PROPOSED REGULATION OF THE STATE ENGINEER

LCB File No. R054-14

CHAPTER 535 - DAMS AND OTHER OBSTRUCTIONS

GENERAL PROVISIONS

CONSTRUCTION, RECONSTRUCTION, ALTERATION AND DECOMMISSIONING OF DAMS

GENERAL PROVISIONS

NAC 535.010 Definitions. (NRS 532.120) As used in this chapter, unless the context otherwise requires, the words and terms defined in NAC 535.015 to 535.100, inclusive, have the meanings ascribed to them in those sections.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.015 "Alters" or "alteration" defined. (NRS 532.120) "Alters" or "alteration" includes breaching, decommissioning, modifying, raising and removing.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.020 "Applicant" defined. (NRS 532.120) "Applicant" means a person who files an application for approval of plans for a dam.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.025 "Application for approval of plans for a dam" defined. (NRS 532.120) "Application for approval of plans for a dam" means an application submitted pursuant to paragraph (b) of subsection 2 of NRS 535.010 for approval of plans and specifications for a new dam or for the reconstruction or alteration of an existing dam.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

"Breach" defined. (NRS 532.120) "Breach" means a discontinuity in a dam that allows impounded water to escape in an uncontrolled fashion whether intentional or accidental.

NAC 535.030 "Capacity" defined. (NRS 532.120) "Capacity" means the maximum volume of water, expressed in acre-feet, that a dam is physically capable of impounding without overtopping.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.035 "Closure" defined. (NRS 532.120) "Closure" means the permanent revocation by the State Engineer of permission to construct, maintain or operate a dam or to impound water behind a dam.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.040 "Dam" defined. (NRS 532.120) "Dam" means any structure that stores or diverts water for a beneficial purpose. The term includes a dam that is proposed. The term does not include a levee or road embankment that is:

1. Designed as a levee or floodwall intended to constrain the water of a creek or river to its natural floodplain in the event of a flood;
2. Designed as a levee for the reinforcement of a ditch, watercourse or canal; or
3. Designed for the sole purpose of supporting a roadbed, path or other means of conveyance for the transportation of vehicles, pedestrians, trains or bulk commodities if the levee or embankment:
    a. Is free-draining;
    b. Has a residence time for impounded storm water of less than 24 hours; and
    c. Unless the levee or embankment is less than 10 feet in height, has drainage capacity sufficient to pass, without overtopping, an amount of water equal to the storm runoff generated by a storm whose annual chance of exceedence is 1 percent.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

"Dam Failure" defined. (NRS 532.120) "Dam Failure" means any damage to a dam or its appurtenances such that any impoundment may no longer be retained or released in a controlled manner.

"Emergency Action Plan" defined. (NRS 532.120) "Emergency Action Plan" refers to a document prepared by the dam owner that addresses appropriate steps to be taken in the event of a potential or actual emergency at a dam.

NAC 535.045 "Decommission" defined. (NRS 532.120) "Decommission" means to physically render a dam incapable of impounding any significant quantity of water.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

"Flood Control Detention Basin" defined. (NRS 532.120) A "Flood Control Detention Basin" is any dam that is normally dry and has an ungated outlet structure for the controlled release of water impounded during and subsequent to a flood event to prevent erosion and/or flooding downstream.

NAC 535.050 "Impounding" defined. (NRS 532.120) "Impounding" includes any detention of water without regard to the duration of the detention.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.055 "Inflow design flood" defined. (NRS 532.120) "Inflow design flood" means a hypothetical flood of a given magnitude that is used to determine the design of a dam and its related hydraulic features.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.060 "Maximum conservation elevation" defined. (NRS 532.120) "Maximum conservation elevation" means that elevation to which water is approved to be stored pursuant to the approval to impound.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.065 "Maximum credible earthquake" defined. (NRS 532.120) "Maximum credible earthquake" means a hypothetical earthquake of a magnitude determined by the United States Geological Survey as the worst-case scenario that is reasonably possible for the region in which a dam is located.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.070 "Operator" defined. (NRS 532.120) "Operator" means a person, including an owner or his or her designee, who controls the day-to-day operations of a dam.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.075 "Owner" defined. (NRS 532.120) "Owner" means a person, including a governmental agency or quasi-governmental agency, that:

