

**WEST VIRGINIA
SECRETARY OF STATE**

KEN HECHLER

ADMINISTRATIVE LAW DIVISION

Form #1

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JUN 19 3 07 PM '97

OFFICE OF WEST VIRGINIA
SECRETARY OF STATE

NOTICE OF PUBLIC HEARING ON A PROPOSED RULE

AGENCY: Office of Oil and Gas
WV Div. of Environmental Protection TITLE NUMBER: 38 35

RULE TYPE: Legislative; CITE AUTHORITY WV Code 22-1-13, 22-1-15, 22-1-16,

AMENDMENT TO AN EXISTING RULE: YES X NO 22B-1-2, and 22-5D-1 thru

IF YES, SERIES NUMBER OF RULE BEING AMENDED: 14 8

TITLE OF RULE BEING AMENDED: Dam Control

IF NO, SERIES NUMBER OF NEW RULE BEING PROPOSED:

TITLE OF RULE BEING PROPOSED:

DATE OF PUBLIC HEARING: July 22, 1997 TIME: 6:00PM

LOCATION OF PUBLIC HEARING: WV Division of Environmental Protection
#10 McJunkin Road
Nitro, West Virginia 25143-2506

COMMENTS LIMITED TO: ORAL , WRITTEN , BOTH X

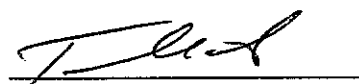
COMMENTS MAY ALSO BE MAILED TO THE FOLLOWING ADDRESS: Theodore M. Streit

The Department requests that persons wishing to make comments at the hearing make an effort to submit written comments in order to facilitate the review of these comments.

The issues to be heard shall be limited to the proposed rule.

ATTACH A **BRIEF** SUMMARY OF YOUR PROPOSAL

WV Div. of Env. Protection
#10 McJunkin Road
Nitro, WV 25143-2506





BUREAU OF ENVIRONMENT
10 McJunkin Road
Nitro, WV 25143-2506

CECIL H. UNDERWOOD
GOVERNOR

JOHN E. CAFFREY
COMMISSIONER

June 18, 1997

Ms. Judy Cooper
Director, Administrative Law Division
Office of the Secretary of State
Capitol Complex
Charleston, West Virginia 25305

RE: 38CSR14 - "Dam Control"

Dear Ms. Cooper:

This is to advise you that I am giving approval for filing the above-referenced rule as Notice of Public Hearing/Comment Period.

Your cooperation in this regard is very much appreciated. If you have any questions or require additional information, please feel free to contact Carrie Chambers at 759-0515.

Sincerely yours,


John E. Caffrey
Commissioner

JEC:cc

Attachment

**BUREAU OF ENVIRONMENT
DIVISION OF ENVIRONMENTAL PROTECTION**

BRIEFING DOCUMENT

Rule Title: 38CSR14 - Dam Control

A. AUTHORITY: WV Code WV Code 22-1-13, 22-1-15, 22-1-16, 22B-1-2,
and 22-5D-1 through 14

B. SUMMARY OF RULE:

Rule establishes general and specific rules for the design, placement, construction, enlargement, alteration, repair or removal of dams pertaining to the exploration, development, production, storage and recovery of oil and gas.

**C. STATEMENT OF CIRCUMSTANCES WHICH REQUIRE
RULE:**

Rule to be repealed because neither statute or procedures in place under oil and gas laws.

**D. FEDERAL COUNTERPART REGULATIONS -
INCORPORATION BY REFERENCE/DETERMINATION
OF STRINGENCY:**

N/A

E. CONSTITUTIONAL TAKINGS DETERMINATION:

N/A

In accordance with §22-1A-1 and 3(c), the Director has determined that this rule will not result in taking of private property within the meaning of the Constitutions of West Virginia and the United States of America.

F. CONSULTATION WITH THE ENVIRONMENTAL PROTECTION ADVISORY COUNCIL:

This amendment (or these amendments) to the rule will be reviewed by the Advisory Council during its meeting in July, 1997. Recommendations of the Council and the Director's response to Council's recommendations will be included in the August 1, 1997 filing with the Secretary of State's Office and the Legislative Rulemaking Review Committee.

