruments of the owner or owners of the right to impound water in any reservoir, such reservoir owner or owners shall, after the completion of the works in connection with such reservoir, be held to be the owner of the right to impound the water, and the right to sell or lease a portion or all his right to the impounded waters; provided, that the sale of any portion of the capacity of any reservoir shall carry with it an interest in the reservoir and works appurtenant thereto of such proportion as the portion sold bears to the total capacity of the reservoir; and provided, further, that the water stored in any reservoir cannot be used outside the boundaries of the state of Wyoming without special permit from the state engineer; and provided, further, that the state engineer may deny any use of water from any reservoir that would be detrimental to the public interest.
41-3-321. Owners of ditches and reservoirs; priority of right to store or impound.

The priority of right to store or impound water under this act shall date from the filing of the application in the state engineer's office.

41-3-322. Owner's report of persons entitled to use water; superintendent's report of use of water.

The owner of each reservoir shall annually, in writing, before or during the irrigating season and before the releasing of the water from the reservoir, deliver to the water commissioner having jurisdiction over such reservoir a list or lists of parties entitled to use water from such reservoir during the irrigating season of such year, and also a list as near as may be of the lands proposed to be irrigated, and shall immediately notify such water commissioner of any changes in such list or lists. The superintendent of the water division in which such reservoir is situated shall annually on or before the first day of December in each year make a written report to the state engineer of the state, enumerating in detail the person or persons who during the irrigating season immediately preceding use any part of such reservoir water, and shall also enumerate therein the lands upon or uses for which said water was applied during such irrigating season so that the state engineer may be kept at all times advised as to whether or not such water has been applied to beneficial uses.

41-3-323. Deeds for water rights; attaching of rights to land; sale, lease, transfer or use.

The reservoir water and rights acquired under reservoir permits and adjudications shall not attach to any particular lands except by deed, or other sufficient instrument conveying such water or water rights, executed by the owner or owners of such reservoir, and such water and water rights, except when attached to particular lands as aforesaid, may be sold, leased, transferred and used in such manner and upon such lands as the owner of such rights or partial rights may desire, provided, that such water must be used for beneficial purposes.

41-3-324. Deeds and leases for water rights; execution and recording.

All deeds for reservoir water and water rights and all leases of the same for periods of three (3) years or more shall be executed and acknowledged as deeds are executed, and shall be recorded in the
office of the county clerk of the county in which the reservoir is situated and also filed in the office of the state engineer. All leases of such water and water rights for a period less than three (3) years shall be in writing and filed in the office of the state engineer.

41-3-325. Excess stored water to be furnished applicants; preferences; rates.

The owner or owners of a reservoir impounding a greater quantity of water than the owner or owners thereof necessarily use for irrigation and other beneficial purposes in connection with their own lands shall, when application is made to them for that purpose, furnish such surplus water at reasonable rates to the owners of lands lying under and capable of being irrigated from such reservoir for the purpose of irrigating and rendering the same productive, and maintaining their productiveness, and in case of refusal so to do, the owner or owners of such reservoir may be compelled by proper proceedings to furnish such water on such reasonable terms as to the court may seem meet and proper. The water user who may have used any water from such reservoir for any particular year shall have the preference as to the use of the same water for the next ensuing year. The state engineer, the water commissioner of the particular district and the water superintendent having jurisdiction over the region of any reservoir, shall together constitute a board of special commissioners, and shall have power, when application is made to them by either party interested, to establish reasonable maximum rates to be charged for the use of water from any reservoir, whether furnished by individuals or a corporation. The establishment of such rate shall be made only after notice given and public hearing had, at which hearing the applicants may produce witnesses and evidence, and such witnesses must be sworn and may be cross-examined. No commissioner shall sit upon such board and determine such rate who is employed by one (1) of the applicants or if the relationship of debtor or creditor exists between him and one (1) of the applicants. Nothing contained in this section shall be construed to deny the right to store water for use for more than one (1) year.

41-3-326. Applicability of ownership provisions.

The provisions of this act shall apply to reservoirs heretofore lawfully constructed as well as to all reservoirs hereafter lawfully constructed.

41-3-327. Carey Act lands.

This act shall not apply to Carey Act lands or reservoirs for their
irrigation, nor to any water right or rights to the use of waters of natural streams of this state, initiated from such streams and used through any such reservoir. All acts and parts of acts in conflict herewith, excepting such as relate to Carey Act lands, are hereby repealed.

41-3-328. Witnesses' fees and mileage.

Every witness who shall attend before the court, or the judge thereof in vacation, or before the person appointed to take testimony in causes relating to water rights, under subpoena, by request of any party, shall be entitled to the same fees and mileage as witnesses in civil cases in the district court, and shall be paid by the party requiring the testimony.

41-3-329. Change in point of diversion.

(a) The storage of water by means of a reservoir is a diversion, and the point of diversion is the point defined in the permit where the longitudinal axis of the dam crosses the center of the streambed.

(b) A change in point of diversion of a reservoir may be granted pursuant to W.S. 41-3-114 by the state engineer if the water right is unadjudicated, or by the state board of control if the water right has been adjudicated. No petition shall be granted if the rights of other appropriators shall be injuriously affected thereby or if the change is not within the original project concept. In deciding whether to grant or deny a proposed change in point of diversion of a reservoir within the original project concept, the state engineer or the board of control shall consider:

(i) The distance between the old point of diversion and the new point of diversion;

(ii) The water administration problems which may be created by granting the change in the point of diversion;

(iii) The effect of the petition upon Wyoming's entitlement to water under compacts, court decrees and treaties;

(iv) The rights of other appropriators; and

(v) The safety aspects of the new point of diversion.
Appendix F. Association of State Dam Safety Officials (ASDSO) Summaries