1. Causes a dam to be built, rebuilt or modified;
2. Owns or controls real property on which a dam is constructed;
3. Owns or controls real property inundated by the reservoir created by a dam;
4. Owns a water right that is impounded or diverted by a dam;
5. Is a successor in interest in a chain of title that expressly mentions a dam;
6. Is a local cooperator who will assume any control over a project constructed by the United States Army Corps of Engineers or the United States Bureau of Reclamation; or
7. Is identified by the State Engineer as a person responsible for a dam.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.080 "Probable maximum flood" defined. (NRS 532.120) "Probable maximum flood" means a hypothetical flood whose magnitude is:

1. The largest that could be expected from the most severe combination of critical meteorologic and hydrologic conditions that are reasonably possible for the region in which a dam is located; and
2. Such that there is virtually no chance of its being exceeded.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.085 "Professional engineer" defined. (NRS 532.120) "Professional engineer" has the meaning ascribed to it in NRS 625.060.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.090 "State Engineer" defined. (NRS 532.120) "State Engineer" has the meaning ascribed to it in NRS 533.015.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.095 "Water" defined. (NRS 532.120) "Water" includes any potentially mobile fluid or semifluid substance that is capable of being impounded by a dam, including, without limitation, tailings, slimes, organic waste and sewage.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.100 "Water right" defined. (NRS 532.120) "Water right" means a valid appropriation of the public waters of this state pursuant to chapters 533 and 534 of NRS.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.110 Expression of "elevation." (NRS 532.120) For the purposes of this chapter, each "elevation" must be expressed as a deviation from a point included in the North American Vertical Datum of 1988.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.120 Height, crest and toe of dam. (NRS 532.120) For the purposes of this chapter:

1. The height of a dam is the maximum difference in elevation between the crest and the toe of the dam.
2. The crest of a dam is the nominal top horizontal surface of the dam excluding railings or parapet walls.
3. The toe of a dam is the contact between the outer shell of the dam and the natural ground surface on the downstream side of the dam.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.130 Determination of size of dam. (NRS 532.120) For the purposes of this chapter, a dam is:

1. Small if it is less than 20 feet in height and impounds less than 100 acre-feet of water.
2. Medium if it is neither small nor large.
3. Large if it is 50 feet or more in height or impounds 10,000 acre-feet or more of water.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.140 Hazard classifications. (NRS 532.120, 535.040)

1. The State Engineer will assign a hazard classification to each dam.
2. The State Engineer will determine the immediate consequences to persons and property located downstream from the dam in the event of a failure of the dam. The State Engineer will classify a dam as:
    a. High hazard if its failure carries a high probability of causing a loss of human life.
    b. Significant hazard if its failure carries a:
        i. Reasonable probability of causing a loss of human life; or
        ii. High probability of causing extensive economic ~~[loss]~~ ***or environmental loss*** or disruption in a lifeline.
    c. Low hazard if its failure carries a:
        i. Very low probability of causing a loss of human life; and
        ii. Reasonable probability of causing little, if any, economic ~~[loss]~~ ***or environmental loss*** or disruption in a lifeline.
3. If changes in the persons or property located downstream from a dam change the immediate consequences in the event of a failure of the dam, the State Engineer will change the hazard classification of the dam accordingly.
4. The hazard classification of a dam does not constitute a warranty in favor of anyone concerning the actual safety of the dam.
5. As used in this section, "lifeline" includes, without limitation, a:
    a. Road that is the sole means of access to a community;
    b. Major trunk or transmission line for gas or electricity, the disruption of which could pose significant risks to the public health, safety or welfare of the affected community;

c. Transmission line for gas or electricity that serves a hospital or other comparable facility; and
d. Railroad line used or proposed to be used in interstate commerce.
e. Lake, reservoir, stream or watercourse that serves as a potable supply of water.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

CONSTRUCTION, RECONSTRUCTION, ALTERATION AND DECOMMISSIONING OF DAMS

NAC 535.200 Notice to State Engineer before construction, reconstruction or alteration of dam. (NRS 532.120, 535.010)

