ENVIRONMENTAL PROTECTION COMMISSION[567]

Regulatory Analysis

Notice of Intended Action to be published: Iowa Administrative Code 567—Chapter 73 "Approval, Construction, Use, Maintenance, Removal, Inspections, and Safety of Dams"

Iowa Code section(s) or chapter(s) authorizing rulemaking: 455B.263(8) and 455B.276(1)

State or federal law(s) implemented by the rulemaking: Iowa Code chapter 455B, subchapter III, part 4

Public Hearing

A public hearing at which persons may present their views orally or in writing will be held as follows:

September 24, 2024 1 p.m.	Virtual via Zoom – see www.iowadnr.gov/Environmental-Protection/Water-Quality/Water-Quality-Rulemaking for meeting information

Public Comment

Any interested person may submit written comments concerning this Regulatory Analysis. Written comments in response to this Regulatory Analysis must be received by the Department of Natural Resources (Department) no later than 4:30 p.m. on the date of the public hearing. Comments should be directed to:

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Purpose and Summary

Proposed Chapter 73 regulates dams in the state, including construction, inspections, and owner responsibilities. A state dam safety program reduces the risks of dam failures that can lead to loss of life and property damage. Iowa's dam safety rules closely follow the current best practices and national standards. This chapter has been reviewed and edited consistent with Executive Order 10.

Analysis of Impact

1. Persons affected by the proposed rulemaking:

- Classes of persons that will bear the costs of the proposed rulemaking:

Private landowners, businesses and government agencies are all impacted by floodplain and dam safety regulation.

- Classes of persons that will benefit from the proposed rulemaking:

Private landowners and businesses benefit from construction regulation by reducing potential flood-related damages. Surrounding landowners benefit by the reduction in potential risk of flooding from dam failures. The general public benefits from the reduction in public damages related to emergency response and recovery.

2. Impact of the proposed rulemaking, economic or otherwise, including the nature and amount of all the different kinds of costs that would be incurred:

- Quantitative description of impact:

Costs vary depending on the projects.

- Qualitative description of impact:

Applicants are required to construct dams and perform maintenance to reduce the risk of dam failure.

3. Costs to the State:

- Implementation and enforcement costs borne by the agency or any other agency:

Staff time is dedicated to the review of proposed construction and to perform dam inspections.

- Anticipated effect on state revenues:

No anticipated effect on state revenue is expected.

4. Comparison of the costs and benefits of the proposed rulemaking to the costs and benefits of inaction:

Floodplain regulation is required by the Iowa Code and seeks to reduce the damages both to individuals and the public due to flood-related risk.

5. Determination whether less costly methods or less intrusive methods exist for achieving the purpose of the proposed rulemaking:

Floodplain regulation and dam safety is required by the Iowa Code.

6. Alternative methods considered by the agency:

- Description of any alternative methods that were seriously considered by the agency:

Floodplain regulation is required by the Iowa Code. The Department seeks to streamline the application and review process to ease the process.

- Reasons why alternative methods were rejected in favor of the proposed rulemaking:

Floodplain and dam safety is required by the Iowa Code and the dam safety rules are consistent with national standards and those of surrounding states.

Small Business Impact

If the rulemaking will have a substantial impact on small business, include a discussion of whether it would be feasible and practicable to do any of the following to reduce the impact of the rulemaking on small business:

- Establish less stringent compliance or reporting requirements in the rulemaking for small business.
- Establish less stringent schedules or deadlines in the rulemaking for compliance or reporting requirements for small business.
- Consolidate or simplify the rulemaking's compliance or reporting requirements for small business.
- Establish performance standards to replace design or operational standards in the rulemaking for small business.
- Exempt small business from any or all requirements of the rulemaking.

If legal and feasible, how does the rulemaking use a method discussed above to reduce the substantial impact on small business?

Rulemaking is composed in a way that tries to ease requirements for not only small businesses, but individual landowners that need to apply and receive permits. Often times permitting requires engineering design that frequently utilizes small local engineering firms around the state.

Text of Proposed Rulemaking

ITEM 1. Rescind 567—Chapter 73 and adopt the following **new** chapter in lieu thereof:

CHAPTER 73
APPROVAL, CONSTRUCTION, USE, MAINTENANCE, REMOVAL, INSPECTIONS, AND SAFETY OF DAMS

DIVISION I
SCOPE AND DEFINITIONS

567—73.1(455B) Scope and applicability. The department regulates the storage of water and the construction and maintenance of dams. Any person who desires to construct, repair, modify, abandon, or remove a dam has a responsibility to determine whether approval is required from the department prior to undertaking any such work.