F.1 Size Classification Schemes  
F.2 Hazard Classification Schemes
F.1. Size Classification Schemes
<table>
<thead>
<tr>
<th>State</th>
<th>Very Large</th>
<th>Large</th>
<th>Intermediate</th>
<th>Small</th>
<th>Minor</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL</td>
<td></td>
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<td></td>
<td></td>
<td>&quot;Not defined; Alabama currently has no dam safety legislation or formal dam safety program. Source: Dam Safety Model Program Jurisdictional definition: Section 6. (a) The following low hazard potential dams are not required to be included in the inventory of dams maintained pursuant to this act: (1) Any dam which is less than six feet in height, regardless of its storage capacity. (2) Any dam which has an impounding storage capacity at maximum water storage elevation of less than 15 acre-feet, regardless of its height.</td>
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<tr>
<td>AK</td>
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<td>Source: Dam Safety Model Program To determine if a dam is under state jurisdiction, AS 46.17.900(3) defines a dam as an &quot;artificial barrier and its appurtenant works, which may impound or divert water&quot; and which meets at least one of the following three descriptions &quot;(A) Has or will have an impounding capacity at maximum water storage elevation of 50 ac-ft and is at least 10 ft in height measured from the lowest point at either the upstream or downstream toe of the dam to the crest of the dam.&quot; A dam with a jurisdictional height (H) of 10 feet or taller and that stores 50 acre-feet or more of water meets this description, as illustrated in figure 2-1. &quot;(B) is at least 20 feet in height measured from the lowest point at either the upstream or downstream toe of the dam to the crest of the dam.&quot; A dam that is 20 ft or more in height meets this description regardless of its storage capacity, as illustrated in figure 2-2. &quot;(C) Poses a threat to lives and property as determined by the department after an inspection.&quot; In other words, a barrier with a Class I (high) or Class II (significant) hazard potential classification is considered a dam, even if it does not meet the geometric criteria of A or B, above. See section 2.4 for guidance in determining the hazard potential classification.</td>
</tr>
<tr>
<td>AZ</td>
<td>N/A</td>
<td>&quot;Large Dam&quot;- Maximum storage greater than or equal to 50,000 ac-ft; height greater than or equal to 100 ft.</td>
<td>&quot;Intermediate Dam&quot;- Maximum storage between 1,001 and 50,000 ac-ft; height between 41 and 100 ft.</td>
<td>&quot;Small dam&quot;- Maximum storage between 50 and 1,000 ac-ft; height between 25 and 40 ft.</td>
<td>N/A</td>
<td>Source: <a href="http://www.azwater.gov/AzDWR/SurfaceWater/DamSafety/HazardandSizeClassifications.htm">http://www.azwater.gov/AzDWR/SurfaceWater/DamSafety/HazardandSizeClassifications.htm</a> Owner or engineer determines size by storage capacity or height, whichever results in the larger size.</td>
</tr>
<tr>
<td>AR</td>
<td>N/A</td>
<td>&quot;Large Dam&quot;- Maximum storage greater than or equal to 50,000 ac-ft; height greater than or equal to 100 ft.</td>
<td>&quot;Intermediate Dam&quot;- Maximum storage between 1,001 and 50,000 ac-ft; height between 41 and 100 ft.</td>
<td>&quot;Small dam&quot;- Maximum storage between 50 and 1,000 ac-ft; height between 25 and 40 ft.</td>
<td>N/A</td>
<td>Source: <a href="http://www.anrc.arkansas.gov/TITLEVII.pdf">http://www.anrc.arkansas.gov/TITLEVII.pdf</a> Section 705.3</td>
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<tr>
<td>STATE</td>
<td>DAM SIZE CLASSIFICATION</td>
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<tr>
<td>CA</td>
<td>N/A</td>
<td>Dam Safety Model Program</td>
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<td>CO</td>
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<td><a href="http://water.state.co.us/pubs/rule_reg/ds_rules07.pdf">http://water.state.co.us/pubs/rule_reg/ds_rules07.pdf</a></td>
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<tr>
<td>GA</td>
<td>N/A</td>
<td><a href="http://rules.sos.state.ga.us/docs/391/3/8/02.pdf">http://rules.sos.state.ga.us/docs/391/3/8/02.pdf</a></td>
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<tr>
<td>State</td>
<td>N/A</td>
<td>Hawaii (HI)</td>
<td>N/A</td>
<td>Medium Dam: Storage capacity exceeding 1,000 acre-feet but not exceeding 50,000 acre-feet; height exceeding 35 feet but not exceeding 100 feet.</td>
<td>N/A</td>
<td>Source: <a href="http://state.hi.us/dlnr/eng/ds/guides/HI%20Inspection%20Guidelines.pdf">http://state.hi.us/dlnr/eng/ds/guides/HI%20Inspection%20Guidelines.pdf</a> Chapter 2, Guidelines for Safety Inspection of Dams</td>
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<tr>
<td>State</td>
<td>N/A</td>
<td>Idaho (ID)</td>
<td>N/A</td>
<td>Medium Dam: Storage capacity of 4000 ac-ft. or more OR a height of 40 ft. or more.</td>
<td>N/A</td>
<td>Source: <a href="http://www.adm.idaho.gov/adminrules/rules/idapa37/0306.pdf">http://www.adm.idaho.gov/adminrules/rules/idapa37/0306.pdf</a> 37.03.06- Safety of Dam Rules</td>
</tr>
<tr>
<td></td>
<td>N/A</td>
<td>Illinois (IL)</td>
<td>N/A</td>
<td>Medium Dam: Storage capacity less than 1000 ac-ft; height less than 40 ft.</td>
<td>N/A</td>
<td>Source: Dam Safety Model Program</td>
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<tr>
<td></td>
<td>N/A</td>
<td>Indiana (IN)</td>
<td>N/A</td>
<td>Not listed Jurisdictional definition: IDNR currently regulates all dams that meet any one of the following criteria: (1) the drainage area above the dam is greater than 1 square mile (2) the dam embankment is greater than 20 feet high (3) the dam impounds more than 100 acre-feet</td>
<td>N/A</td>
<td>Source: Dam Safety Model Program</td>
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<tr>
<td></td>
<td>N/A</td>
<td>Iowa (IA)</td>
<td>N/A</td>
<td>“Major dam structure” means “Low head dam” means any dam</td>
<td>N/A</td>
<td>Source: Dam Safety Model Program</td>
</tr>
</tbody>
</table>
a dam meeting any of the following criteria:
1. Any high hazard dam.
2. Any moderate hazard dam with a permanent storage exceeding 100 acre-feet or a total of permanent and temporary storage exceeding 250 acre-feet at the top of the dam elevation.
3. Any dam, including low hazard dams, where the height of the emergency spillway crest measured above the elevation of the channel bottom at the centerline of the dam (in feet) multiplied by the total storage volume (in acre-feet) to the emergency spillway crest elevation exceeds 30,000. For dams without emergency spillways, these measurements shall be taken to essentially contained within the channel of a river or stream and which is overtopped by normal stream flows.
<table>
<thead>
<tr>
<th>STATE</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>KS</td>
<td>N/A</td>
</tr>
<tr>
<td>KS</td>
<td>&quot;Class Size 4&quot; - A size factor of more than 30,000.</td>
</tr>
<tr>
<td>KS</td>
<td>&quot;Class Size 3&quot; - A size factor of 3,000 to 30,000</td>
</tr>
<tr>
<td>KS</td>
<td>&quot;Class Size 2&quot; - A size factor of less than 3,000.</td>
</tr>
<tr>
<td>KS</td>
<td>&quot;Class Size 1&quot; - Height of less than 25 feet and an effective storage of less than 50 acre-feet.</td>
</tr>
<tr>
<td>KS</td>
<td>Source: Dam Safety Model Program</td>
</tr>
<tr>
<td>KY</td>
<td>Not defined</td>
</tr>
<tr>
<td>KY</td>
<td>Source: Dam Safety Model Program</td>
</tr>
<tr>
<td>KY</td>
<td>Jurisdictional definition: Kentucky statutes (KRS 150.100) defines a dam as any artificial barrier (including appurtenant works) which does, or can, impound or divert water and is, or will be 1) 25 feet or more high from the natural bed of the stream or watercourse at the downstream toe of the barrier, as determined by the Department for Environmental Protection, or 2) has, or will have an impounding capacity of fifty acre-feet or more at the maximum water storage elevation.</td>
</tr>
<tr>
<td>LA</td>
<td>Correlated with hazard classification</td>
</tr>
<tr>
<td>LA</td>
<td>Source: Dam Safety Model Program</td>
</tr>
<tr>
<td>LA</td>
<td>Jurisdictional definition: For the purposes of this Chapter, a dam is any artificial barrier, including appurtenant works, which does or will impound or divert water or any other liquid substance and which (1) is or will be twenty-five feet or more in height from the bed of the watercourse measured at the downstream toe of the barrier or from the lowest elevation of the outside limit of the barrier, if it is not across a stream channel or watercourse, to the maximum water storage elevation or (2) has or will have an impounding capacity at maximum water storage elevation of fifty acre-feet or more. This definition does not include any dam or barrier that is not or will not be in excess of six feet in height, regardless of storage capacity or which has or will have a storage capacity of maximum water storage elevation not in excess of fifteen acre-feet, regardless of height.</td>
</tr>
<tr>
<td>ME</td>
<td>Not listed</td>
</tr>
<tr>
<td>ME</td>
<td>Source: Dam Safety Model Program</td>
</tr>
<tr>
<td>ME</td>
<td>Jurisdictional definition: &quot;Dam&quot; means any artificial barrier, including appurtenant works, the site on which it is located and appurtenant rights of flowage and access, that impounds or diverts water, and that: A. Is 25 feet or more in height from the natural bed of the watercourse measured at the downstream toe of the barrier or from the lowest elevation of the outside limit of the barrier to the maximum water storage elevation and impounds at least 15 acre-feet of water; or [2001, c. 460, §3 (NEW).] B. Is 6 feet or more in height from the natural bed of the watercourse measured at the downstream toe of the barrier or from the lowest elevation of the outside limit of the barrier to the maximum water storage elevation and has an impounding capacity at maximum water storage elevation of 50 acre-feet or more. [2001, c. 460, §3 (NEW).]</td>
</tr>
<tr>
<td>MD</td>
<td>N/A</td>
</tr>
<tr>
<td>MD</td>
<td>&quot;Category I&quot; is a</td>
</tr>
<tr>
<td>MD</td>
<td>&quot;Category II&quot; is a</td>
</tr>
<tr>
<td>MD</td>
<td>&quot;Category III&quot; is</td>
</tr>
<tr>
<td>MD</td>
<td>N/A</td>
</tr>
<tr>
<td>MD</td>
<td>Source: Dam Safety Model Program</td>
</tr>
<tr>
<td>STATE</td>
<td>DAM SIZE CLASSIFICATION SCHEMES</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td><strong>MA</strong></td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>&quot;Large Dam&quot;- Storage of at least 1000 ac-ft or greater; height greater than or equal to 40 ft.</td>
</tr>
<tr>
<td></td>
<td>&quot;Intermediate Dam&quot;- Storage of at least 50 ac-ft, but not exceeding 1000 ac-ft; height of at least 15 ft but not greater than 40 ft.</td>
</tr>
<tr>
<td></td>
<td>&quot;Small Dam&quot;- Storage of at least 15 ac-ft but not exceeding 50 ac-ft; height of at least 6 ft but not greater than 15 ft.</td>
</tr>
<tr>
<td></td>
<td>&quot;Non-jurisdictional Dam&quot;- Storage not in excess of 15 ac-ft regardless of height; height not in excess of 6 ft, regardless of storage capacity.</td>
</tr>
<tr>
<td>For dams not in excess of 25 feet in height or having maximum impounding capacity not in excess of 50 acre-feet, the Commissioner shall make jurisdictional determination by taking into consideration factors or combination of factors such as height, type of structure, volume of the impoundment, extent of downstream development, and other factors deemed appropriate by the Commissioner.</td>
<td></td>
</tr>
</tbody>
</table>

| **MI** | Not defined |
| Source: Dam Safety Model Program |
| Jurisdictional definition: Dams are regulated by Part 315 when they are over 6 feet in height and over 5 acres are impounded during the design flood. Dams are regulated by Part 307 when a circuit court issues an order establishing the level at which the lake is to be maintained. |

| **MN** | Source: Dam Safety Model Program |
|
Jurisdictional definition: State dam safety regulations apply only to structures that pose a potential threat to public safety or property. The potential for damage downstream if a dam fails increases as the height of the dam and the volume of impounded water increases. State dam safety rules do not apply to dams that are so low or retain so little water as to not pose a threat to public safety or property.

Dams 6 feet high or less, regardless of the quantity of water they impound, and dams that impound 15 acre-feet of water or less, regardless of their height, are exempt from state dam safety rules. Dams that are less than 25 feet high and impound less than 50 acre-feet are also exempt from state dam safety rules unless there is a potential for loss of life due to failure or misoperation. Figure 1 shows these criteria in a graphical form.

<table>
<thead>
<tr>
<th><strong>State</strong></th>
<th><strong>Large dams</strong></th>
<th><strong>Medium dams</strong></th>
<th><strong>Small dams</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MS</strong></td>
<td>Large dams are greater than 50 feet in height. and Large lakes are greater than 1,000 acre-feet maximum storage.</td>
<td>Medium dams are greater than 25 feet and less than 50 feet in height. Medium lakes are greater than 150 acre-feet maximum storage and less than 1,000 acre-feet maximum storage.</td>
<td>Small dams are those less than 25 feet in height. Small lakes are less than 150 acre-feet maximum storage.</td>
</tr>
</tbody>
</table>

Figure 1. DAMS SUBJECT TO DNR DAM SAFETY REGULATIONS. 
Federa.cly-owned dams and non-hazard dams are exempt.

About 900 dams in Minnesota are subject to dam safety regulations.

Source: MS DEQ, Sept. 2010
Size classification found in design guidelines. Requirements depend on hazard classification (Low, Significant or High), the dam height (Small dams are those less than 25 feet in height. Medium dams are greater than 25 feet and less than 50 feet in height and Large dams are greater than 50 feet in height), and the storage volume (Small lakes are less than 150 acre-feet maximum storage, Medium lakes are greater than 150 acre-feet maximum storage and less than 1,000 acre-feet maximum storage and Large lakes are greater than 1,000 acre-feet maximum storage). Size and hazard classifications shown dictate requirements for plans and engineering reports.