1. A person who is required, pursuant to NRS 535.010, to notify the State Engineer before he or she constructs, reconstructs or alters a dam must submit to the State Engineer:
    a. A description of all work that is proposed.
    b. The name, mailing address and telephone number of each owner of the dam.
    c. The name, mailing address and telephone number of the operator of the dam.
    d. The name, mailing address and telephone number of each professional engineer in responsible charge of work in connection with the proposed work on the dam.
    e. The source of the water to be impounded by the dam.
    f. The number of the permit for each water right for the water to be impounded ***or diverted*** by the dam.
    g. The date on which the work on the dam is anticipated to commence.
    h. The location of the dam. The location must be expressed by bearing and distance to a known section corner from a reference point on the dam ***and is to include latitude and longitude coordinates***. The reference point must be on the long axis of the dam at the station where the toe is at the lowest elevation. If no single point meets this criterion, the reference point must be at the intersection of the long axis and the principle outlet centerline of the dam.
    i. An estimate of the length, height and volume of the dam.
    j. The capacity of the reservoir to be created by the dam.
    k. A set of plans for the proposed work. The set of plans must:
        i. Consist of at least three sheets of paper that are each 11 by 17 inches in size and contain:
            1. A cover sheet that includes the names of all the owners, the name of the dam or project and a location plat for the dam that includes a referenced section corner;
            2. A plan view of the dam and impoundment that shows the alignments of cross sections of the dam; and
            3. One or more cross sections of the dam that depict the outlet, spillway and maximum embankment height.
        ii. Be prepared by a person licensed pursuant to the provisions of chapter 623, 624 or 625 of NRS~~[, or by an owner or builder of the dam]~~.
2. The State Engineer will review the notice and its accompanying materials and, not later than 30 days after receiving the notice, will respond in writing stating:
    a. The deficiencies, if any, in the submission that must be cured;
    b. That approval of the plans and specifications pursuant to subsection 2 of NRS 535.010 is required before construction may begin; or

c. That no such approval is necessary.

3. A person who files a completed application for approval of plans for a dam pursuant to NAC 535.210 or 535.220 shall be deemed to have complied with this section.
4. As used in this section, "responsible charge of work" has the meaning ascribed to it in NRS 625.080.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.210 Submission of application for approval of plans for dam. (NRS 532.120, 533.435, 535.010)

1. Except as otherwise provided in NAC 535.220, a person who is required by NRS 535.010 to file an application for approval of plans for a dam must submit to the State Engineer:
   a. The application;
   b. The fee for examining and acting upon such plans and specifications required by NRS 533.435; and
   c. Three copies of the plans and specifications, including, without limitation:
      i. A design report;
      ii. A geotechnical report;
      iii. The specifications for construction;
      iv. A potential hazard classification report;
      ~~[iv.]~~***v.*** A set of plans; and
      ~~[v.]~~***vi.*** If required or permitted by the State Engineer, one or more addenda.

 Each element of the plans and specifications must be prepared by or under the supervision of a professional engineer and must bear the wet stamp and signature of the professional engineer.

2. The application must be:
   a. On a form provided by the State Engineer;
   b. Complete;
   c. ~~[Signed by]~~ ***Bears the original signature of*** each owner of the dam or by an agent authorized to sign the application on behalf of the owner; and
   d. Bound separately from the plans and specifications.
3. The design report must include, without limitation:
   a. A description of the proposed structure;
   b. Discussions of:
      i. The design approach;
      ii. The downstream hazard in the event of a failure of the dam or a large release of water;
      iii. Any special conditions at the site of which the applicant is aware;
      iv. Selection of the inflow design flood; and
      v. Selection of the design earthquake; and
   c. Calculations that establish:
      i. The dam's freeboard;
      ii. The dam's inflow design flood;
      iii. The dam's outlet capacity;
      iv. The dam's spillway capacity;
      v. The dam's storm surcharge; and
      vi. If the dam is:

1. Concrete, the dam's stability under critical reservoir and seismic loading conditions for sliding, overturning, cracking and abutment failure; or
2. An earthen embankment, the dam's slope stability under static, seismic, rapid fill and rapid draw down conditions.