APPENDIX B

FISCAL NOTE FOR PROPOSED RULES

Rule Title: 38CSR14 - Dam Control

Type of Rule: Legislative Interpretive Procedural

Agency: WV Division of Environmental Protection - Oil & Gas

Address: #10 McJunkin Road
Nitro, WV 25143-2506

1. Effect of Proposed Rule

	ANNUAL FISCAL YEAR				
	INCREASE	DECREASE	CURRENT	NEXT	THEREAFTER
<u>ESTIMATED TOTAL COST</u>	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
PERSONAL SERVICES	0	0	0	0	0
CURRENT EXPENSE	0	0	0	0	0
REPAIRS & ALTERNATIONS	0	0	0	0	0
EQUIPMENT	0	0	0	0	0
OTHER	0	0	0	0	0

2. Explanation of above estimates:

N/A

3. Objectives of these rules:

Rule to be repealed because neither statute or procedures in place under oil and gas laws.

Rule Title: 38CSR14 - Dam Control

4. Explanation of Overall Economic Impact of Proposed Rule.

A. Economic Impact on State Government.

N/A

B. Economic Impact on Political Subdivisions; Specific Industries; Specific groups of Citizens.

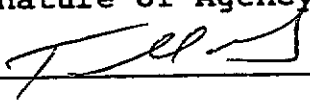
N/A

C. Economic Impact on Citizens/Public at Large.

N/A

Date: _____

Signature of Agency Head or Authorized Representative



FILED

TITLE 38
LEGISLATIVE RULES
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

JUN 19 3 00 PM '87

SERIES 14
DAM CONTROL

OFFICE OF WEST VIRGINIA
SECRETARY OF STATE

~~§38-14-1. General.~~

~~1.1. Scope. This legislative rule establishes general and specific rules for the design, placement, construction, enlargement, alteration, repair or removal of dams pertaining to the exploration, development, production, storage and recovery of oil and gas, and related mineral resources in this state, to include application for approval, hazard potential, subsurface and geologic investigations, laboratory investigation, hydrology, runoff control, hydraulics, slope stability and protection seepage analysis, settlement analysis, foundation analysis, liquefaction potential, quality control, maintenance and inspection.~~

~~1.2. Authority. W.Va. Code §§22-1-13; 22-1-15; 22-1-16; 22B-1-2, and 20-5D-1 through 14.~~

~~1.3. Filing Date. June 12, 1987~~

~~1.4. Effective Date. June 12, 1987~~

~~1.5. Former Rule Superseded. This legislative rule supersedes West Virginia Legislative Rule "Department of Natural Resources, Chapter 20-5D, Series 32, Dam Control Regulations" in effect on July 11, 1985, to the extent that such rule pertains to the exploration, development, production, storage and recovery of oil and gas, and related mineral resources in this state. Such rule was continued in effect pursuant to West Virginia Code §22-1-15 for the benefit of the Department of Energy to the extent that it pertained to the provisions of the West Virginia Energy Act.~~

~~§38-14-2. Definitions.~~

~~Unless the context in which used clearly requires a different meaning, the definitions contained in West Virginia Code §20-5D-3 shall apply to this rule in addition to those definitions set forth below; except that for the purpose of this rule "Department" shall mean the Department of Energy, Division of Oil and Gas, and "Director" shall mean the Director of the Division of Oil and Gas of the Department of Energy.~~

~~2.1. "Appurtenances" means any ancillary part of the dam and/or reservoir system which contributes to the operation or construction of the dam.~~

~~2.2. "Channel protection" means any measures taken to prevent or control erosion, cavitation, or other destructive the lowest point of the crest of the embankment of a dam and the reservoir water surface.~~

~~2.3. "Dangerous condition" means any structural, or hydraulic condition of a dam or its appurtenances which may lead to (1) failure of the dam and possible loss of human life or substantial loss of property, or (2) harm to the public health or welfare, or (3) significant harm to the environment.~~