Jurisdictional definition: **Dam**—Any artificial barrier, including appurtenant works, constructed to impound or divert water, waste-water, liquid borne materials, or solids that may flow if saturated. All structures necessary to maintain the water level in an impoundment or to divert a stream from its course will be considered one dam.
<table>
<thead>
<tr>
<th>State</th>
<th>Jurisdictional Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>MO</td>
<td>Dam Safety Model Program</td>
</tr>
<tr>
<td></td>
<td>Jurisdictional definition: &quot;Dam&quot;, any artificial or manmade barrier which does or may impound water, and which impoundment has or may have a surface area of fifteen or more acres of water at the water storage elevation, or which is thirty-five feet or more in height from the natural bed of the stream or watercourse measured at the downstream toe of the barrier or dam, if it is not across a streambed or watercourse, together with appurtenant works. Sections 236.400 to 236.500 shall not apply to any dam which is not or will not be in excess of thirty-five feet in height or to any dam or reservoir licensed and operated under the Federal Power Act.</td>
</tr>
<tr>
<td>MT</td>
<td>Not defined</td>
</tr>
<tr>
<td></td>
<td>Source: Dam Safety Model Program</td>
</tr>
<tr>
<td></td>
<td>Jurisdictional definition: &quot;Dam&quot; means any artificial barrier, including appurtenant works, used to impound or divert water with an impounding capacity of 50 acre-feet or greater measured to the crest of the dam embankment.</td>
</tr>
<tr>
<td>NE</td>
<td>Not listed</td>
</tr>
<tr>
<td></td>
<td>Source: <a href="http://www.dnr.state.ne.us/floodplain/DamSafety/Title_458_1008.pdf">http://www.dnr.state.ne.us/floodplain/DamSafety/Title_458_1008.pdf</a></td>
</tr>
<tr>
<td></td>
<td>001.09 Dam means any artificial barrier, including appurtenant works, with the ability to impound water, wastewater, or liquid-borne materials and which (a) is twenty-five feet or more in height from the natural bed of the stream or watercourse measured at the downstream toe of the barrier, or from the lowest elevation of the outside limit of the barrier if it is not across a stream channel or watercourse, to the maximum storage elevation or (b) has an impounding capacity at maximum storage elevation of fifty acre feet or more, except that any barrier described in this subsection which is not in excess of six feet in height or which has an impounding capacity at maximum storage elevation of not greater than fifteen acre-feet shall be exempt, unless such barrier, due to its location or other physical characteristics, is classified as a high hazard potential dam. Dam does not include: (1) an obstruction in a canal used to raise or lower water; (2) a fill or structure for highway or railroad use, but if such structure serves, either primarily or secondarily, additional purposes commonly associated with dams it shall be subject to review by the department; (3) canals, including the diversion structure, and levees; or (4) water storage or evaporation ponds regulated by the United States Nuclear Regulatory Commission.</td>
</tr>
</tbody>
</table>

### Required Spillway Design Flood Precipitation Values

<table>
<thead>
<tr>
<th>Dam Type</th>
<th>Stage of Construction</th>
<th>Special Descriptions</th>
<th>Environmental Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convention or Industrial</td>
<td>Completed</td>
<td>Dams built prior to August 13, 1981</td>
<td>75PMP</td>
</tr>
<tr>
<td></td>
<td>New dams built after August 13, 1981</td>
<td>75PMP</td>
<td>5PMP</td>
</tr>
<tr>
<td>Industrial</td>
<td>Starter Dam</td>
<td>Any</td>
<td>5PMP</td>
</tr>
<tr>
<td></td>
<td>After starter dam is finished and before final dam is completed</td>
<td>Any</td>
<td>75PMP</td>
</tr>
</tbody>
</table>

Source: Dam Safety Model Program
### STATE DAM SAFETY SIZE CLASSIFICATION SCHEMES
**Association of State Dam Safety Officials - www.damsafety.org**
**Compiled September 2010**

<table>
<thead>
<tr>
<th>NV</th>
<th>N/A</th>
<th>&quot;Large Dam&quot; - has an embankment height greater than 50 feet or a reservoir capacity greater than 10,000 acre-feet.</th>
<th>Source: <a href="http://water.nv.gov/Engineering/Dams/dam_size.cfm">http://water.nv.gov/Engineering/Dams/dam_size.cfm</a>; Please note that if an embankment height dictates one size dam and the reservoir capacity dictates a different size dam, the larger of the two designations shall apply, e.g. a dam that has an embankment height of 2 feet and a reservoir capacity of 9,000 acre-feet shall be designated a medium size dam.</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>NH</td>
<td>N/A</td>
<td>&quot;Class C Structure&quot; means a dam that has a high hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in probable loss of human life as a result of: (a) Water levels and velocities causing the structural failure of a foundation of a habitable residential structure or a commercial or industrial structure which is occupied under normal conditions; (b) Water levels rising above the first floor elevation of a habitable residential structure or a commercial or industrial structure.</td>
<td>Jurisdictional definition: RSA chapter 482 defines the term <em>dam</em> as &quot;(a) any artificial barrier, including appurtenant works, which impounds or diverts water, and which has a height of 4 feet or more, or a storage capacity of 2 acre-feet or more, or is located at the outlet of a great pond. A roadway culvert shall not be considered a dam if its invert is at the natural bed of the water course, it has adequate discharge capacity, and it does not impound water under normal circumstances. Artificial barriers which create surface impoundments for liquid industrial or liquid commercial wastes, septage or sewage, regardless of height or storage capacity, shall be considered dams. (b) An artificial barrier at a storm water detention basin, which impounds 0.5 acre-feet or less of water during normal conditions, shall not be considered a dam unless its height is 10 feet or greater or its maximum storage is 6 acre-feet or greater.&quot; Part ENV-WR 101 of the Administrative Code (regulations) contains definitions for the terms <em>great pond</em>, which is a &quot;water body of more than 10 acres in its natural condition&quot;, and <em>height of dam</em>, which means the &quot;vertical distance from the lowest point of natural ground on the downstream side of the dam to the highest part of the dam which would impound water&quot;. Part ENV-WR 301 further defines &quot;a roadway embankment whose culvert is set at the natural streambed shall be considered a dam if during the 25 year storm; (1) the water surface elevation at the culvert inlet is 6 feet or more above the water surface elevation at the culvert outlet; and (2) it impounds 2 acre-feet or more of water over the crown, or top of the culvert.&quot; RSA Chapter 482 lists the classifications of dams as &quot;non-menace&quot;, &quot;low hazard potential&quot;, &quot;significant hazard potential&quot;, or &quot;high hazard potential&quot;. The determination of hazard classification of structures is based on the potential threat to life and extent of property damage, and is further explained in part ENV-WR 101 of the regulations.</td>
<td>N/A</td>
</tr>
</tbody>
</table>

("Class AA structure" means a dam that is not a menace because it is in a location and of a size that failure or misoperation of the dam would not result in probable loss of life or loss to property, provided the dam is: (a) Less than 6 feet in height if it has a storage capacity greater than 50 acre-feet; or (b) Less than 25 feet in height if it has a storage capacity of 15 to 50 acre-feet.

"Class A structure" means a dam that has a low hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following: (a) No probable loss of life; (b) Low economic loss to structures or property; (c) Structural damage to a Class I or II road which could render the road impassable or otherwise interrupt public safety services; (d) Major environmental or public health losses, including: (1) Damage to a public water system, as defined by RSA | | |

"Class B structure" means a dam that has a low hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following: (a) No probable loss of life; (b) Low economic loss to structures or property; (c) Structural damage to a town or city road or private road accessing property other than the dam owner’s which could render the road impassable or otherwise interrupt public safety services; (d) The release of liquid industrial, agricultural, or commercial wastes, septage, | | |

"Class C structure" means a dam that has a significant hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following: (a) No probable loss of life; (b) Major economic loss to structures or property; (c) Structural damage to a Class I or II road which could render the road impassable or otherwise interrupt public safety services; (d) Major environmental or public health losses, including: (1) Damage to a public water system, as defined by RSA | | |
<table>
<thead>
<tr>
<th>State</th>
<th>Jurisdictional Definition</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJ</td>
<td>“Large dams”: Dams that raise the waters of any stream more than 70 feet above its usual mean low water height or which impound more than 10,000 acre feet of water.</td>
<td><a href="http://www.state.nj.us/dep/damsafety/standard.pdf">http://www.state.nj.us/dep/damsafety/standard.pdf</a>; <a href="http://www.state.nj.us/dep/damsafety/dampres1/index.htm">http://www.state.nj.us/dep/damsafety/dampres1/index.htm</a></td>
</tr>
<tr>
<td></td>
<td>A “Class IV” dam is any project which impounds less than 15 ac-ft of water to the top of the dam, and has less than 15 feet height-of-dam (as measured to the top of the dam) and which has a drainage area above the usual, mean, low water height when measured from the downstream toe-of-dam to the emergency spillway crest or, in the absence of an emergency spillway, the top-of-dam.</td>
<td></td>
</tr>
</tbody>
</table>
## STATE DAM SAFETY SIZE CLASSIFICATION SCHEMES

Association of State Dam Safety Officials - www.damsafety.org

Compiled September 2010

<table>
<thead>
<tr>
<th>STATE</th>
<th>Dam Size</th>
<th>Description</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>NM</td>
<td>N/A</td>
<td>A &quot;large dam&quot; is greater than 100 feet in height, or greater than 50,000 acre-feet of storage. A &quot;small dam&quot; is 25 ft or greater but less than or equal to 40 ft in height, or 50 acre-ft or greater but less than or equal to 1000 acre-ft of storage. N/A</td>
<td>Source: NM Dam Safety Bureau, Sept 2010 and <a href="http://www.ose.state.nm.us/PDF/19-25-12-NMAC.pdf">http://www.ose.state.nm.us/PDF/19-25-12-NMAC.pdf</a></td>
</tr>
<tr>
<td>NY</td>
<td>Large Class &quot;C&quot; Dams: For dams that have been assigned a Hazard Classification of Class &quot;C&quot; as of the effective date of this Part; the dam either has a height greater than or equal to 40 feet or impounds 1000 acre-feet or more at normal water surface. Small Class &quot;C&quot; Dams. For dams that have been assigned a Hazard Classification of Class &quot;C&quot; as of the effective date of this Part; the dam has a height less than 40 feet and impounds less than 1000 acre-feet at normal water surface. **Class B&quot; Dams: For dams that have been assigned a Hazard Classification of Class &quot;B&quot; as of the effective date of this Part. ***Class A&quot; dam is a low hazard dam. A &quot;Class D&quot; dam is a &quot;negligible or no hazard&quot; dam.</td>
<td>Source: <a href="http://www.dec.ny.gov/docs/water_pdf/damguideli.pdf">http://www.dec.ny.gov/docs/water_pdf/damguideli.pdf</a> ; Dam Safety Model Program</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*&quot;Class B&quot; Dams: For dams that have been assigned a Hazard Classification of Class &quot;B&quot; as of the effective date of this Part. **&quot;Class A&quot; dam is a low hazard dam.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>**&quot;Class A&quot; dam is a low hazard dam.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A &quot;very large dam&quot; will have a total storage equal to or greater than 50,000 ac-ft; a height equal to or greater than 100 ft. A &quot;large dam&quot; will have a total storage equal to or greater than 7,500 and less than 50,000 ac-ft; height equal to or greater than 75 ft, and A &quot;medium dam&quot; will have a total storage equal to or greater than 750 and less than 7,500; height equal to or greater than 35 ft and less A &quot;small dam&quot; will have a total storage less than 750 ac-ft; height less than 35 ft. N/A</td>
<td>Source: <a href="http://www.damsafety.org/media/Documents/STATE_INFO/LAWS">http://www.damsafety.org/media/Documents/STATE_INFO/LAWS</a> &amp; REGS/NorthCarolina_L&amp;R.pdf</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The factor determining the largest size shall govern.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NC</td>
<td>A &quot;very large dam&quot; will have a total storage equal to or greater than 50,000 ac-ft; a height equal to or greater than 100 ft. A &quot;large dam&quot; will have a total storage equal to or greater than 7,500 and less than 50,000 ac-ft; height equal to or greater than 75 ft, and A &quot;medium dam&quot; will have a total storage equal to or greater than 750 and less than 7,500; height equal to or greater than 35 ft and less A &quot;small dam&quot; will have a total storage less than 750 ac-ft; height less than 35 ft. N/A</td>
<td>Source: <a href="http://www.damsafety.org/media/Documents/STATE_INFO/LAWS">http://www.damsafety.org/media/Documents/STATE_INFO/LAWS</a> &amp; REGS/NorthCarolina_L&amp;R.pdf</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The factor determining the largest size shall govern.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
North Dakota's Dam Design Classifications are based on both the size of the dam and the hazard classification, as shown in the following table (Source: ND Dam Design Handbook, 1985).