4. The geotechnical report must:
   a. Include, or if filed with the plans refer to, one or more plats showing each test pit, borehole or other exploration site;
   b. Show the lithology at each exploration site, including standard penetration test results or other means of estimating bearing capacity;
   c. Include estimates of the:
      i. Suitability of the site for the proposed project;
      ii. Foundation bearing capacity of the site; and
      iii. Expected settlement;
   d. Indicate the soil properties in each relevant area, including, without limitation:
      i. The foundation;
      ii. Each abutment;
      iii. The reservoir; and
      iv. The borrow;
   e. Show the depth to groundwater and permeability of foundation materials;
   f. Explore seismic hazards in the area; and
   g. Include a discussion of any special conditions at the site of which the applicant is aware.
5. The specifications for construction must:
   a. Address all aspects of construction;
   b. Include a schedule of testing for quality assurance and quality control;
   c. Provide a precise citation to the location of any other common specification to which it refers; and
   d. Be on standard paper that is 8 1/2 by 11 inches in size.

6. The potential hazard classification report must:

a. Address potential impacts to life, property and lifelines downstream and within the potential reservoir inundation area for:

i. Bank-full reservoir condition;

ii. Maximum discharge condition; and

iii. Dam breach condition.

b. Make recommendation for hazard potential classification

c. Identify conditions that justify the recommended hazard potential

~~[6.]~~***7.*** The plans must:

   d. Depict the proposed work adequately and include, without limitation:
      i. A cover sheet that includes, without limitation:
         1. The name of each owner of the dam;
         2. The name of the dam; and
         3. A location plat that shows at least one section corner;
      ii. A second sheet that shows elevation-capacity and elevation-area curves;
      iii. A third sheet which includes a plan view of the dam and impoundment that shows, without limitation:

1. The alignments of cross sections of the dam;
2. The reference point of the dam, tied to a found section corner and identified by latitude and longitude; and
3. Section corners and post construction elevation contours;
4. A fourth sheet which includes cross sections at each outlet and spillway, and at the maximum embankment height, that show preconstruction and post construction ground elevation contours; and
5. A fifth sheet that shows appurtenant works and details.

e. Show a tie with bearing and distance to a found section corner from a reference point on the dam. The reference point must be on the long axis at the station where the toe is at the lowest elevation. If no single point meets this criterion, the reference point must be at the intersection of the long axis and the centerline of the principle outlet.

f. Not include any spurious or excessive detail, including, without limitation, plantings, streets, buildings and pipelines, unless their location directly affects construction, operation or maintenance of the project.

g. Unless the use of exaggerated dimensions is necessary for clarity, have the same vertical and horizontal scales.

h. Be in one color on standard paper that is 24 by 36 inches in size.

~~[7.]~~ ***8.*** Each addendum must:

i. Be reasonably necessary; and

j. Be on standard paper that, if the addendum consists of:

i. Text only, is 8 1/2 by 11 inches in size; or

ii. An illustration, is not larger than 11 by 17 inches in size.

~~[8.]~~ ***9.*** A calculation included in the plans and specifications that concerns strength or stability must incorporate a factor of safety. The factor of safety:

k. If the calculation describes conditions of steady-state seepage static load, must not be less than 1.4;

l. If the calculation describes conditions of postconstruction static load, must not be less than 1.3;

m. If the calculation describes conditions of rapid reservoir draw down load, must not be less than 1.25; or

n. If the calculation describes conditions of seismic load, must not be less than ~~[1.0]~~ ***1.1 unless a deformation analysis showing adequate residual strength and retention of freeboard is provided***.

~~[9.]~~ ***10.*** For the purposes of determining whether a person is required to apply for approval of plans for a dam pursuant to paragraph (b) of subsection 2 of NRS 535.010, the State Engineer will calculate the capacity of the dam as the volume of water, expressed in acre-feet, detained above the anticipated elevation of the lowest point on the toe of the dam.