567—73.2(455B) Definitions.

"Abandonment" means to render a dam nonimpounding by dewatering and filling the reservoir created by that dam with solid materials and by diverting the natural drainage around the site.

"Acre-foot" means a volume of water that would cover one acre of land one foot deep, equal to 43,560 cubic feet of water.

"Adverse consequences" means negative impacts that may occur upstream, downstream, or at locations remote from the dam. The primary concerns are loss of human life, economic loss including but not limited to property damage, public damages, disruption of public utilities, and environmental impact.

"Appurtenant structures" means structures such 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, occurring through either the dam or its abutments.

"Auxiliary spillway" means any secondary spillway that is designed to be operated infrequently.

"Confinement feeding operation" means the same as defined in 567—65.1(459,459B).

"Dam" means a barrier that impounds or stores water.

"Dam owner" means any person who owns, controls, operates, maintains, or manages a dam.

"Hazard potential" means a classification based on the possible incremental adverse consequences that result from the release of water or stored contents due to a failure or misoperation of the dam or appurtenances. The hazard potential classification of a dam does not reflect in any way on the current condition of the dam and its appurtenant structures (e.g., safety, structural integrity, or flood routing capacity).

"Height of dam" means the vertical distance from the top of the dam to the natural bed of the stream or water source measured at the downstream toe of the dam or to the lowest elevation of the outside limit of the dam if it is not across a water source.

"Incremental consequence" means the difference, under the same conditions (e.g., flood, earthquake, or other event), between the consequences that are likely to occur from the failure or misoperation of the dam and appurtenances as compared to the consequences that are likely to occur without such failure or misoperation.

"Permanent storage" means the volume of water expressed in acre-feet that is stored upstream from a dam or in an impoundment up the level of the principal outlet works of the structure.

"Probable" means more likely than not to occur; reasonably expected; realistic.

"Probable maximum flood" means the flood that may be expected from the most severe combination of critical meteorological and hydrologic conditions that are reasonably possible in the region, and is derived from probable maximum precipitation, the theoretical greatest depth of precipitation for a given duration that is physically possible over a particular drainage area at a certain time of year. The probable maximum precipitation within designated zones in Iowa has been determined by the National Weather Service. The probable maximum flood for any location within Iowa is determined by the department.

"Public damages" means as defined in 567—70.2(455B,481A).

"Temporary storage" means the volume of water expressed in acre-feet that may be stored upstream from a dam or in an impoundment above the level of the principal outlet works.

"Q500," "Q100," "Q50," "Q25," "Q15," "Q10," et cetera, means the same as defined in rule 567—70.2(455B,481A).

567—73.3(455B) Regulated dams.

73.3(1) *Thresholds.* Dams meeting any of the following thresholds shall be regulated by the department:

a. A dam with a height of at least 25 feet and a storage of 15 acre-feet or more at the top of the dam elevation; or

b. A dam with a storage of 50 acre-feet or more at the top of the dam elevation and a height of at least 6 feet; or

c. A dam that is assigned a hazard potential of high hazard.

73.3(2) *Exceptions.* Road embankments or driveways with culverts are exempt unless such structure serves, either primarily or secondarily, a purpose commonly associated with dams, such as the temporary storage of water for flood control.

73.3(3) *New construction.* Before construction begins, approval is required for construction of any dam meeting the thresholds of a regulated dam. The proposed dam must meet the criteria outlined in this chapter.

73.3(4) *Existing dams.*

a. Approval is required for:

(1) Modification, repair, alteration, breach, abandonment, or removal of any existing dam or appurtenant structure beyond the scope of ordinary maintenance if the height of the dam or storage of the dam exceeds the applicable thresholds in this rule.

(2) Any change in operating procedures if the height of the dam or storage of the dam exceeds the applicable thresholds in this rule.

b. Spillway reconstruction, changes in normal water level, and modification of the dam embankment or spillway are examples of modifications that require approval. The dam must meet the criteria outlined in this chapter. Dams found to be unsafe according to 567—73.33(455B) shall be repaired or removed.

73.3(5) *Required upgrades.* Improvements may be required for existing dams in order to reduce the risk of a dam failure.

a. Existing dams assigned a high hazard potential or significant hazard potential that have been inspected or analyzed and found not to meet the criteria in this chapter will be required to meet the requirements outlined in this chapter for the appropriate hazard potential.

b. Existing dams assigned a low hazard potential that have been inspected or analyzed and found to have a significant hazard potential or high hazard potential shall be required to be upgraded to meet the requirements outlined in this chapter for the appropriate hazard potential.