<table>
<thead>
<tr>
<th>State</th>
<th>Hazard Classification</th>
<th>Size Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>ND</td>
<td>Class I</td>
<td>A “Class I dam” has a total storage volume greater than five thousand acre-feet or a height of greater than sixty feet.</td>
</tr>
<tr>
<td></td>
<td>Class II</td>
<td>A “Class II dam” will have a total storage volume greater than five hundred acre-feet or a height of greater than forty feet.</td>
</tr>
<tr>
<td></td>
<td>Class III</td>
<td>A “Class III dam” will have a total storage volume greater than fifty acre-feet or a height of greater than twenty-five feet.</td>
</tr>
<tr>
<td></td>
<td>Class IV</td>
<td>A “Class IV dam” will be twenty-five feet or less in height and have a total storage volume of fifty acre-feet or less.</td>
</tr>
<tr>
<td>OH</td>
<td>N/A</td>
<td>A “large dam” has maximum storage over 50,000 ac-ft; maximum height over 100 ft.</td>
</tr>
<tr>
<td></td>
<td>N/A</td>
<td>An “intermediate dam” has a maximum storage between 10,000 and 50,000 ac-ft; height between 50 and 100 ft.</td>
</tr>
<tr>
<td></td>
<td>N/A</td>
<td>A “small dam” has a maximum storage less than 10,000 ac-ft; height less than 50 ft.</td>
</tr>
<tr>
<td>OK</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>OR</td>
<td>N/A</td>
<td>“Large Dam” for dam safety purposes, means a dam with a height of 10 feet or more and impounding</td>
</tr>
<tr>
<td></td>
<td>N/A</td>
<td>“Small dam” for dam safety purposes, means a dam with a height of less than 10 feet or impounding</td>
</tr>
</tbody>
</table>

Source: ND State Water Commission, Sept. 2010

Size classifications are combined with hazard classification definitions.


**Table 4-1. Dam Design Classifications**

<table>
<thead>
<tr>
<th>Dam Height (Feet)</th>
<th>Hazard Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 10</td>
<td>I</td>
</tr>
<tr>
<td>10 to 24</td>
<td>II</td>
</tr>
<tr>
<td>25 to 39</td>
<td>III</td>
</tr>
<tr>
<td>40 to 55</td>
<td>IV</td>
</tr>
<tr>
<td>Over 55</td>
<td>V</td>
</tr>
</tbody>
</table>


Source: [http://arcweb.sos.state.or.us/rules/OARS_600/OAR_690/690_020.html](http://arcweb.sos.state.or.us/rules/OARS_600/OAR_690/690_020.html)
<table>
<thead>
<tr>
<th>STATE</th>
<th>CLASSIFICATION SCHEMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA</td>
<td>N/A</td>
</tr>
<tr>
<td>PR</td>
<td>Not defined</td>
</tr>
<tr>
<td>RI</td>
<td>Source: <a href="http://www.dem.ri.gov/pubs/regs/regs//compinsp/dams07.pdf">http://www.dem.ri.gov/pubs/regs/regs//compinsp/dams07.pdf</a>; Dam Safety Model Program</td>
</tr>
<tr>
<td>SC</td>
<td>N/A</td>
</tr>
<tr>
<td>SD</td>
<td>N/A</td>
</tr>
<tr>
<td>TN</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Note:** Size classification may be determined by either storage or height, whichever gives the higher category.

**Source:** [http://www.pacode.com/secure/data/025/chapter105/s105.91.html](http://www.pacode.com/secure/data/025/chapter105/s105.91.html)

**N/A**

**Source:** [http://www.scdhec.gov/environment/water/regs/R72-1.doc](http://www.scdhec.gov/environment/water/regs/R72-1.doc)


The classification of dams by size is as follows: The size classification is determined by either the maximum storage capacity or the height, whichever gives the larger size category.


The classification for size is based on the height of the dam and storage capacity in accordance with the table below. The height of the dam is established with respect to...
<table>
<thead>
<tr>
<th>STATE</th>
<th>DESCRIPTION</th>
<th>RULES REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX</td>
<td>A &quot;large dam&quot; will have an impoundment storage equal to or greater than 50,000 ac-ft; height equal to or greater than 100 ft.</td>
<td>Source: <a href="http://www.tceq.state.tx.us/assets/public/legal/rules/rules/pdflib/299b.pdf">http://www.tceq.state.tx.us/assets/public/legal/rules/rules/pdflib/299b.pdf</a></td>
</tr>
<tr>
<td>UT</td>
<td>Not defined</td>
<td>Source: Dam Safety Model Program Jurisdictional definition: DAM is any artificial barrier or obstruction, together with appurtenant works, if any, which impounds or diverts water.</td>
</tr>
<tr>
<td>VT</td>
<td>A &quot;large dam&quot; will have a storage of 50,000 ac-ft or greater; height of 100 ft or greater.</td>
<td>Source: <a href="http://psb.vermont.gov/sites/psb/files/rules/OfficialAdoptedRules/4500_Dam_Safety.pdf">http://psb.vermont.gov/sites/psb/files/rules/OfficialAdoptedRules/4500_Dam_Safety.pdf</a></td>
</tr>
</tbody>
</table>
**STATE DAM SAFETY SIZE CLASSIFICATION SCHEMES**

Association of State Dam Safety Officials - www.damsafety.org

Compiled September 2010

<table>
<thead>
<tr>
<th>STATE</th>
<th>DAM SAFETY SIZE CLASSIFICATION SCHEMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>WA</td>
<td>A “large dam” is 50 ft or greater in height. An “intermediate dam” is 15 ft or greater but less than 50 ft. A “small dam” is less than 15 ft. N/A</td>
</tr>
<tr>
<td>WV</td>
<td>Not defined</td>
</tr>
<tr>
<td>WI</td>
<td>A dam is considered to be a “large dam” if either of the following applies:</td>
</tr>
</tbody>
</table>

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


The size classification and reservoir operation classification of the proposed project should be listed as defined by Tables 2 and 3. These classifications are used throughout Part IV of the Dam Safety Guidelines for determining the degree of conservatism of design, and the sophistication of the methodologies to be used in analyses.

Source: [Dam Safety Model Program](#)

Jurisdictional definition: "Dam" means an artificial barrier or obstruction --including any works appurtenant to it and any reservoir created by it -- which is or will be placed, constructed, enlarged, altered, or repaired so that it does or will impound or divert water and is or will be twenty-five (25) feet or more in height from the natural bed of a stream or watercourse measured at the downstream toe of the barrier and which does or can impound fifteen (15) acre-feet or more of water or is or will be six (6) feet or more in height from the natural bed of such stream or watercourse measured at the downstream toe of the barrier and which does or can impound fifty (50) acre-feet or more of water. (List is given of items that are NOT dams as well)

The "coal related dam safety" rule is as follows: "Dam" means an artificial barrier or obstruction including works appurtenant to it and be placed, constructed, enlarged, altered or repaired so that it does or will impound or divert water and is or will be twenty-five (25) feet or more in height from the natural bed of a stream or watercourse measured at the downstream toe of the barrier and which does or can impound fifteen (15) acre-feet or more of water or is or will be six (6) feet or more in height from the natural bed of such stream or watercourse measured at the downstream toe of the barrier and which does or can impound fifty (50) acre-feet or more of water.


Jurisdictional definition: Dam is defined in Chapters NR 333 as “any artificial barrier, together with appurtenant works, built across a waterway that has the primary purpose of impounding or diverting water”. Jurisdiction for the dam inspection program described in Chapter NR 333 is established by defining large dams as those with 1) a structural...
| STATE DAM SAFETY SIZE CLASSIFICATION SCHEMES |
| Association of State Dam Safety Officials - www.damsafety.org |
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| WY | (a) It has a structural height of 25 feet or more and impounds more than 15 acre-feet of water. |
| (b) It has a structural height of more than 6 feet and impounds 50 acre-feet or more of water. |

Source: Dam Safety Model Program
All large dams in the state, except those owned by the US Government or inspected, approved and licensed by a federal agency, are under Department of Natural Resources jurisdiction and must conform to Chapter NR 333 "Dam Design and Construction Standards".