~~2.4. "Design storm" means predicted precipitation of given intensity, frequency, and duration based on National Weather Service data.~~

~~2.5. "Diversion ditch" means a designed channel constructed for the purpose of collecting and transmitting surface runoff resulting from a given design storm.~~

~~2.6. "Embankment" means a man-made deposit of earth or waste materials, usually exhibiting at least one (1) sloping face.~~

~~2.7. "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.~~

~~2.8. "Engineer" means a registered professional engineer in accordance with Article 13, Chapter 30 of the Code of West Virginia, 1931, as amended (West Virginia State Registration Law for Professional Engineers.)~~

~~2.9. "Freeboard" means the vertical distance between the lowest point of the crest of the embankment of a dam and the reservoir water surface.~~

~~2.10. "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.~~

~~2.11. "Hazard potential" means a classification rating assigned to a structure based on engineering evaluations and judgement for predicting the danger to human life, property and environment should a failure of the structure occur.~~

~~2.12. "Highway, primary" means those roadways which are designed as interstates, United States numbered highways or West Virginia numbered highways.~~

~~2.13. "Highway, secondary" means those roadways which are designated by the West Virginia Department of Highways as county numbered routes.~~

~~2.14. "Hydraulics" means the study of the physical behavior of liquids, especially water, in natural or man-made systems or processes.~~

~~2.15. "Hydrologic analysis" means a determination, using accepted engineering methods, to establish surface water runoff for a specified design storm.~~

~~2.16. "Hydrology" means the science that deals with the occurrence and behavior of water in the atmosphere, on the ground and underground.~~

~~2.17. "Impoundment" means a basin constructed for the retention of water, sediment or waste.~~

~~2.18. "Natural drainway" means any natural water course which may carry water to the tributaries and rivers of the watershed.~~

~~2.19. "P100" means the rainfall amount based on a one hundred (100) year frequency, six (6) hour duration rainfall event.~~

~~2.20. "PMP" means the probable maximum precipitation.~~

~~2.21. "Principal spillway" means the hydraulic structure designed to discharge water stored between normal pool and the emergency spillway invert elevations.~~

~~2.22. "Probable maximum precipitation" means the depth-duration-area rainfall for a particular area that represents the maximizing of the most critical meteorological conditions that are considered possible of occurrence.~~

~~2.23. "Safety factor" means the ratio of the available shear strength to the developed shear stress, or ratio of the sum of the resisting forces to the sum of the loading or driving forces, as determined by accepted engineering practices.~~

~~2.24. "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.~~

~~2.25. "Serious problem" means a situation, which left uncorrected, may lead to a dangerous condition.~~

~~2.26. "Site" means the actual or planned location of a dam including, but not limited to, appurtenant works, reservoirs area, diversion ditches, sediment control facilities, and borrow areas.~~

~~2.27. "Subsidence" means a sinking, collapsing or cracking of a portion of the earth's surface resulting from the presence of a voids beneath the surface.~~

~~§38-14-3. Requirements for a certificate of approval.~~

~~3.1. Applicability. An application and certificate of approval is required for any placement, construction, modification, enlargement, alteration, repair or removal of a dam after June 13, 1973, pertaining to the exploration, development, production, storage and recovery of oil and gas, and related mineral resources in this state. The Director of the Department of Energy, Division of Oil and Gas shall give notice to file an application for a certificate of approval to every owner of such a dam completed prior to July 1, 1973, that has not been issued a certificate of approval pursuant to West Virginia Code §§20-5D-1 through 14, as of the effective date of this rule. Any person who wishes to construct, modify, or remove such a dam or who is notified by said Director shall (a) file an application for a certificate of approval with the Department of Energy, Division of Oil and Gas and (b) obtain from said Division a certificate of approval, unless such person has applied for and been issued a certificate of approval pursuant to West Virginia Code §§20-5D-1 through 14, as of the effective date of this rule.~~