567—73.4(455B) Assignment of hazard potential. All existing and proposed dams reviewed by the department shall be assigned a hazard potential. Anticipated future land and impoundment use shall be considered in the determination of hazard potential. The hazard potential shall be determined using the following criteria:

73.4(1) *Low hazard.* A dam shall be classified as "low hazard" if failure of the dam would result in no probable loss of human life, low economic losses, and low public damages.

73.4(2) *Significant hazard.* A dam shall be classified as "significant hazard" if failure of the dam would result in no probable loss of human life but may damage residential structures or industrial, commercial, or public buildings; may negatively impact important public utilities or moderately traveled roads or railroads; or may result in significant economic losses or significant public damages.

73.4(3) *High hazard.* A dam shall be classified as "high hazard" if located in an area where failure would result in probable loss of human life.

73.4(4) *Consideration of changes affecting hazard potential.* In locating the site of a dam and in obtaining easements and rights-of-way, the applicant shall consider the impacts to the hazard potential

of a dam from anticipated changes in land use downstream or adjacent to the impoundment, the operation of the dam, and the potential liability of the dam owner.

73.4(5) *Changes in hazard potential.* Any future changes in downstream land use, development, impoundment use, or critical hydraulic structures shall require a reevaluation of the hazard potential of the dam. If the hazard potential of the dam changes, the dam shall be required to meet all applicable criteria for that hazard potential. This may require additional increases in spillway capacity for the dam. The owner and any other persons responsible for the construction and operation of the dam shall assume all risks for future costs to upgrade a dam in the event there is a change in hazard potential.

567—73.5 to **73.9** Reserved.

DIVISION II
APPROVAL PROCESS

567—73.10(455B) Review and approval process for dam construction, modification, abandonment, or removal.

73.10(1) *Application process.* Application materials are provided by the department. The application shall be submitted by or on behalf of the person or persons who will be the future dam owner or owners. The application shall be signed by the applicant or a duly authorized agent. Completed applications along with supporting information shall be submitted to the department through an online application system or mailed to Iowa Department of Natural Resources, Attn: Joint Application, 502 East 9th Street, Des Moines, Iowa 50319. For dam repairs, abandonment, or removal, the department may waive the requirements of the application process outlined in this rule if the requirements are unnecessary for the application approval or if the dam has been designated as unsafe and immediate temporary emergency stabilization repairs are required to prevent failure of the dam. Permanent repairs or modifications will require review and approval.

73.10(2) *Preliminary application packet.* The preliminary application packet includes the joint application form and requires submittal of preliminary design data prepared by or under supervision of a professional engineer licensed in the state of Iowa or by an engineer working for the United States government. The preliminary design data packet shall contain a report summarizing the preliminary design, hydrologic data and reservoir routing, a hazard potential analysis, preliminary design drawings, the soils and geotechnical engineering analysis, and a list of the engineering references used as the basis for design and construction.

73.10(3) *Project review.* The department shall review a preliminary application packet and provide feedback or concurrence on the initial design and assumptions. After concurrence with the preliminary application packet and upon reception of the final submittal as required by 73.10(4), the department will review the final submittal and issue a decision based on whether the project meets criteria for approval outlined in this chapter.

73.10(4) *Final submittal.* After the department's review of and concurrence with the preliminary submittal, the engineering plans and other engineering information shall be certified by a professional engineer licensed in the state of Iowa, unless prepared by an engineer working for the United States government, and submitted with the following information:

a. One complete set of certified construction plans;

b. One complete set of construction specifications;

c. An operating plan, if required;

d. Easements, if required;

e. For high hazard dams, an emergency action plan; and

f. An engineering design report documenting all aspects of the design of the dam and how the design of the dam meets the criteria outlined in this chapter. The engineering design report shall include the following: hazard potential analysis; hydrology and hydraulic calculations; embankment design and foundation analysis; and structural calculations, where applicable.

73.10(5) *Public notice.* Public notice shall be issued by the department to inform persons who may experience adverse consequences by the permitted project. Adverse consequences may occur through maintenance of the dam and appurtenant structures, spillway discharges, temporary ponding of floodwater behind the dam, or failure of the dam. It is the applicant's responsibility to submit sufficient information with the preliminary application packet and on request to enable the department to accurately identify the owners, occupants, and addresses of affected lands.

73.10(6) *Project approval or disapproval.*

a. Approval. Issuance of a dam construction permit shall constitute approval of a project. The permit may include one or more special conditions when reasonably necessary to implement relevant criteria.

b. Disapproval. A letter to the applicant denying the application shall constitute disapproval of a project.

c. Notice of decision. Copies of the decision shall be mailed or electronically transmitted to the applicant and any person who commented.