Source: [http://www.damsafety.org/media/Documents/PDF/WY.pdf](http://www.damsafety.org/media/Documents/PDF/WY.pdf)
Jurisdictional definition: Section 41-3-307 of the statutes defines the term dam as any artificial barrier, including appurtenant works, used to impound or divert water and which is or will be greater than twenty (20) feet in height or with an impounding capacity of fifty (50) acre-feet or greater. Dams less than 15 acre-feet in capacity or 6 feet or less in height are excluded. No system of dam classification is provided for in either the laws or the regulations.
F.2. Hazard Classification Schemes
### STATE DAM SAFETY HAZARD POTENTIAL CLASSIFICATION

Association of State Dam Safety Officials - www.damsafety.org

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<table>
<thead>
<tr>
<th>Extreme</th>
<th>High</th>
<th>Significant</th>
<th>Low</th>
<th>Very Low</th>
<th>Citation/ Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL</td>
<td>NA</td>
<td>High-Hazard Potential</td>
<td>Moderate-Hazard Potential</td>
<td>Low-Hazard Potential</td>
<td>NA</td>
</tr>
</tbody>
</table>
| AK      | NA   | Class I (high) hazard potential classification, if the department determines that the failure or improper operation of the barrier will result in probable loss of human life. | Class II (significant) hazard potential classification, if the department determines that the failure or improper operation of the barrier will result in:

- (A) a significant danger to public health;
- (B) the probable loss of or probable significant damage to homes, occupied structures, commercial property, high-value property, major highways, primary roads, railroads, or public utilities, other than losses described in (3)(B) of this subsection;
- (C) other probable significant property losses or damage, other than losses described in (3)(B) of this subsection; or
- (D) probable loss of or significant damage to waters identified under 5 AAC 95.011(a) as important for the spawning, rearing, or migration of anadromous fish. |
| AZ      | NA   | High Hazard Potential. Failure or improper operation of a dam would be likely to cause loss of human life because of residential, commercial, or industrial development. Intangible losses may | Significant Hazard Potential. Failure or improper operation of a dam would be unlikely to result in loss of human life but may cause significant or high economic loss, intangible damage requiring major mitigation, and disruption or impact on lifeline facilities. | Low Hazard Potential. Failure or improper operation of a dam would be unlikely to result in loss of human life, but would produce low economic and intangible losses, and result in no disruption of lifeline facilities. | Very Low Hazard Potential. Failure or improper operation of a dam would be unlikely to result in loss of human life and would produce no lifeline losses and very low economic and intangible losses. Losses | Source: AZ DWR, Sept. 2010 Hazard classification based on evaluation of probable present & future incremental adverse consequences of failure or improper operation of the dam or appurtenances regardless of the condition of the dam or appurtenances. Evaluation includes land use zoning & projected development over 10 years following classification. All of the following are considered: probable loss of human life, economic/ lifeline losses, & intangible losses identified & evaluated by a public resource management or protection agency. -Probable incremental loss of human life determined primarily on the number of permanent structures for human |
### State Dam Safety Hazard Potential Classification

Association of State Dam Safety Officials - www.damsafety.org
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<table>
<thead>
<tr>
<th>State</th>
<th>Hazard Classification</th>
<th>Hazards</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AR</strong></td>
<td>Loss of human life expected. Excessive economic loss (extensive public, industrial, commercial, or agricultural development); over $500,000</td>
<td>No loss of life expected; Appreciable economic loss (significant structures, industrial, or commercial development, or cropland); $100,000 to $500,000</td>
<td>NA</td>
</tr>
<tr>
<td><strong>CA</strong></td>
<td>Extreme</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td><strong>CO</strong></td>
<td>High Hazard - Loss of human life is expected to result from failure of the dam. Designated recreational sites located downstream within the bounds of possible inundation</td>
<td>Significant Hazard - Significant damage is expected to occur, but no loss of human life is expected from failure of the dam. Significant damage is defined as damage to structures where people generally live, work, or</td>
<td>Low Hazard - Loss of human life is not expected, and significant damage to structures and public facilities as defined for a &quot;Significant Hazard&quot; dam is not expected to</td>
</tr>
</tbody>
</table>
**STATE DAM SAFETY HAZARD POTENTIAL CLASSIFICATION**
Association of State Dam Safety Officials - www.damsafety.org
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<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
<th>NA</th>
<th>FL Direct loss of life: Certain (one or more extensive residential, commercial or industrial development)</th>
<th>Lifeline losses: Disruption of critical facilities and access Property Losses: Major public and private facilities Environmental losses: Major</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT Class C - A high hazard potential dam which, if it were to fail, would result in any of the following: (i) probable loss of life; (ii) major damage to habitable structures, residences, hospitals, convalescent homes, schools, etc.; (iii) damage to main highways (greater than 1500 ADT); or (iv) great economic loss.</td>
<td>recreation, or public or private facilities. Significant damage is determined to be damage sufficient to render structures or facilities uninhabitable or inoperable.</td>
<td>Direct loss of life: Uncertain (rural location with few residences &amp; only transient or industrial development) Lifeline losses: Disruption of essential services &amp; access Property Losses: Major public and private facilities Environmental losses: Major</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Significant damage is determined to be damage sufficient to render structures or facilities uninhabitable or inoperable.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>result from failure of the dam.</td>
<td>Direct loss of life: None expected (due to rural location with no permanent structures for human habitation) Lifeline losses: No disruption of services Property Losses: Private agricultural lands,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class B - A significant hazard potential dam which, if it were to fail, would result in any of the following: (i) possible loss of life; (ii) minor damage to habitable structures, residences, hospitals, convalescent homes, schools, etc.; (iii) damage to or interruption of the use of service of utilities; (iv) damage to primary roadways (less than 1500 ADT) and railroads; or (v) significant economic loss.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class BB - A moderate hazard potential dam which, if it were to fail, would result in any of the following: (i) damage to normally unoccupied storage structures; (ii) damage to low volume roadways (less than 500 ADT); or (iii) moderate economic loss.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class A - A low hazard potential dam which, if it were to fail, would result in any of the following: (i) damage to agricultural land; (ii) damage to unimproved roadways (less than 100 ADT); (iii) minimal economic loss.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class AA - A negligible hazard potential dam which, if it were to fail, would result in the following: (i) no measurable damage to roadways; (ii) no measurable damage to land and structures; and (iii) negligible economic loss.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

The Commissioner shall assign each dam to one of five classes according to its hazard potential. Such classification shall be determined by the Commissioner during the initial periodic inspection.
Source: Guidelines for Inspection and Maintenance of Dams
<table>
<thead>
<tr>
<th>NA</th>
<th>Extensive public and private facilities Environmental losses: Extensive mitigation cost or impossible to mitigate</th>
<th>mitigation required</th>
<th>equipment, &amp; isolated buildings Environmental losses: Minimal incremental damage</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>GA</td>
<td>Category I – Improper operation or dam failure would result in probable loss of human life. Situations constituting 'probable loss of life' are those situations involving frequently occupied structures or facilities, including but not limited to, residences, commercial and manufacturing facilities, schools, and churches.&quot;</td>
<td>NA</td>
<td>Category II - Improper operation or dam failure would not be expected to result in probable loss of human life.*</td>
<td>NA</td>
</tr>
<tr>
<td>HI</td>
<td>High Hazard: Loss of life: Probable, one or more expected Economic/ Environmental Losses: Yes, but not necessary for this classification</td>
<td>Significant: Loss of life: None expected Economic/ Environmental Losses: Yes</td>
<td>Low: Loss of life: None expected Economic/ Environmental Losses: Low and generally limited to owner property</td>
<td>NA</td>
</tr>
<tr>
<td>ID</td>
<td>High-Hazard Dams: Catastrophic failure and sudden release of water likely would result in direct loss of human life.</td>
<td>Significant Hazard Dams: Failure would cause significant economic damage to existing infrastructure, or may contribute to the indirect loss of life.</td>
<td>Low Hazard Dams: No permanent habitable structures within inundation zone; failure would cause only minor damage to infrastructure, with low probability for loss of life.</td>
<td>NA</td>
</tr>
<tr>
<td>IL</td>
<td>Class I - Failure has a high probability of causing loss of life or substantial economic loss, similar to that of Class II - Failure has a moderate probability for causing loss of life or substantial economic loss, similar to USACE Significant</td>
<td>Class II - Failure has a low probability for causing loss of life or substantial economic loss, similar to USACE Significant</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

*When an existing Category II dam may be reclassified to a Category I dam because of proposed development, the governing authority issuing the permit for the development shall provide for review by the Safe Dams Programs: (a) location of the Category II dam and the proposed development; (b) a surveyed cross-section of the stream valley at the proposed development location, including proposed finished floor elevations; (c) a dam breach analysis to establish the height of the flood wave in the floodplain. If reclassification is deemed appropriate, the owner of the existing Category II dam may request an inspection from the Director within 10 days of notification of the proposed development. Detailed surveys, hydrologic and hydraulic analyses will not be performed, but the Director may provide an opinion on the hydraulic adequacy of the dam. A written evaluation of the existing Category II dam's compliance with Category I requirements will be provided to the owner of the dam and the local governing authority based on preliminary visual inspection by the Safe Dams Program. *
**STATE DAM SAFETY HAZARD POTENTIAL CLASSIFICATION**

Association of State Dam Safety Officials - www.damsafety.org

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<table>
<thead>
<tr>
<th>NA</th>
<th>USACE High Hazard Potential or USDA/NRCS Class (c) dams</th>
<th>Hazard Potential or USDA/NRCS Class (b) dams.</th>
<th>Low Hazard Potential or USDA/NRCS Class (a) dams.</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN</td>
<td>High hazard - If an uncontrolled release of the structure’s contents due to a failure of the structure may result in any of the following: (A) The loss of human life. (B) Serious damage to: (i) homes; (ii) industrial and commercial buildings; or (iii) public utilities. (C) Interruption of service for more than one (1) day on any of the following: (i) A county road, state two-lane highway, or U.S. highway serving as the only access to a community. (ii) A multilane divided state or U.S. highway, including an interstate highway. (D) Interruption of service for more than one (1) day on an operating railroad. (E) Damage to important utilities where service would be interrupted for not more than one (1) day, but either of the following may occur: (i) Buried lines can be exposed by erosion. (ii) Towers, poles, and aboveground lines can be damaged by undermining or debris loading.</td>
<td>Significant hazard - If an uncontrolled release of the structure’s contents due to a failure of the structure may result in any of the following: (A) Damage to isolated homes. (B) Interruption of service for not more than one (1) day on any of the following: (i) A county road, state two-lane highway, or U.S. highway serving as the only access to a community. (ii) A multilane divided state or U.S. highway, including an interstate highway. (C) Interruption of service for not more than one (1) day on an operating railroad. (D) Damage to important utilities where service would be interrupted for not more than one (1) day, but either of the following may occur: (i) Buried lines can be exposed by erosion. (ii) Towers, poles, and aboveground lines can be damaged by undermining or debris loading.</td>
<td>Low hazard - If an uncontrolled release of the structure’s contents due to a failure of the structure does not result in any of the items given in subdivision (1) or (2) and damage is limited to either farm buildings, agricultural land, or local roads.</td>
<td>The division may modify an assignment of hazard classification, made previously under this article, if changes in the downstream development affect the potential for loss of human life and property. (Natural Resources Commission; 312 IAC 10.5-3-1; filed Jan 26, 2007, 10:45 a.m.: 20070221-IR-312060092FRA)</td>
</tr>
</tbody>
</table>