~~[10.]~~ ***11.*** As used in this section, "design earthquake" means a hypothetical earthquake of a specified magnitude ***or return period*** used in the design of a dam.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.220 Submission of application for approval of plans for decommissioning of dam. (NRS 532.120, 535.010)

1. A person who is required by NRS 535.010 to file an application for approval of plans for the decommissioning of a dam must submit to the State Engineer:
    a. The application; and
    b. Three copies of the plans and specifications, including, without limitation:
        i. A design report;
        ii. The specifications for construction; and
        iii. A set of plans.

 Each element of the plans and specifications must be prepared by or under the supervision of a professional engineer and must bear the wet stamp and signature of the professional engineer.

2. The application must be:
    a. On a form provided by the State Engineer;
    b. Complete; and
    c. Signed by each owner of the dam or by an agent authorized to sign the application on behalf of the owner.
3. The design report must include, without limitation:
    a. A detailed description of the proposed work;
    b. Discussions of:
        i. The plan for release of water impounded by the dam;
        ii. The stabilization of sediment;
        iii. The anticipated consequences to persons and property located downstream from the dam;
        iv. Design features to prevent a sudden release of water or slope failure during decommissioning; and
        v. Erosion control; and
    c. If a breach in an embankment of the dam is designed with a bottom width that is less than the height of the embankment, calculations that establish the slope stability of the walls of the breach.
4. The specifications for construction must:
    a. Address all aspects of construction;
    b. Include a schedule of testing for quality assurance and quality control;
    c. Provide a precise citation to the location of any other common specification to which it refers;
    d. Be on standard paper that is 8 1/2 by 11 inches in size; and
    e. Set forth the sequence of activities, including a timetable.
5. The plans must:
    a. Depict the proposed work adequately and include, without limitation:
        i. A cover sheet that includes, without limitation:
            1. The name of each owner of the dam;
            2. The name of the dam; and
            3. A location plat that shows at least one section corner;
        ii. A second sheet which includes a plan view of the existing dam and impoundment that shows, without limitation:
            1. The alignments of cross sections of the dam showing proposed alterations to the dam and impoundment;
            2. The reference point of the dam, tied to a found section corner and identified by latitude and longitude; and

3. Section corners and elevation contours; and

iii. A third sheet which includes a plan view of the dam and impoundment at the completion of decommissioning that shows, without limitation:

1. Details of proposed alterations to the dam and impoundment, including any new construction for the purposes of erosion control; and
2. Representative cross sections through the dam, breach and impoundment.

b. Show a tie with bearing and distance to a found section corner from a reference point on the existing dam. The reference point must be on the long axis at the station where the toe is at the lowest elevation. If no single point meets this criterion, the reference point must be at the intersection of the long axis and the centerline of the principle outlet.

c. Unless the use of exaggerated dimensions is necessary for clarity, have the same vertical and horizontal scales.

1. For the purposes of determining whether a person is required to apply for approval of plans for the decommissioning of a dam pursuant to paragraph (b) of subsection 2 of NRS 535.010, the State Engineer will calculate the capacity of the dam as the volume of water, expressed in acre-feet, detained above the anticipated elevation of the lowest point on the toe of the dam.

6. As used in this section, "decommissioning" includes breaching and removing.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.230 Rejection of application; resubmission; conditional approval. (NRS 532.120, 535.010)

1. The State Engineer will reject an application that:
   a. Appears to be incomplete; or
   b. Lacks the correct fee.

 The rejected application, any accompanying plans or specifications and the fee, if any, will be returned to the applicant.

2. The State Engineer will:
   a. ***Initially*** e~~[E]~~xamine each unrejected application within 90 days after receipt ~~[in the order in which it is received]~~; and
   b. Approve or disapprove the application ~~[within 90 days after receipt]~~.

3. If the State Engineer returns the plans and specifications to the applicant for correction or revision pursuant to subsection 3 of NRS 535.010, the State Engineer will:
   a. Identify the defects or other deficiencies;
   b. Establish a reasonable time, not to exceed 60 days after the date of receipt, within which the applicant may revise or correct and resubmit the plans; and
   c. Retain the fee.

 There is no additional fee for the resubmission of a revised or corrected application within the time established by the State Engineer.