~~3.2. Application requirements. An application for a certificate of approval shall be prepared by or under the direct supervision of a registered professional engineer. The application shall be on forms prescribed by the Director of the Division of Oil and Gas of the Department of Energy and shall include one set of maps and drawings on standard twenty-four inch (24") by thirty six inch (36") size plan sheets with two (2) copies of an engineering report. The engineering report shall satisfy the requirements of Section 4.~~

~~§38-14-4. Engineering report requirements.~~

~~The engineering report required to accompany the application for a certificate of approval shall contain the following information in the order listed:~~

~~4.1. Project narrative. A general narrative and discussion of the project shall be submitted to include as required by the design concept a discussion of existing site conditions, local geology, the design life of the facility, subsidence potential, design methodology backed up with design computations and data, method of construction to include clearing and grubbing topsoil stockpiles, construction of surface and subsurface drainage facilities, phases of construction routine inspection and maintenance, and timetable of construction. A description of the duties, responsibilities and lines of communication between those persons responsible for the design, construction and operation of the dam shall be included.~~

~~4.2. Emergency warning system. All owners of dams posing a hazard to human life shall include an emergency notification and evacuation procedure and shall include a list of appropriate agencies to be contacted in the event a dangerous condition develops. These~~

agencies shall include as a minimum the Division of Oil and Gas of the Department of Energy, Office of Emergency Services, and state and local law enforcement agencies.

~~4.3. Hazard classification. The hazard potential shall be determined by the applicant based on the potential loss that would result due to a failure and the classification determined as listed below:~~

~~4.3.1 Class A. Dams located in rural or agricultural areas where failure may damage farm buildings, agricultural land, or secondary highways. Failure of the structure would cause only loss of the structure and loss of property use such as related roads, but with little additional damage to adjacent property. Any impoundment exceeding twenty five (25) feet in height or two hundred (200) acre feet storage volume or having a watershed exceeding five hundred (500) acres shall not be a Class A structure.~~

~~4.3.2. Class B. Dams located in predominately rural agricultural areas where failure may damage isolated homes, primary highways or minor railroads or cause interruption of relatively important public utilities. Failure of the structure may cause great damage to property and project operations.~~

~~4.3.3. Class C. Dams located where failure may cause loss of human life, serious damage to homes, industrial and commercial buildings, important public utilities, primary highways, or main railroads. This classification must be used if failure would cause possible loss of human life.~~

~~4.4. Initial site investigation.~~

~~4.4.1. Site selection.~~

~~4.4.1.1. Hazard classification evaluation.~~

~~4.4.1.1.1. A complete upstream and downstream hazard evaluation shall be conducted based on Section 4.3. No dam shall be constructed so that upstream dwellings will be flooded during maximum pool conditions unless otherwise approved by the Director of the Division of Oil and Gas of the Department of Energy based on specific site conditions.~~

~~4.4.1.1.2. A downstream breach routing of the dam must be performed to justify a hazard classification of A or B if dwellings are located downstream.~~

~~4.4.1.2. Site survey. A site survey must be conducted to establish baselines and elevations of the dam embankments, reservoir and borrow areas, and appurtenant structures. The survey must locate all test pits, borings, mine openings, landslides, etc.~~

~~4.4.1.3. Borrow areas. Suitable borrow areas shall be evaluated for appropriate construction materials and required volume.~~

~~4.4.2. Geotechnical investigation.~~

~~4.4.2.1. A geotechnical investigation shall be performed. The quantity, location and depth of borings, test pits or trenches shall be adequate for 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 insitu testing and soil sampling shall be reported. Soil profiles may be required for critical locations in the structure, spillways and other pertinent locations which affect the safety of the structure. A geological study shall also be conducted to evaluate 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 to include thickness of seam, depth and type of rock above the seam, and previous or~~

~~expected subsidence problems shall be considered where subsidence may affect the safety of the structure.~~