Source: General Guidelines For New Dams and Improvements To Existing Dams in Indiana (2010)
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<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IA</strong></td>
<td>High Hazard - Located in an area where dam failure may create a serious threat of loss of human life.</td>
<td>Moderate Hazard - Failure may damage isolated homes or cabins, industrial or commercial buildings, moderately traveled roads, interrupt major utility services, but are without substantial risk of loss of human life. Dams are also classified as Moderate Hazard where the dam and its impoundment are themselves of public importance, such as dams associated with public water supply systems, industrial water supply or public recreation or which are an integral feature of a private development complex.</td>
<td>Low Hazard - Damages from a failure would be limited to loss of the dam, livestock, farm outbuildings, agricultural lands and lesser used roads and where loss of human life is considered unlikely.</td>
<td>NA</td>
</tr>
</tbody>
</table>
| **KS** | Class C dam - A dam located in an area where failure could result in any of the following: Extensive loss of life; Damage to more than one home; Damage to industrial or commercial facilities; Interruption of a public utility serving a large number of customers; Damage to traffic on high-volume roads that meet the requirements for hazard class C dams as specified in subsections (b) and (c) or a high-volume railroad line; | Class B - A dam located in an area where failure could endanger a few lives, damage an isolated home, damage traffic on moderate-volume roads that meet the requirements for hazard class B dams as specified in subsections (b) and (c), damage low-volume railroad tracks, interrupt the use or service of a utility serving a small number of customers, or inundate recreation facilities, including campground areas intermittently used for sleeping and serving a relatively small number of persons. | Class A - A dam located in an area where failure could damage only farm or other uninhabited buildings, agricultural or undeveloped land including hiking trails, or traffic on low-volume roads that meet the requirements for hazard class A dams as specified in subsections (b) and (c), including campground areas intermittently used for sleeping and serving a relatively small number of persons. | NA | K.A.R. 5-40-20.  
Vehicle-per-day counts used to determine potential hazard created by the roadway:  
Roads on any part of the embankment or spillway:  
Class A: 0 through 100  
Class B: 101 through 500  
Class C: more than 500  
Any roadway not on the dam but in the inundation area:  
Class A: 0 through 500  
Class B: 501 through 1,500  
Class C: more than 1,500 |
<table>
<thead>
<tr>
<th>State</th>
<th>NA</th>
<th>KY</th>
<th>Class (C) High Hazard - Structures for which failure would cause loss of life or serious damage to homes, commercial buildings, utilities, highways or railroads.</th>
<th>Class (B) Moderate Hazard - Structures for which failure would cause significant damage to property and project operation, but loss of life is not envisioned.</th>
<th>Class (A) Low Hazard - Structures for which failure would result in loss of the structure itself, but little or no additional damage to other property.</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME</td>
<td>NA</td>
<td>NA</td>
<td>Impounding structures in the &quot;high hazard&quot; potential category will be those located where failure may cause serious damage to homes, extensive agricultural, industrial, and commercial facilities, important public utilities, main highways, railroads, or other impounding structures. Urban development: Exists, with more than a small number of habitable structures. Economic loss: Excessive (extensive community, industry, or Agriculture)</td>
<td>Structures conforming to criteria for the &quot;low hazard&quot; potential category generally will be found in rural or agricultural areas where failure may damage some farm buildings, limited agricultural land, or country roads. Urban development: None. No permanent structure for human habitation. Economic loss: Minimal (undeveloped to occasional structures or agriculture)</td>
<td>Present and projected development of the flood plain downstream from the impounding structure shall be considered in determining the classification. Evaluation. The commissioner shall evaluate all dams to assign or reassign a hazard potential classification in accordance with the following schedule: A. New or reconstructed dams, within 6 months of construction or reconstruction; [2001, c. 460, §3 (NEW).] B. All other dams, at least once every 6 years; [2001, c. 460, §3 (NEW).] C. Any dam, within 30 days of a request for an evaluation from the dam owner, the municipality in which the dam is located or the emergency management director of the county in which the dam is located; and [2001, c. 460, §3 (NEW).] D. At any time a dam for which, in the judgment of the commissioner, such an evaluation is appropriate.</td>
<td></td>
</tr>
<tr>
<td>State</td>
<td>NA</td>
<td>Description</td>
<td>Class 1</td>
<td>Class 2</td>
<td>Class 3</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>----</td>
<td>-------------</td>
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<td>---------</td>
<td></td>
</tr>
<tr>
<td>MD</td>
<td>NA</td>
<td>High hazard (Class 1) where loss of life and extensive property damage are probable should the dam fail.</td>
<td>Significant hazard (Class 2) where failure would cause extensive damage to public or private property but the loss of life is very unlikely</td>
<td>Low hazard (Class 3) where failure would not cause the loss of life and the damage is within the financial capability of the owner to repair</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>MA</td>
<td>NA</td>
<td>High Hazard Potential dam refers to dams located where failure will likely cause loss of life and serious damage to home(s), industrial or commercial facilities, important public utilities, main highway(s) or railroad(s).</td>
<td>Significant Hazard Potential dam refers to dams located where failure may cause loss of life and damage home(s), industrial or commercial facilities, secondary highway(s) or railroad(s) or cause interruption of use or service of relatively important facilities.</td>
<td>Low Hazard Potential dam refers to dams located where failure may cause minimal property damage to others. Loss of life is not expected.</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>MI</td>
<td>NA</td>
<td>High Hazard Potential: Failure may cause serious damage to inhabited homes, agricultural buildings, campgrounds, recreational facilities, industrial or commercial buildings, public utilities, main highways or class I carrier railroads, or where environmental degradation would be significant, or where danger to individuals exists with the potential for loss of life.</td>
<td>Significant Hazard Potential: failure may cause damage limited to isolated inhabited homes, agricultural buildings, structures, secondary highways, short line railroads, or public utilities, where environmental degradation may be significant, or where and danger to individuals exists.</td>
<td>Low Hazard Potential: failure may cause damage limited to agriculture, uninhabited buildings, township or county roads, where environmental degradation would be minimal, and danger to individuals is slight or nonexistent.</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>MN</td>
<td>NA</td>
<td>Class I - any loss of life or serious hazard, or damage to health, main highways, high-value industrial or commercial</td>
<td>Class II - possible health hazard or probable loss of high-value property, damage to secondary highways, railroads or other public utilities, or</td>
<td>Class III- property losses restricted mainly to rural buildings and local county and township roads, which</td>
<td>No hazard - no potential for loss of life and no impacts to health, safety, and welfare.</td>
<td></td>
</tr>
</tbody>
</table>
**STATE DAM SAFETY HAZARD POTENTIAL CLASSIFICATION**  
Association of State Dam Safety Officials - www.damsafety.org  
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<table>
<thead>
<tr>
<th></th>
<th>properties, major public utilities, or serious direct or indirect economic loss</th>
<th>limited direct or indirect economic loss to the public other than that described in Class III</th>
<th>are an essential part of the rural transportation system serving the area involved</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MS</td>
<td>NA</td>
<td>High Hazard—A class of dam in which failure may cause loss of life, serious damage to residential, industrial, or commercial buildings; or damage to, or disruption of, important public utilities or transportation facilities such as major highways or railroads. Dams which meet the statutory thresholds for regulation that are proposed for construction in established or proposed residential, commercial, or industrial areas will be assigned this classification, unless the applicant provides convincing evidence to the contrary.</td>
<td>Low Hazard—A class of dam in which failure poses no threat to life, but may cause significant damage to main roads, minor railroads, or cause interruption of use or service of public utilities.</td>
<td>NA</td>
</tr>
</tbody>
</table>

**MO**  
NA  

|        | Class 1 – Downstream of the dam contains at least 10 or more permanent dwellings or any public building. | Class 2 – Downstream of the dam contains 1 to 9 public dwellings or 1 or more campgrounds with permanent water, sewer and electrical services or 1 or more industrial building. | Class 3 – No lives, campgrounds, public dwellings, public buildings or industrial buildings are threatened from a dam failure. | NA     |

**MT**  
Dams in Series - (1) The worst case scenario shall govern for determining the hazard classification of  

<p>|        | High-hazard - Impoundment capacity is 50 acre-feet or larger and loss of human life is likely to occur within the breach flooded area as a result of failure of | NA | NA | (History: Sec. 85-15-110, MCA; IMP, Sec. 85-15-209, MCA; NEW, 1988 MAR p. 2489, Eff. 11/24/88.) |</p>
<table>
<thead>
<tr>
<th>Dam in series where more than one mode of failure is possible among the dams. Classification shall be based on potential for failure under combined and, if applicable, individual dam breach scenarios.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2) If an upstream dam has the capability to create failure in a downstream high-hazard dam because of its failure flood wave, the upstream dam must be classified as a high-hazard dam.</td>
</tr>
<tr>
<td>(3) If the failure flood wave of the upstream dam will cause failure of the downstream dam, and the combined flows will likely cause a loss of life, the upstream dam must be classified as a high-hazard dam.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dam in series where more than one mode of failure is possible among the dams. Classification shall be based on potential for failure under combined and, if applicable, individual dam breach scenarios.</th>
</tr>
</thead>
<tbody>
<tr>
<td>the dam. The breach flooded area, for the purpose of this classification only, is the flooded area caused by a breach of the dam with the reservoir full to the crest of the emergency spillway. The evaluation of the effects of flood inundation, for the purpose of classification, will continue downstream until the flood stage is equal to that of the 100-year floodplain. The breach flow hydrograph and downstream routing of the breach flows, for the purpose of classification, will be estimated by the department either by visual determination or dam breach modeling techniques. Loss of life is assumed to occur if the following structures are present or planned for as a matter of public record or notice in the breach flooded area: occupied houses and farm buildings, stores, gas stations, parks, golf courses, stadiums, ball parks, interstate, principal, and other paved highways, and including railroads, highway rest areas, RV areas, developed campgrounds, and excluding unpaved</td>
</tr>
</tbody>
</table>

STATE DAM SAFETY HAZARD POTENTIAL CLASSIFICATION
Association of State Dam Safety Officials - www.damsafety.org
Compiled September 2010
| NE  | NA | High hazard - Failure or misoperation of the dam resulting in loss of human life is probable. | Significant hazard - Failure or misoperation of the dam would result in no probable loss of human life but could result in major economic loss, environmental damage, or disruption of lifeline facilities. | Low hazard potential - Failure or misoperation of the dam would result in no probable loss of human life and in low economic loss. | NA | Laws 2005, LB 335, § 19, § 32, § 21. Effective Sept 4, 2005. ~ Revised Statutes Supplement 2005, Sections 46-1632, 46-1621 |
| NV  | NA | High hazard – when there is reasonable potential for loss of life and/or extreme economic loss. | Significant hazard designation is assigned to a dam if there is a low potential for loss of life but an appreciable economic loss. | Low hazard designation is assigned to a dam if there is a vanishingly small potential for loss of life and the economic loss is minor or confined entirely to the dam owner’s own property. | NA | http://water.nv.gov/Engineering/Dams/hazard_designations.cfm |
| NH  | NA | “Class C Structure” means a dam that has a high hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in probable loss of human life as a result of: (a) Water levels and velocities causing the structural failure of a foundation of a habitable residential structure or a commercial or industrial structure which is occupied under normal conditions; (b) Water levels rising above the first floor elevation of a habitable residential structure or a commercial or industrial structure which is occupied | “Class B structure” means a dam that has a significant hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following: (a) No probable loss of life; (b) Major economic loss to structures or property; (c) Structural damage to a Class I or II road which could render the road impassable or otherwise interrupt public safety services; (d) Major environmental or public health losses, including: (1) Damage to a public water system, as defined by RSA 485:1-a, XV, which will take longer than 48 hours to repair; or (2) The release of liquid industrial, agricultural, or contaminated sediment | “Class A structure” means a dam that has a low hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following: (a) No probable loss of life; (b) Low economic loss to structures or property; (c) Structural damage to a town or city road or private road accessing property other than the dam owner’s which could render the road impassable or otherwise interrupt public safety services; (d) The release of liquid industrial, agricultural, or commercial wastes, septage, or contaminated sediment | NAC 535.140 | NHCAR, Env-Wr 100-800 |
### STATE DAM SAFETY HAZARD POTENTIAL CLASSIFICATION

Association of State Dam Safety Officials - www.damsafety.org

Compiled September 2010

| NA  | High hazard potential: Dams where failure or misoperation will probably cause loss of human life. |
| NA  | NA |

#### NJ

Class I - High Hazard Potential - Dams, the failure of which may cause probable loss of life or extensive property damage.