4. The State Engineer may condition his or her approval of an application by imposing terms of approval on the work proposed. ~~[If the State Engineer imposes such terms, he or she will provide a copy of the terms to the Board of Wildlife Commissioners.]~~

5. If the State Engineer approves, or approves as conditioned, the plans and specifications for a dam, the State Engineer will:

a. Endorse the application with the State Engineer's stamp and signature;
b. Retain a copy of the application for his or her records;
c. Return a copy of the application to the applicant; and
d. Deem the endorsed application a permit issued by the State of Nevada for the purposes of NRS 535.050.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.240 Requirements for approval. (NRS 532.120, 535.010)

1. Except as otherwise provided in NAC 535.220, to obtain the approval of the State Engineer pursuant to NRS 535.010, the plans and specifications must, in addition to all other applicable requirements, demonstrate to the satisfaction of the State Engineer that:
   a. The dam and reservoir are able to accommodate the inflow design flood for the tributary watershed without the failure of the dam or any other unintended release of water.
   b. The inflow design flood selected is appropriate given the intended purpose, hazard classification and size of the dam.
2. For the purposes of this section, the inflow design flood used for design purposes must not, except as otherwise provided in subsection 3, be less than:
   a. A probable maximum flood, if the dam:
      i. Is classified as high hazard or is a large dam and classified as significant hazard; or
      ii. Lacks one or more spillways.
   b. The ~~[greater of one-half of the probable maximum flood or a]~~ flood whose annual chance of exceedence is ~~[0.2]~~ ***0.1*** percent, if the dam is a small or medium dam and is classified as significant hazard.
   c. A flood whose annual chance of exceedence is 1 percent, for all other dams.
3. The State Engineer will approve plans that use an inflow design flood which is less than those set forth in subsection 2 if the applicant provides an incremental damage analysis that demonstrates, to the satisfaction of the State Engineer, that a lesser event is appropriate.
4. An applicant may use one or more watershed diversion structures in lieu of spillways for the protection of a dam embankment so long as:
   a. The impoundment created by the embankment so protected is temporary; and
   b. The diversion structures are designed to accommodate the greater of the inflow design flood or five times the expected life of the impoundment.
5. A dam must have freeboard adequate to prevent overtopping by wave run-up and reservoir fetch above the storm surcharge elevation. The adequacy of the freeboard must be demonstrated by evidence satisfactory to the State Engineer in the form of:
   a. A wave run-up and reservoir fetch calculation; or
   b. Proof that the freeboard is not less than 3 feet above the storm surcharge elevation.
6. As used in this section, "storm surcharge elevation" means the elevation that the water surface would reach if the inflow design flood of a dam were added to a reservoir that is at its maximum conservation elevation.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.250 Requirements for approval concerning earthquakes. (NRS 532.120, 535.010)

1. Except as otherwise provided in NAC 535.220, to obtain the approval of the State Engineer pursuant to NRS 535.010, the plans and specifications must, in addition to all other applicable requirements, demonstrate to the satisfaction of the State Engineer that the dam is able to accommodate an earthquake or other extreme motion event without the failure of the dam or any other unintended release of water.
2. Except as otherwise provided in subsection 3, the applicant must calculate the seismic response to a maximum credible earthquake of a dam and its foundation, including, without limitation:
    a. Potential liquefaction;
    b. Loss of material strength;
    c. Settlement;
    d. Ground displacement; and
    e. Wave action due to landslide or seiche.

 Any numeric analysis of the seismic response must be calculated for the normal maximum loading condition with steady-state seepage. If a pseudo static stability analysis is performed for an earthen embankment, the calculations must be accompanied by a description of the assumptions used in deriving the seismic coefficient used in the calculations.