73.10(7) *Appeal of decision.* Any person aggrieved by a decision issued under these rules may file a notice of appeal as governed by 567—Chapter 7.

73.10(8) *General conditions.* Department approvals of a project shall be subject to the following conditions:

a. Change in ownership. The dam owner and any successor in interest to the real estate on which the project or activity is located shall be responsible for notifying the department of change in ownership.

b. Maintenance. The dam owner has a responsibility to maintain the dam and appurtenant structures in a safe condition. Maintenance shall include keeping earthen portions of the dam well vegetated, keeping trees and brush off the dam, preventing and repairing erosion, keeping the spillway free of obstructions, repairing deteriorated structural elements, and performing required maintenance on mechanical appurtenances such as gates.

c. Responsibility. No legal or financial responsibility arising from the construction or maintenance of the approved works shall attach to the state of Iowa or the department due to the issuance of an approval or administrative waiver.

d. Lands. The applicant shall be responsible for obtaining such government licenses, permits, and approvals, and lands, easements, and rights-of-way which are required for the construction, operation, and maintenance of the authorized work.

e. Change in plans. No material change from the plans and specifications approved by the department shall be made unless authorized in writing by the department.

f. Revocation of permit. A department permit may be revoked if construction is not completed within the period of time specified in the department permit.

g. Performance bond. A performance bond may be required when necessary to secure the construction, operation, and maintenance of approved projects and activities in a manner that does not create a hazard to the public's health, welfare, and safety. The amount and conditions of the bond shall be specified as special conditions in the department permit.

h. Construction inspection. For high hazard and significant hazard dams, construction shall be inspected by or under the supervision of a professional licensed engineer in the state of Iowa. The engineer shall prepare and certify as-built plans after completion and a report documenting that the dam was constructed in general conformance with the approved plans (or approved changes) and outlining unusual circumstances encountered during construction. The water storage permit shall not be issued until the department accepts the as-built plans and report.

i. Postconstruction department inspections. A department approval which authorizes construction or modification, operation, and maintenance of a dam for which ongoing inspections are required by these rules shall include a condition stating that the department shall have access to the dam site for such inspections at a reasonable time after notification of the dam owner.

j. *Owner inspections.* For high hazard and significant hazard dams, the owner is responsible for annual inspections and submission of written inspection reports to the department as required in subrule 73.30(4).

567—73.11(455B) Water storage permits.

73.11(1) A water storage permit shall be required for all regulated dams in order to legally impound water. No water shall be impounded by a dam or reservoir prior to issuance of a water storage permit.

73.11(2) Application for a dam construction permit shall constitute application for a water storage permit if the appropriate fee (as stated in 567—subrule 50.4(2)) is received with the application.

73.11(3) A water storage permit shall be issued upon a finding by the department that the dam and reservoir are safe to impound water within the conditions prescribed in the dam construction permit and the project meets the following conditions:

a. The proposed storage is for a specified beneficial use such as human or livestock water supply, flood control, water quality, recreation, aesthetic value, erosion control, or low-flow augmentation.

b. The impounding structure can be operated in a manner which will not adversely affect any applicable protected flow in the impounded stream. Protected flows are listed in 567—Chapter 52.

c. For high hazard and significant hazard dams, the water storage permit will not be issued until as-built plans and a construction report have been submitted documenting that the dam has been constructed in general conformance with the approved plans and conditions of the dam construction permit and until the department has conducted an inspection of the dam.

73.11(4) A water storage permit may be modified, canceled, or suspended pursuant to Iowa Code section 455B.271. Conditions of cancellation or suspension of water storage permits shall include draining the lake with any available low-level drain and may include dewatering with other methods or breaching of the dam.

567—73.12 to **73.14** Reserved.

DIVISION III
CRITERIA FOR APPROVAL

567—73.15(455B) General criteria.

73.15(1) *Required findings.* The department shall approve the construction, repair, modification, abandonment, or removal of a dam only after finding that the project is designed in accordance with accepted engineering practice and methods, and in a manner consistent with the applicable department criteria in this rule.

73.15(2) *Waiver.* A request for a waiver to this chapter shall be submitted in writing pursuant to 561—Chapter 10. The contents of a petition for waiver shall include information pursuant to 561—10.9(17A,455A).

567—73.16(455B) Lands, easements, and rights-of-way. An application for approval of a dam project shall include information showing the nature and extent of lands, easements, and rights-of-way that the applicant has acquired or proposes to acquire to satisfy the following criteria:

73.16(1) Ownership or perpetual easements shall be obtained for the area to be occupied by the dam embankment, spillways, and appurtenant structures, and the permanent or maximum normal pool.