Class II - Significant Hazard Potential - Dams, the failure of which may cause significant damage to property and project operation, but loss of human life is not envisioned.

Class III - Low Hazard Potential - Dams, the failure of which would cause loss of the dam itself but little or no additional damage to other property.

Class IV - Small Dams - Any project which impounds less than 15 acre-feet of water, is less than 15 feet in height, and has a drainage area above the dam of less than 150 acres.

N.J.A.C. 7:20-1.8.

#### NM

Significant hazard potential: Dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in populated areas with significant infrastructure.

Low hazard potential: Dams where failure or misoperation results in no probable loss of life and low economic or environmental losses. Losses are principally limited to the dam owner's property.

NA

[19.25.12.10 NMAC - N, 3/31/2005] Rating is based on loss of life, damage to property and environmental damage that is likely to occur in the event of dam failure. No allowances for evacuation or other emergency actions by the population should be considered.
| NY | NA | Class "C" or "High Hazard" dam: A dam failure may result in widespread or serious damage to home(s); damage to main highways, industrial or commercial buildings, railroads, and/or important utilities, including water supply, sewage treatment, fuel, power, cable or telephone infrastructure; or substantial environmental damage; such that the loss of human life or widespread substantial economic loss is likely. | Class "B" or "Intermediate Hazard" dam: A dam failure may result in damage to isolated homes, main highways, and minor railroads; may result in the interruption of important utilities, including water supply, sewage treatment, fuel, power, cable or telephone infrastructure; and/or is otherwise likely to pose the threat of personal injury and/or substantial economic loss or substantial environmental damage. Loss of human life is not expected. | Class "A" or "Low Hazard" dam: A dam failure is unlikely to result in damage to anything more than isolated or unoccupied buildings, undeveloped lands, minor roads such as town or county roads; it is unlikely to result in the interruption of important utilities, including water supply, sewage treatment, fuel, power, cable or telephone infrastructure; and/or is otherwise unlikely to pose the threat of personal injury, substantial economic loss or substantial environmental damage. | Source: NY DEC, Sept. 2010 |
| NC | NA | Class C – High-hazard: Dams located where failure will likely cause loss of life or serious damage to homes, industrial and commercial buildings, important public utilities, primary highways, or major railroads. | Class B – Intermediate-hazard: Dams located where failure may damage highways or secondary railroads, cause interruption of use or service of public utilities, cause minor damage to isolated homes, or cause minor damage to commercial and industrial buildings. Damage to these structures will be considered minor only when they are located in backwater areas not subjected to the direct path of the breach flood wave; and they will experience no more than 1.5 feet of flood rise due to breaching above the lowest ground elevation adjacent to the outside foundation walls or no more than 1.5 feet of flood rise due to breaching above the | Class A – Low-hazard: Dams located where failure may damage uninhabited low value non residential buildings, agricultural land, or low volume roads. | Rule .0105 |
**ND**

<table>
<thead>
<tr>
<th>Cases</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>High - Dams located upstream of developed and urban areas where failure may cause serious damage to homes, industrial and commercial buildings &amp; major public utilities. There is potential for loss of more than a few lives if the dam fails. Medium – Dams located in predominantly rural or agricultural areas where failure may damage isolated homes, main highways, railroads or cause interruption of minor public utilities. The potential for loss of a few lives may be expected if the dam fails. Low – Dams located in rural or agricultural areas where there is little possibility of future development. Failure of low hazard dams may result in damage to agricultural land, township and county roads, and farm buildings other than residences. No loss of life expected.</td>
</tr>
</tbody>
</table>

Source: ND State Water Commission, Sept. 2010

North Dakota’s Dam Design Classifications are based on both the size of the dam and the hazard classification, as shown in the following table (Source: ND Dam Design Handbook, 1985).

<table>
<thead>
<tr>
<th>Dam Height (Feet)</th>
<th>Hazard Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 10</td>
<td>I</td>
</tr>
<tr>
<td>10 to 24</td>
<td>II</td>
</tr>
<tr>
<td>25 to 39</td>
<td>III</td>
</tr>
<tr>
<td>40 to 55</td>
<td>IV</td>
</tr>
<tr>
<td>Over 55</td>
<td>V</td>
</tr>
</tbody>
</table>

Admin. Rules Chapt 13-1501:21-13-01. All pertinent information including any unusual circumstances shall be considered by the chief in establishing an appropriate classification for a dam. Probable future development of the area downstream from the dam that would be affected by its failure shall be considered. Completed downstream hazard mitigation such as acquisition, removal or protection of downstream property may also be considered. However, the above criteria shall in no way preclude the chief’s requirement of greater safety in the interest of life, health, or property.
<table>
<thead>
<tr>
<th>OK</th>
<th>NA</th>
<th>High hazard: One or more habitable structures with loss of life due to dam failure likely. Excessive economic loss/property damage (extensive community, industrial or agriculture)</th>
<th>Significant hazard: No loss of life for future development exists, habitable structures may exist in inflow design flood floodplain, but dam failure would not endanger lives that would not be endangered if structure did not exist. Appreciable economic loss/property damage (notable agriculture, industrial or structural)</th>
<th>Low hazard: None (no probable future development; may be zoned to prevent future development).</th>
<th>Minimal economic/property loss (undeveloped to occasional structure or agriculture)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR</td>
<td>N/A</td>
<td>High Hazard: This rating indicates that if the dam fails there is a strong plausibility for loss of life. The plausibility is established because of inhabited infrastructure (such as homes and business) downstream that would be inundated to such a degree see 690-020-0100(2)(d) for specific criteria that it would put the person</td>
<td>Significant Hazard: This rating indicates that if a dam fails, infrastructure (such as roads, power lines or other largely uninhabited buildings) would be damaged or destroyed due to inundation and flooding. The department shall endeavor to inspect this class of dams at least once every three years.</td>
<td>Low Hazard: This rating indicates that if the dam fails there is little plausibility for loss of life, and human infrastructure that could be affected by inundation downstream is minor or non-existent. The department shall endeavor to inspect this class of dams at least once every six years.</td>
<td>NA</td>
</tr>
</tbody>
</table>

785:25-3-3. Hazard classification subject to regulation and change. (A) For dams inventoried in the National Safety of Dams program authorized under 33 USC 467, hazard classifications set forth in Phase I reports is presumed accurate. If the dam owner disagrees, he has the burden to show that hazard class should be changed. (B) At the discretion of the Board, any proposed or existing dam considered to have classification of a high hazard potential may be subject to regulation regardless of size or impounding capacity. (C) The hazard potential classification may change as the area downstream from a dam develops and the dam may be reclassified from time to time.

http://arcweb.sos.state.or.us/rules/OARS_600/OAR_690/690_020.html
who inhabits the structure in jeopardy. Any factor that puts a strong probability of people being downstream in an inundation area of a dam failure shall be considered. The department shall endeavor to inspect this class of dams on an annual basis.

<table>
<thead>
<tr>
<th>State</th>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA</td>
<td>NA</td>
<td>High Hazard: A dam so located as to endanger populated areas downstream by its failure. Category 1: Substantial loss of life. Excessive economic loss (extensive residential, commercial, agricultural and substantial public inconvenience). Failure would impact two or more habitable structures. Category 2 - High Hazard: Breach inundation area impacts one habitable structure. Category 2 - Non High Hazard: No habitable structures are impacted (appreciable economic loss only). Category 3: No loss of life expected (no permanent structure for human habitation). Minimal economic loss (undeveloped or occasional structures with no significant effect on public inconvenience).</td>
</tr>
<tr>
<td>PR</td>
<td>NA</td>
<td>High Hazard - Structures for which failure would cause more than very little loss of life and serious damage to communities, industry and agriculture. Intermediate Hazard - Structures for which failure would cause very little loss of life and significant damage to property and project operation, Low Hazard - Structures for which failure would result in loss of the structure itself, but little or no additional damage to other property.</td>
</tr>
<tr>
<td>STATE DAM SAFETY HAZARD POTENTIAL CLASSIFICATION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association of State Dam Safety Officials - <a href="http://www.damsafety.org">www.damsafety.org</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compiled September 2010</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| RI | NA | High hazard: Failure or mis-operation results in a probable loss of human life. | Significant hazard: Failure or mis-operation results in no probable loss of human life but can cause major economic loss, disruption of lifeline facilities or impact other concerns detrimental to the public’s health, safety or welfare. | Low hazard: Failure or mis-operation results in no probable loss of human life and low economic losses. | NA |
| SC | NA | Class I - High Hazard: Dams located where failure will likely cause loss of life or serious damage | Class II - Significant Hazard: Dams located where failure will not likely cause loss of life but may damage property. | Class III - Low Hazard: Dams located where failure may cause minimal property damage | NA |
| SD | NA | Category 1: Potential loss of life; | Category 2: No loss of life expected: Extensive economic loss potential (community or industry) | Category 3: No loss of life expected: minimal economic loss potential (undeveloped to occasional structures) | NA |
| TN | NA | Category 1: Failure would probably result in any of the following: loss of human life; excessive economic loss due to damage of downstream properties; excessive economic loss, public hazard, or public inconvenience due to loss of impoundment and/or damage to roads or any public or private utilities. | Category 2: Failure may damage downstream private or public property, but such damage would be relatively minor and within the general financial capabilities of the dam owner. Public hazard or inconvenience due to loss of roads or any public or private utilities would be minor and of short duration. Chances of loss of life would be possible but remote. | Category 3: Failure may damage uninhabitable structures or land but such damage would probably be confined to the dam owner's property. No loss of human life would be expected. | NA |
| TX | NA | A dam in the high-hazard potential category has: (A) loss of life expected (seven or more lives or three or more habitable structures in the breach inundation area downstream of the dam); or (B) appreciable economic loss, located primarily in rural areas where | A dam in the significant-hazard potential category has: (A) loss of human life possible (one to six lives or one or two habitable structures in the breach inundation area downstream of the dam); or (B) appreciable economic loss, located primarily in rural areas | A dam in the low-hazard potential category has: (A) no loss of human life expected (no permanent habitable structures in the breach inundation area downstream of the dam); and (B) minimal economic loss (located in undeveloped areas) | NA |

In regulations effected December 2007, each dam has a hazard classification of high, significant or low, which is a determination made by the Director relating to the following probable consequences of failure or misoperation of the dam:

- **RI**: NA
- **SC**: NA
- **SD**: NA
- **TN**: NA
- **TX**: NA

Definitions provided by TX Program, 9/3/2010.