3. Subsection 2 does not apply to a dam classified as low hazard or to a small earth dam classified as significant hazard, if the applicant demonstrates to the satisfaction of the State Engineer that the:
    a. Static slope stability factor of safety is 1.5 or greater under normal maximum loading with steady-state seepage;
    b. Peak site acceleration is not greater than 6.5 feet per second squared;
    c. Materials used in the foundation and embankment are not prone to liquefaction; and
    d. Slope of the embankment is:
        i. If the embankment is earthen, not greater than ***a 3 horizontal to 1 vertical*** ~~[18.43 degrees from horizontal]~~; or
        ii. If the embankment is free-draining rockfill, not greater than ***a 2 horizontal to 1 vertical*** ~~[26.56 degrees from horizontal]~~.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.260 Design and construction oversight by professional engineer; construction by licensed contractors. (NRS 532.120, 535.010)

1. A professional engineer shall provide design and construction oversight for any work on a dam for which the plans and specifications require the approval of the State Engineer pursuant to NRS 535.010.
2. A contractor licensed pursuant to chapter 624 of NRS shall perform all construction on a dam classified as high hazard or significant hazard and on a large or medium dam classified as low hazard.
3. A small dam classified as low hazard may be designed by empirical methods.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.270 Compliance with terms and conditions of approval; violations. (NRS 532.120, 535.030, 535.050)

1. An applicant who begins construction of a dam pursuant to an application approved by the State Engineer shall:
    a. Comply with all terms and conditions imposed by the State Engineer as conditions for approval; and
    b. Ensure that all construction conforms to the plans as approved.
2. A dam built in violation of this section is not legally established or recognized for the purposes of NRS 535.050, and the State Engineer may order the removal of such a dam pursuant to that section. In addition, if the dam presents an immediate danger, the State Engineer may take the remedial steps authorized in NRS 535.030.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.280 Abandonment of dam. (NRS 532.120)

~~1.~~ An owner shall not abandon a dam ***except through a transfer pursuant to NAC 535.380 or by decommissioning pursuant to NAC 535.220.*** ~~[unless, not later than 30 days before doing so, the owner notifies the State Engineer.~~

~~2. The notice must include:~~

~~a. The name, mailing address and telephone number of each owner of the dam.~~

~~b. The number of the permit for each water right for the water formerly impounded by the dam.~~

~~c. The location of the dam. The location must be expressed by bearing and distance to a known section corner from a reference point on the dam. The reference point must be on the long axis of the dam at the station where the toe is at the lowest elevation. If no single point meets this criterion, the reference point must be at the intersection of the long axis and the principle outlet centerline of the dam.]~~

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.290 Closure of file associated with decommissioned dam. (NRS 532.120)

1. A person whose application for approval of plans for the decommissioning of a dam has been approved by the State Engineer may apply for the closure of the file associated with the dam.
2. The State Engineer will close a file if:
    a. The dam has been breached intentionally or through mishap;
    b. The dam and impoundment have been decommissioned;
    c. The dam was not built;
    ~~[d. All water rights associated with the dam have been moved, cancelled, denied, withdrawn or forfeited; or]~~
    e. The applicant withdraws the application for approval of plans for a dam.
3. If the State Engineer closes the file, the dam may not be returned to service and no water may be impounded behind the dam represented by that file until an owner complies with all applicable sections of this chapter and chapter 535 of NRS.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.300 Request for approval to impound. (NRS 532.120, 533.435, 535.030)

1. Except as otherwise provided in subsection 8, an owner of a dam approved by the State Engineer pursuant to this chapter shall not put the dam into operation, or otherwise

impound any water, until the owner obtains an approval to impound, including a temporary approval to impound, from the State Engineer.