~~4.4.2.2. Laboratory investigation. Laboratory tests shall be conducted on foundation and embankment materials to include complete soil classification: grain size, sieve, and hydrometer analysis, Atterburg limits, density, water content, compaction tests, shear strength, consolidation and permeability where applicable. Compaction curves shall be developed for all fill materials as appropriate.~~

~~4.4.3. Hydrologic investigation.~~

~~4.4.3.1. A survey shall be conducted to determine soil types, land use, land slope, watershed area, runoff curve number, and any other factors needed to establish watershed characteristics.~~

~~4.4.3.2. Stream flow analysis shall be conducted to determine stream flow quantity and quality as it affects the dam and its appurtenances.~~

~~4.4.3.3. All necessary parameters to determine stream channel hydraulics shall be measured.~~

~~4.5. Hydrology and hydraulics.~~

~~4.5.1. Design data required. A summary of all hydrologic and hydraulic data determined in the initial site investigation and used in the analysis (Section 4.4) shall be included in table or figure form.~~

~~4.5.2. Design requirements.~~

~~4.5.2.1. Design storm. All dams shall be designed to meet the following minimum hydrologic criteria based on hazard classification:~~

~~4.5.2.1.1. Class A dams shall be designed for a minimum of $P100 + 0.12$ (PMP - P100) inches of rainfall in six (6) hours plus three (3) feet of freeboard. If the storage X effective height is less than three thousand (3,000) (acre feet x feet) then Soil Conservation Pond Standard 378 may be substituted.~~

~~4.5.2.1.2. Class B dams shall be designed for a minimum $P100 + 0.40$ (PMP - P100) inches of rainfall in six (6) hours plus three (3) feet of freeboard.~~

~~4.5.2.1.3. Class C dams shall be designed for the probable maximum precipitation, or for eighty percent (80%) of the probable maximum precipitation plus three (3) feet of freeboard provided the watershed is less than ten (10) square miles in area.~~

~~4.5.2.2. Storage and discharge.~~

~~4.5.2.2.1. Class A dams shall be designed with either an open channel spillway only, or a combination of principal and emergency spillways. The dam must be capable of passing that portion of the design storm that cannot be safely stored in the impoundment. Ninety percent (90%) of the stored portion of the design storm shall be discharged with ten (10) days after the storm event.~~

~~4.5.2.2. Storage and discharge.~~

~~4.5.2.2.2. Class B dams shall be designed with either an open channel spillway only, or a combination of principal and emergency spillways. The dam must be capable of passing that portion of the design storm that cannot be safely stored in the~~

~~impoundment. Ninety percent (90%) of the stored portion of the design storm shall 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.~~

~~4.5.2.2.3. Class C dams may be designed in one of three (3) ways:~~

~~4.5.2.2.3.1. A dam designed without discharge structures shall be capable of storing a minimum of two (2) probable maximum, six (6) hour duration storms. 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) probable maximum storm or less.~~

~~4.5.2.2.3.2. A dam designed with a decant or principal spillway only shall be capable of storing one (1) probable maximum, six (6) hour duration storm. Ninety percent (90%) of the stored portion of the storm shall 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.~~

~~4.5.2.2.3.3. 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 probable maximum storm that cannot be safely stored in the impoundment. Ninety percent (90%) of the stored portion of the storm event. Slurry impoundments shall be provided with a means of removing water to maintain the lowest practical water level.~~

~~4.5.2.3. Surface drainage.~~

~~A diversion system shall be designed to protect the entire front slope of the dam from excessive erosion. All diversion systems shall exit safely beyond the toe of an embankment in a natural drainway capable of carrying the design flow without excessive erosion. The design storm for diversion systems shall be the one hundred (100) year, six (6) hour duration storm event.~~

~~4.5.2.4. Spillways.~~

~~4.5.2.4.1. All spillways shall exit in adequate distance beyond the toe of the embankment in a natural drainway to prevent erosion of the toe.~~