73.16(2) Ownership or easements shall be obtained for temporary flooding of areas that would be inundated by the flood pool up to the top of dam elevation and for spillway discharge areas.

73.16(3) Easements covering areas affected by temporary flooding or spillway discharges shall include provisions prohibiting the erection and usage of structures for human habitation or commercial purposes without prior approval by the department.

73.16(4) As a condition of granting approval of a dam rated less than high hazard, the applicant may be required to acquire control over lands downstream from the dam as necessary to prevent downstream development which would affect the hazard classification of the dam.

567—73.17(455B) Emergency action plans for high hazard dams.

73.17(1) *Emergency action plan required.* All high hazard dams shall be required to have an approved emergency action plan on file with the department. The plan shall include the following:

a. A statement of purpose;
b. A project description;
c. An emergency response process;
d. An emergency notification plan with flowchart;
e. Responsibilities of all parties;
f. A list of emergency preparedness and plan maintenance activities; and
g. Inundation maps or another acceptable description of the inundated area.

73.17(2) *Emergency action plan maintenance.* The owner of the dam shall keep the emergency action plan up to date. Contact information shall be verified in the plan at least once a year, and an exercise shall be performed at least every five years. The owner of the dam shall keep an up-to-date copy of the emergency action plan on file with the department and with the local county emergency manager.

567—73.18(455B) Encroachment on a confinement feeding operation structure. A dam shall not be constructed or modified so that the ordinary high water of the lake, pond, or reservoir created by the dam is closer than the following distances from a confinement feeding operation structure unless a secondary containment barrier according to 567—subrule 65.15(17) is in place. Measurement shall be from the closest point of the confinement feeding operation structure to the water edge of the lake, pond, or reservoir for a pool level at the elevation of the crest of the auxiliary spillway or at the top of dam elevation if the dam does not have an auxiliary spillway.

73.18(1) The minimum separation between a water source other than a major water source and a confinement feeding operation structure is 500 feet.

73.18(2) The minimum separation between a major water source and a confinement feeding operation structure is 1,000 feet or such distance that the structure is not located on land that would be inundated by Q100, whichever is greater.

567—73.19(455B) Hydrologic and hydraulic criteria.

73.19(1) *Hydrology and hydraulic calculations.* Hydrology and hydraulic calculations shall be submitted in the design report documenting the methods and analysis followed in modeling software selection, inflow design hydrograph determination, and reservoir routing. The hydrology and hydraulics section of the design report shall include design references, inflow hydrograph, reservoir stage storage, and stage discharge curves and clearly identify peak inflows, peak discharges, and reservoir elevations for the design floods.

73.19(2) *Design floods.* The specified freeboard design floods in the table below shall be passed without overtopping of the dam or the dam shall be designed to withstand such overflow. The specified spillway design flood in the table below shall be passed by the principal spillway without need for operation of an auxiliary spillway unless the auxiliary spillway is designed such that erosion is not expected during operation.

Hazard Potential	Freeboard Design Flood	Spillway Design Flood
Low Hazard	Q100	Q10
Significant Hazard	Q1000	Q50

High Hazard	Probable Maximum Flood	Q100

73.19(3) *Precipitation amounts.* The National Oceanic and Atmospheric Administration's NOAA Atlas 14, Precipitation-Frequency Atlas of the United States, Volume 8, Version 2.0, dated 2013, shall be used for the Q10–Q1000 frequency storm events. NOAA Hydrometeorological Report No. 51, Probable Maximum Precipitation Estimates, United States, East of the 105th Meridian, dated 1978, shall be used for the probable maximum precipitation.

73.19(4) *Spatial and temporal rainfall distributions and storm durations.* The design report shall document the sources and methodologies for inflow hydrograph development. Distributions and durations that produce the highest impoundment water level shall be used for design.

73.19(5) *Spillway discharge capacity.* The spillway discharge capacity shall be sufficient to evacuate at least 80 percent of the volume of water temporarily stored during the principal spillway design flood within ten days. If this cannot be accomplished, the auxiliary spillway and freeboard design flood routings shall be made beginning with the impoundment level at the ten-day drawdown elevation.

73.19(6) *Incremental consequence analysis.* An inflow design flood based on an incremental consequence analysis may be developed and submitted to the department for review as an alternative to the design floods stated in 73.19(2). The design flood selected using incremental consequence analysis is the flood above which there is a negligible increase in downstream water surface elevation, velocity, and consequences due to failure of the dam when compared to the same flood without failure. If the department concurs with the analysis, the freeboard design storm may be reduced. The minimum design flood for a high hazard dam shall be Q500. The minimum design flood for low hazard and significant hazard dams shall be Q100.