Regulations state that dams will be re-evaluated for hazard potential every 5 years (1200-5-7-05).
dam); or (B) excessive economic loss, located primarily in or near urban areas where failure would be expected to cause extensive damage to: (i) public facilities; (ii) agricultural, industrial, or commercial facilities; (iii) public utilities, including the design purpose of the utility; (iv) main highways as defined in §299.2(33); or (v) railroads used as a major transportation system.

failure may cause: (i) damage to isolated homes; (ii) damage to secondary highways as defined in §299.2(58); (iii) damage to minor railroads; or (iv) interruption of service or use of public utilities, including the design purpose of the utility.

primarily in rural areas where failure may damage occasional farm buildings, limited agricultural improvements, and minor highways as defined in §299.2(38) of this title (relating to Definitions).

| UT | NA | High hazard: Failure has a high probability of causing loss of human life or extensive economic loss, including damage to critical public utilities. | Moderate hazard. Failure has a low probability of causing loss of human life, but would cause appreciable property damage, including damage to public utilities. Subcategories: Over 20 ac-ft: (Approval process requires formal plans) Under 20 ac-ft: (Approval process requires application procedure.) | Low hazard: Failure would cause minimal threat to human life, and economic losses would be minor or limited to damage sustained by the owner of the structure. Subcategories: Over 20 ac-ft and failure would damage property not held by the owner: (Approval process requires formal plans) Over 20 ac-ft with failure consequences limited to property held by the owner: (Approval process requires application procedure.) Under 20 ac ft: (Approval process requires application procedure.) | Low hazard (No formal plans required). Subcategories: NA | The State Engineer has the final authority in assigning hazard ratings. |
| VT | N | Class 1/High Hazard | Class 2/Significant Hazard | Class 3/Low Hazard | NA | The department classifies dams according to the potential loss resulting from failure, and uses |
Dams are those, the failure of which could result in more than a few deaths and excessive economic loss.

Dams are those, the failure of which could result in a few deaths and appreciable economic loss.

Dams are those, the failure of which is not expected to result in either loss of life or any economic loss.

The Downstream Hazard Classification system recommended by the US Army Corps of Engineers.

<table>
<thead>
<tr>
<th>STATE</th>
<th>DAM SAFETY HAZARD POTENTIAL CLASSIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>VA</td>
<td><strong>High Hazard Potential</strong> is defined where an impounding structure failure will cause probable loss of life or serious economic damage. &quot;Probable loss of life&quot; means that impacts will occur that are likely to cause a loss of human life, including but not limited to impacts to residences, businesses, other occupied structures, or major roadways. Economic damage may occur to, but not be limited to, building(s), industrial or commercial facilities, public utilities, major roadways, railroads, personal property, and agricultural interests. &quot;Major roadways&quot; include, but are not limited to, interstates, primary highways, high-volume urban streets, or other high-volume roadways.</td>
</tr>
<tr>
<td>VA</td>
<td><strong>Significant Hazard Potential</strong> is defined where an impounding structure failure may cause the loss of life or appreciable economic damage. &quot;May cause loss of life&quot; means that impacts will occur that could cause a loss of human life, including but not limited to impacts to facilities that are frequently utilized by humans other than residences, businesses, or other occupied structures, or to secondary roadways. Economic damage may occur to, but not be limited to, building(s), industrial or commercial facilities, public utilities, secondary roadways, railroads, personal property, and agricultural interests. &quot;Secondary roadways&quot; include, but are not limited to, secondary highways, low-volume urban streets, service roads, or other low-volume roadways.</td>
</tr>
<tr>
<td>WA</td>
<td><strong>Low Hazard Potential</strong> is defined where an impounding structure failure would result in no expected loss of life and would cause no more than minimal economic damage. &quot;No expected loss of life&quot; means no loss of human life is anticipated.</td>
</tr>
</tbody>
</table>


The hazard potential classification shall be proposed by the owner and shall be subject to approval by the board. To support the appropriate hazard classification, dam break analysis shall be conducted by the owner's engineer. Present and planned land-use for which a development plan has been officially approved by the locality in the dam break inundation zones downstream from the impounding structure shall be considered in determining the classification.

Impoundung structures shall be subject to reclassification by the board as necessary.

Downstream hazard classification reflects current conditions of development in downstream zones.

The State DAM SAFETY HAZARD POTENTIAL CLASSIFICATION is compiled by the Association of State Dam Safety Officials - www.damsafety.org

Compiled September 2010

VA High-hazard/ Class 1b: High-hazard/ Class 1c: Significant-hazard/ Class 1d: Low-hazard/ Class 3: Downstream hazard classification reflects current conditions of development in downstream zones.

WA High-hazard/ Class 1d: Low-hazard/ Class 3: Downstream hazard classification reflects current conditions of development in downstream zones.
### STATE DAM SAFETY HAZARD POTENTIAL CLASSIFICATION

Association of State Dam Safety Officials - www.damsafety.org

Compiled September 2010

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<table>
<thead>
<tr>
<th>Class</th>
<th>Hazard Potential</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a:</td>
<td>-PAR*: More than 300</td>
<td>*Economic loss: Extreme. More than 100 inhabited structures. Medium density suburban or urban area with associated industry, property and transportation features. Environmental damages: Severe water quality degradation potential from reservoir contents and long term effects on aquatic and human life.</td>
</tr>
<tr>
<td>1b:</td>
<td>-PAR*: 31-300</td>
<td>-Economic loss: Major. 3 to 10 inhabited structures. Low density suburban area with some industry and work sites. Primary highways and rail lines.</td>
</tr>
<tr>
<td>2:</td>
<td>-PAR*: 7-30</td>
<td>-Economic loss: Appreciable. 1 or 2 inhabited structures. Notable agriculture or work sites. Secondary highway and/or rail lines. Environmental damages: Limited water quality degradation from reservoir contents and only short term consequences.</td>
</tr>
</tbody>
</table>

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WV: NA

Class 1 (High Hazard): Dams located where failure may cause loss of human life or major damage to dwellings, commercial or industrial buildings, important public utilities, main railroads, or cause major damage to unoccupied buildings, or where a high risk highway may be affected or damaged. This classification must be used if failure may result in the loss of human life.

Class 2 (Significant Hazard): Dams located where failure may cause minor damage to dwellings, commercial or industrial buildings, important public utilities, main railroads, or cause major damage to unoccupied buildings, or where a low risk highway may be affected or damaged. The potential for loss of human life resulting from failure of a Class 2 dam must be unlikely.

Class 2 (Low Hazard): Dams located in rural or agricultural areas where failure may cause minor damage to nonresidential and normally unoccupied buildings, or rural or agricultural land. Failure of a Class 3 dam would cause only a loss of the dam itself and a loss of property use, such as use of related roads, with little additional damage to adjacent property. The potential for loss of human life resulting from failure of a Class 3 dam must be unlikely. An impoundment exceeding 40 ft in height or 400 acre-ft storage volume shall not be classified as a Class 3 dam. A waste disposal dam, the failure of which may cause significant harm to the environment.

Class 4 (Negligible Hazard): Dams where failure is expected to have no potential for loss of human life, no potential for property damage and no potential for significant harm to the environment. Examples: dams across rivers, failure of which under any conditions will not flood areas above normal streambank elevations; dams located in the reservoir of another dam which, under any conditions, can contain failure of the Class 4 dam(s) under any condition. In considering a request for a Class 4 designation, the director may require written documentation.
<table>
<thead>
<tr>
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</tr>
<tr>
<td></td>
<td>Compiled September 2010</td>
</tr>
</tbody>
</table>

| STATE | High hazard: A high hazard rating shall be assigned to those dams that have existing development in the hydraulic shadow that will be inundated to a depth greater than 2 feet or do not have land use controls in place to restrict future development in the hydraulic shadow. This rating must be assigned if loss of human life during failure or mis-operation of the dam is probable. | Significant hazard: A significant hazard rating shall be assigned to those dams that have no existing development in the hydraulic shadow that would be inundated to a depth greater than 2 feet and have land use controls in place to restrict future development in the hydraulic shadow. Potential for loss of life during failure must be unlikely. Failure or mis-operation of the dam would result in no probable loss of human life but can cause economic loss, environmental damage, or disruption of lifeline facilities. | Low hazard: A low hazard rating shall be assigned to those dams that have no development unrelated to allowable open space use in the hydraulic shadow where the failure or mis-operation of the dam would result in no probable loss of human life, low economic losses (losses are principally limited to the owners property), low environmental damage, no significant disruption of lifeline facilities, and have land use controls in place to restrict future developments in the hydraulic shadow. | N/A | Source: Page 63 of Dam Design and Construction |
| WI    | N/A | environment, shall not be classified as a Class 3 dam. | concurrence from the owner(s) of downstream dams that may be affected by failure of the Class 4 dam. Approval is vested in the director, and will be based on engineering evaluation of the dam(s) and downstream areas in question. | N/A |  |
| WY    | NA | High hazard dams would, in case of failure of the dam, likely cause loss of life. | Significant hazard dams would, in case of failure, likely cause significant property damage, but no loss of life. | Failure of a low hazard dam would likely cause only minimal property damage. | NA | http://wyohomelandsecurity.state.wy.us/Library/mitigation_plan/Chap4_Dam_Safety.pdf |