~~4.5.2.4.2. Conduit spillway inlets must be protected by a designed trash rack and riser type spillways must be designed to prevent detrimental vortexing. An adequate foundation and bedding shall be designed for all conduits and risers. Anti seep mechanisms shall be designed for all conduits. Conduits spillways shall be of sufficient strength to withstand the maximum load of fill above them and of suitable material to resist deterioration for the design life of the structure. Conduit spillways must also be designed to resist uplift pressures. The outlet of all conduites, where blockage by animals can occur, must be protected by an animal guard.~~

~~4.5.2.4.3. All new freshwater dams must be designed with a gated drain pipe for draining the impoundment.~~

~~4.5.2.5. Landslide potential.~~

~~When locating all hydraulic structures the potential for landslides or slope failures as determined in the initial site investigation shall be evaluated according to Sections 4.6.4.3 and 4.6.5.~~

~~4.5.3. Hydrologic analysis.~~

~~_____ The hydrologic analysis shall be performed for the spillway and/or surface drainage system. This should include inflow hydrographs, stage storage curves, stage discharge curves and routings. The spillways shall safely discharge that portion of the design storm that is not stored in the reservoir. If a computer analysis is used, only the results of the analysis shall be included.~~

~~_____ 4.5.4. Hydraulic analysis.~~

~~_____ Using accepted engineering practices, a hydraulic analysis must be performed for the spillways and surface drainage system. Typical cross section design techniques can be used where constant slopes are encountered. All hydraulic structures shall be designed to safely control the velocity to prevent excessive erosion. Accepted engineering practices shall be used to design rip rap, non flexible channel linings, bedding and energy dissipators.~~

~~_____ 4.6. Geotechnical evaluation.~~

~~_____ 4.6.1. Design data. A summary of all geotechnical data determined in the initial site investigation (Section 4.4.2) and used in the analysis shall be included in table or figure form.~~

~~_____ 4.6.2. Seepage Analysis. An analysis of seepage and its detrimental effects on structural integrity and on the environment shall be made. The analysis shall include consideration of potential piping in the embankment, foundation, and abutments. Seepage control will be required to insure stability of the embankment and adjacent areas. Drainage systems shall designed and constructed of an approved material and protected by a properly designed filter zone using accepted geotechnical engineering design practices.~~

~~_____ 4.6.3. Foundation stability.~~

~~_____ When locating dams, the potential for landslides as determined in the initial site investigation shall be evaluated according to Sections 4.6.4.3. and 4.6.5. Potential subsidence and settlement and their consequences must be considered using accepted engineering technology. Special attention should be given to differential settlement which could lead to cracking the dam. Spillway pipes on compressible foundations must be protected from damage due to settlement. The foundation must have or must be treated to have adequate bearing capacity to support the embankment and any appurtenant works.~~

~~_____ 4.6.4. Stability requirements.~~

~~_____ 4.6.4.1. Embankment stability.~~

~~_____ Slope stability analyses will be required for construction and long term steady state conditions to achieve the following minimum factors of safety:~~

~~_____ Safety Factor~~

Normal and Maximum Pool Conditions	1.5
End of Construction	1.3
Rapid Drawdown	1.2
Seismic	1.2

~~_____ 4.6.4.2. Appurtenance structural stability.~~

~~_____ Embankments constructed as part of an appurtenant structure must achieve a static factor of safety of 1.5 where failure will lead to a dangerous condition in the dam.~~

~~_____ 4.6.4.3. Landslides.~~

~~_____ If landslides noted in the dam site or reservoir areas will 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 landslides shall be corrected to a minimum static factor of safety of 1.5.~~

~~_____ 4.6.4.4. Special considerations. Gravity structures.~~

~~_____ 4.6.4.4.1. Over turning. The reaction of all forces must act within the middle one third of the base. Variation to this requirement may be given if detailed computations prove that overturning will not occur.~~

~~_____ 4.6.4.4.2. Sliding. The dam must have a factor of safety against sliding of at least 4.0 for normal loading conditions and 1.5 for maximum loading conditions.~~

~~_____ 4.6.4.4.3. Bearing. The factor of safety against bearing failure shall be at least 1.5 for maximum stress at the toe.~~