567—73.20(455B) Spillway design requirements.

73.20(1) Spillways shall be designed to operate safely for the life of the structure and at the discharges and pressures that would be experienced under all flow conditions, including the freeboard design flood.

73.20(2) Spillways shall be provided with a means of piping and seepage control (e.g., drainage diaphragms), antivortex devices, trash racks, or other inlet debris control measures, and stable outlets capable of handling design exit flow velocities.

73.20(3) When a conduit is proposed to be used in a high hazard or significant hazard dam, detailed hydraulic, hydrologic, and structural computations supporting selection of the size and type of pipe to be used shall be provided by the applicant.

73.20(4) Detailed drawings and specifications relating to the installation of the pipe shall include, but not be limited to, construction measures that adequately address critical load bedding, backfill, compaction, joints, and seepage precautions related to installation of the pipe.

73.20(5) Structural computations and drawings shall be submitted for all proposed concrete structures. Drawing details, as necessary, shall be provided showing reinforcement, cutoffs, underdrains/filters, waterstops, construction joints, control joints, and any other details necessary to construct.

73.20(6) If an auxiliary spillway is proposed, it shall be analyzed, designed, and constructed adequately to establish and maintain stability during the passage of design flows without blockage or breaching. Open-channel auxiliary spillways shall have a minimum depth of 2 feet and minimum width of 10 feet and be designed with appropriate curvature and slopes to prevent excessive erosion.

73.20(7) A gated low-level outlet shall be provided for high hazard and significant hazard dams. The gated low-level outlet shall be capable of draining at least 50 percent of the permanent storage behind the dam within ten days. The pipe conduit shall be designed so that negative pressures will not occur at any point.

567—73.21(455B) Embankment design requirements.

73.21(1) The applicant shall document the engineering standards and design references used for dam embankment design. Drawing details, as necessary, shall be provided showing embankment slopes, required additional fill for anticipated settlement, top width, foundation preparation, core trench or cutoff wall, fill materials and methodology, internal seepage controls, and embankment erosion protection.

73.21(2) A geotechnical report shall be submitted for high hazard and significant hazard dams documenting the evaluation of slope stability requirements, anticipated vertical settlement and horizontal elongation, seepage and underseepage potential, whether cathodic protection is needed for metal pipes, and proper construction practices for the soil types and conditions encountered. A stability evaluation shall include end-of-construction, steady-state seepage and sudden-drawdown conditions.

567—73.22(455B) Operating plan. A written operating plan shall be prepared for any dam with gates or other movable structures that must operate or be operated during times of flood or to provide a minimum downstream release rate. Development of the operating plan is considered part of the design process. An operating plan shall include, at a minimum, the following items:

73.22(1) *Responsibility.* The operating plan shall outline and identify the necessary personnel who will be present to operate the equipment or, in the case of automatic equipment, to monitor it and ensure it is functioning properly.

73.22(2) *Operating circumstances.* The circumstances under which operation must occur shall be clearly defined, and a means shall be provided to ensure that operating personnel are present when necessary.

73.22(3) *Method of operation.* The means and methods by which operation is to be conducted shall be clearly defined and shall include, at a minimum, the following items: rates and sequences for opening or closure of gates, target water levels, and target flow rates.

73.22(4) *Flood capacity.* The operating plan shall allow for safe passage of all floods up to and including the freeboard design flood. Flood discharges through the dam greater than the design peak flood inflows into the impoundment shall not be permitted.

73.22(5) *Low flow.* The operating plan shall address low flow situations and shall specify a minimum release rate if required by the department and how the minimum release will be provided and maintained.

73.22(6) *Equipment.* Consideration shall be given to and allowance made for the possible failure of or malfunctioning of the equipment.

73.22(7) *Discharge measurement.* A means shall be provided to determine the discharge through the control structures, especially where operation is to maintain a minimum downstream flow. Stage discharge tables, streamflow gages or other means of obtaining discharge readings shall be provided. The settings of control structures shall be easily read.

567—73.23(455B) Removal and abandonment of dams. Removal is the draining of the impoundment and removal of all or a significant portion of the embankment. A dam may be abandoned by rendering a dam nonimpounding by dewatering and filling the reservoir with solid materials and by diverting the natural drainage around the site.

73.23(1) *Removal requirements.* A dam removal project shall meet all of the following requirements:

a. The dam removal plan shall clearly show removal limits and will demonstrate how the proposed construction will render the dam height and storage below thresholds in rule 567—73.3(455B);

b. An impoundment dewatering plan shall be submitted that documents how the water will be released in a controlled manner and not cause upstream erosion or pose a flooding risk downstream;

c. A dam breach plan shall be submitted that demonstrates how the breach process will not pose an increased risk compared to the existing structure; and

d. A sediment disposition plan shall be submitted that provides for stabilization, release, or removal of stored sediment and shall demonstrate no significant adverse consequences on fish and wildlife habitat downstream from the proposed construction.

73.23(2) *Abandonment requirements.* An abandonment plan shall be submitted documenting the final site stabilization, evidence that the structure will no longer impound water or waterborne materials that would be released in the event of a dam failure, and evidence that the structure will not store water above the thresholds outlined in this chapter.

567—73.24 to **73.29** Reserved.

DIVISION IV
DAM OWNERSHIP, INSPECTIONS, AND ENFORCEMENT

567—73.30(455B) Dam owner responsibilities.

73.30(1) *Operation and maintenance required.* The intent to permanently cease or cause to cease all acts of construction, operation, and maintenance of a dam is prohibited. If any person wishes to be relieved of the responsibilities inherent in the ownership or control of a dam structure, those responsibilities shall be undertaken by another person through sale, transfer, or other means or the dam shall be removed.

73.30(2) *Dam maintenance.* The dam owner shall be required to maintain the dam and appurtenant structures in a safe condition. Maintenance shall include, but not be limited to, keeping earthen portions of the dam well vegetated, keeping trees and brush off the dam, preventing and repairing erosion, keeping spillways and drains free of obstructions, repairing structural deterioration, and performing required maintenance on mechanical appurtenances such as gates. The dam owner shall perform regular inspections to identify potential maintenance problems.

73.30(3) *Dam repairs.* The dam owner shall arrange for performance of engineering investigations when needed to evaluate potential safety problems. The dam owner shall perform any required repairs. When the department determines the need for follow-up inspections, the dam owner may be required to have a qualified person make inspections and prepare written inspection reports at specified intervals.

73.30(4) *Maintenance inspections by dam owner.* The dam owner of a high hazard or significant hazard structure shall be responsible for annual inspections and submission of written inspection reports. Annual inspection reports are due to the department on or before December 1. Inspection reports shall include:

a. Maintenance work done since the previous annual report;

b. Observed deficiencies on the dam or appurtenant structures;

c. Remedial measures necessary and the method and schedule the dam owner proposes to correct the deficiencies found; and

d. Changes in land use downstream of the dam.

567—73.31(455B) Dam safety inspection program.

73.31(1) *Scope of dam safety inspection program.* Dams subject to inspection under these rules are regulated dams as defined in this chapter. The scope of department staff field inspections normally is limited to visually observable features of dams and their appurtenant structures.

73.31(2) *Purpose of dam safety inspection program.* The general purposes of inspections are as follows: to evaluate the construction, operation, and maintenance of dams; to identify observable deficiencies in dams or appurtenant structures; and to identify other floodplain structures or uses which may affect the hazard potential of a dam or use of an associated impoundment. Inspection

reports shall be used by the department in determining whether a proposed dam project complies with applicable criteria and to determine whether any of the following conditions exist:

a. A permit violation;

b. A violation of law which requires that a permit be obtained; or

c. A condition which constitutes a public nuisance by causing unacceptable risk of injury to the public health, safety or welfare.

73.31(3) *Inspections of significant hazard and high hazard dam structures.*

a. Inspection prior to construction. A field inspection may be made by the department to determine the hazard potential of the dam and verify the location and plan information upon receipt of an application for approval of construction or modification of a dam.

b. Inspection during construction. Construction or modification of a dam structure shall be inspected by an engineer licensed in the state of Iowa or by a trained inspector under the supervision of the engineer. After completion of construction or modification of a dam structure, the engineer shall prepare and submit a construction report, as-built plans, and a statement that in the engineer's professional opinion the work was conducted in general conformance with the approved plans and specifications.

c. Acceptance inspections. When construction of a dam or modifications thereto is completed, and as-built plans and a construction report have been submitted, the department shall make a field inspection to determine whether visually observable features of the dam and appurtenant structures are consistent with the approved plans and the conditions of the dam construction permit. The department shall thereafter issue the water storage permit or a letter stating that additional work is required for acceptance of construction. Closure of the low-level outlet gate shall not begin until the department has issued the water storage permit.

d. Periodic inspections after acceptance. High hazard structures shall be inspected at least once every two years by the department. Significant hazard structures shall be inspected at least once every five years by the department. Structures poorly maintained or those that require repairs identified by the department shall be inspected more frequently until required maintenance and repairs are completed. The department shall notify the dam owner or agent before each inspection. Each inspection shall assess the condition of the dam and appurtenant structures and the adequacy of operation and maintenance practices. The inspection may include reevaluation of the ability of the dam and appurtenant structures to adequately withstand the hydraulic loadings and pass the appropriate design floods.