~~_____ 4.6.5. Stability analyses.~~

~~_____ All slope stability analysis shall be performed using accepted engineering techniques. Exceptions to this requirement will be made only where there is sufficient evidence to indicate that slope failures will not occur.~~

~~_____ 4.6.6. Liquefaction.~~

~~_____ The potential for liquefaction must be considered. Safeguards against the development of this condition shall be required.~~

~~_____ 4.7. Instrumentation.~~

~~_____ Considerations for installation of instrumentation such as piezometer, settlement markers, slope indicators, and similar monitoring devices shall be included in the plan to monitor present conditions, construction conditions, and to verify design assumptions. A plan for installation, monitoring and maintaining these devices shall also be provided.~~

~~_____ 4.8. Specifications. Specifications for sit development shall be provided to include as a minimum: Clearing and grubbing; soil stockpiles; subdrain construction; slopes; grades; details of surface drainage facilities; spreading and compaction requirements to include lift thicknesses, moisture content and degree of compaction with appropriate compaction curves; material and/or gradation requirements for sub-drainage structures; pipes; concrete; anti-seep mechanism; channel and slope protection (riprap, etc); installation and reading of monitoring devices; inspection and maintenance; revegetation; blasting safety; construction erosion and sediment control; and cutoff trenches.~~

~~_____ 4.9. Maps and drawings.~~

~~_____ 4.9.1. Maps and plans shall be provided showing the site in relation to major highways, county seats, and major drainage. County highway maps may be used for this purpose.~~

~~_____ 4.9.2. A map showing the limits of the watershed with respect to the site shall be provided. The minimum mapping requirement shall be a seven and one half (7 1/2) minute USGS map with the site plotted on it.~~

~~_____ 4.9.3. A plan view of the site shall be provided showing detailed contour intervals (5' maximum) including all disturbed and reservoir areas. Location of springs, seeps, underground mines, mine drainage and/or openings, the subdrain system, project stationing;~~

~~cross sections, borings and test pits, instrumentation, reference points and other pertinent data shall be included in the plan view.~~

~~4.9.4. Cross sections of the dam transversely and longitudinally shall be provided showing original ground, sub drain location, elevations, benches, spillways, and other pertinent features of the site. A cross section shall be provided for stability computations showing the site at critical areas with subsurface data plotted.~~

~~4.9.5. Cross section and profiles of major drainage facilities shall be provided. Additional cross sections shall be taken in all critical areas such as curves and weak areas.~~

~~4.9.6. Construction drawings shall be provided for subdrains, spillways, anti-seep mechanisms, and other pertinent structures.~~

~~4.10. Removal/Elimination.~~

~~Removal of a dam shall consist of the total elimination of its impounding capabilities in a safe and approved manner by one of the following methods:~~

~~4.10.1. Removal of the embankment.~~

~~The embankment shall be completely removed to approximate original contour. A plan and timetable for removal shall be submitted.~~

~~4.10.2. Elimination of impoundment.~~

~~The reservoir area shall be completely filled with suitable material in such a manner that will create a fill with a minimum long term static factor of safety of 1.5 unless otherwise approved by the Director. A plan and timetable for the modification shall be submitted.~~

~~4.10.3. Breaching.~~

~~4.10.3.1. The embankment shall be breached with a design channel having the capacity to carry the peak runoff from the design storm corresponding to the dam's hazard classification. Channel protection shall be provided at least to a flow depth equal to the one hundred (100) year, six (6) hour duration storm.~~

~~4.10.3.2. Plans for removal shall be submitted which include a schedule for implementation.~~

~~§38-14-5. Performance standards.~~

~~5.1. Site preparation.~~

~~5.1.1. Sediment control.~~

~~Approved sediment control facilities shall be installed prior to clearing and grubbing.~~

~~5.1.2. Clearing and grubbing.~~

~~Clearing and grubbing must be performed in foundation, borrow and soil stockpile areas. Clearing is required~~