73.31(4) *Inspections of low hazard dams.*

a. Preliminary site evaluation. The department may evaluate the site of a proposed dam from maps and aerial photographs in lieu of a field inspection.

b. Inspection during construction. The applicant shall be responsible for providing supervision of construction by a person experienced in the type of construction involved.

c. Inspection of dams with operating plans. Low hazard dams with operating plans shall be inspected by the department at least once every five years. Any problems noted shall be reported to the dam owner in writing.

d. General inspections of low hazard dams. Low hazard dams may be periodically inspected by the department to determine their condition. Any serious problems noted shall be reported to the dam owner in writing.

73.31(5) *Special inspections and investigations.* Special inspections and investigations shall be made by department personnel in the following instances:

a. Upon notice or evidence of unauthorized construction;

b. Upon notice or evidence that a dam has failed or is in a condition where failure appears likely, and public damages would result from such failure; or

c. Upon notice or evidence that the hazard classification of a dam may no longer be valid due to changes in downstream conditions.

73.31(6) *Inspections by others.* At the discretion of the department, an inspection report submitted by a qualified individual may be accepted in lieu of an inspection and report by the department.

73.31(7) *Inspection reports.* The department shall prepare a report of each inspection and provide a copy to the dam owner. The report shall state the deficiencies observed during the inspection. If appropriate, the report shall detail the actions required to address the noted deficiencies.

567—73.32(455B) Raising or lowering of impoundment levels.

73.32(1) *When approval is required.* A separate approval is required to temporarily or permanently raise or lower the normal level of water impounded by a regulated dam unless the raising and lowering has been authorized as part of an approved operating plan. Such approval shall be in the form of a letter authorizing the lowering or raising and may be conditioned upon various requirements.

73.32(2) *Information required for approval.* The applicant shall submit the following information:

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

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

73.32(3) *Criteria for approval.* The department's review of the raising or lowering of the impoundment includes determining the effects on flooding or flood control for any proposed works and adjacent lands and property; on the wise use and protection of water resources; on the quality of water; on fish, wildlife, and recreational facilities or uses; and on all other public rights and requirements.

73.32(4) *Conditions.* Conditions of approving the temporary or permanent raising or lowering of water levels may include:

a. Giving prior notice to the director of the local county conservation board or local enforcement officer for the department;

b. Publicizing the lowering locally in order to notify downstream users, persons who have boats or docks on the impoundment and other persons whose use of the impoundment might be affected; and

c. Maintaining a minimum release rate as determined by the department during refilling.

567—73.33(455B) Unsafe dams.

73.33(1) *Procedures for designation of a dam as unsafe.*

a. Department report. If after inspection or other investigation the department determines that a dam is unsafe, a report shall be prepared. Copies of the report shall be provided to the dam owner and any other person whom the report identifies as responsible for the unsafe condition of the dam. The report shall identify the problems which cause the dam to be unsafe and recommend action to remedy the unsafe condition.

b. Opportunity for comment. The department shall provide the dam owner or other responsible person with a reasonable opportunity to comment on the department report considering the degree and imminence of hazard identified in the department report.

73.33(2) *Criteria for designating a dam as unsafe.* Designation of a dam as unsafe shall be based on one or more of the following findings:

a. The dam has serious deficiencies in its design, construction, use, maintenance, or physical condition which would contribute to failure or otherwise increase flood damages;

b. A high hazard or significant hazard dam has inadequate spillway capacity for the size and hazard potential of the dam.

73.33(3) *Department action concerning an unsafe dam.* After completion of the procedures for designating an unsafe dam, the department shall issue an initial decision which may order remedial work depending on the degree and imminence of hazard caused by the unsafe condition. Remedial work may include draining of the impoundment or removal of any structure determined to constitute a public nuisance. Procedures for appealing an initial decision are the procedures in 567—Chapter 7. If the initial decision requires emergency remedial work to abate an imminent danger of failure which would cause significant public damages, the director of the department may request the assistance of the attorney general to seek an appropriate judicial order compelling performance of emergency remedial work.

These rules are intended to implement Iowa Code chapter 455B, subchapter III, part 4.