2. To obtain an approval to impound, an owner or operator must submit to the State Engineer:
    a. The name, mailing address and telephone number of the operator of the dam;
    b. Proof of completion of work, including, without limitation:
        i. A completed cover sheet on a form supplied by the State Engineer;
        ii. The certification of a professional engineer that the construction was in substantial compliance with the plans and specifications as approved;
        iii. Documentation, satisfactory to the State Engineer, of quality assurance and quality control in the construction of the dam;
        iv. A set of plans for the dam as-built; and
        v. Any other documents required by the terms of the approval; and
    c. The fee for filing proof of completion of work required by NRS 533.435.
3. An owner or operator may request an approval to impound a volume of water that is less than that granted to the applicant as specified in the approval of the application for approval of plans for a dam by submitting proof of completion of work for the work actually performed.
4. The State Engineer will request, in writing, any missing or additional information or correction of deficiencies ~~[not later than 30 days after receiving a request for approval to impound]~~.
5. The State Engineer will grant, in writing, an approval to impound upon:
    a. Successful completion of terms pertaining to construction;
    b. Submittal of a complete proof of completion of work form; and
    c. Receipt of all requested additional information, if any.
6. The approval to impound will set forth, without limitation:
    a. The approved capacity of the reservoir to the maximum conservation elevation;
    b. The approved height of the dam;
    c. The minimum amount of freeboard that is required to be maintained; and
    d. Any other conditions or restrictions on operation imposed by the State Engineer.
7. If the State Engineer orders a dam or embankment to be breached or maintained in a drained condition pursuant to NRS 535.030:
    a. The current approval to impound water shall be deemed revoked; and
    b. No water may be impounded behind the structure until:
        i. All conditions of the order have been satisfied; and
        ii. The owner has obtained a new approval to impound pursuant to this chapter.
8. A dam in existence before March 15, 1951, shall be deemed to have approval to impound that volume of water for which water rights had been established pursuant to chapters 533 and 534 of NRS by that date.
9. As used in this section:
    a. "As-built" means record drawings prepared from surveys made during construction and upon completion of the structure.
    ~~[b. If the dam is a storm water detention dam that is designed to be and is operated in a normally drained state, "maximum conservation elevation" means the upstream invert elevation of the low-level outlet.]~~

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.310 Request for temporary approval to impound. (NRS 532.120, 533.435)

1. The State Engineer may grant a temporary approval to impound.
2. An applicant may request a temporary approval to impound by submitting to the State Engineer:
    a. The reason for the necessity of a temporary approval to impound;
    b. A timetable for submitting the deficient or missing information or documents;
    c. A completed proof of completion of work cover sheet;
    d. The certification of a professional engineer that the construction is in substantial compliance with the plans and specifications as approved; and
    e. The fee for filing proof of completion of work required by NRS 533.435.
3. If the State Engineer grants a temporary approval to impound, he or she will establish a specific expiration date not to exceed 90 days after the date of the approval.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.320 Emergency action plan. (NRS 532.120)

~~1.~~ To obtain an approval to impound, including a temporary approval to impound, an owner or operator must submit to the State Engineer an emergency action plan ***for any dam classified high hazard or significant hazard.*** ~~[:~~

~~a. If the dam is classified as high hazard, on or after May 30, 2003.~~

~~b. If the dam is classified as significant hazard, on or after March 31, 2005.]~~

~~2.~~ An owner or operator who is not required to submit an emergency action plan pursuant to subsection 1 shall submit to the State Engineer an emergency action plan ***for any dam classified high hazard or significant hazard.*** ~~[:~~

~~a. If the dam is classified as high hazard, not later than March 31, 2005.~~

~~b. If the dam is classified as significant hazard, not later than March 31, 2007.]~~

3. An emergency action plan must:
    a. Follow the format presented by the Federal Emergency Management Agency (FEMA) in the Federal Guidelines for Emergency Action Planning for Dams (FEMA Publication No. P-64); or equivalent as approved by the State Engineer's Office;
    b. ~~[a.]~~***For those sections requiring numeric analysis, calculations, or mapping, b*** ~~[B]~~e prepared under the direction of a professional engineer;
    c. ~~[b.]~~Conform to the format specified by the State Engineer;
    d. ~~[c.]~~Include a detailed response for each foreseeable emergency; and
    e. ~~[d.]~~Include one or more inundation maps.
4. An owner or operator subject to this section shall:
    a. Perform periodic exercises under the plan; and
    b. ***Update*** ~~[Modify]~~ the plan as necessary to keep it current and incorporate lessons learned from the exercises.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.330 Grounds for revocation of approval to impound. (NRS 532.120) The State Engineer may revoke an approval to impound, including a temporary approval to impound, if:

1. The approval is based on a water right that is moved, cancelled, denied, withdrawn or forfeited.
2. The terms of the approval to impound are violated.
3. The dam is operated in an unsafe manner.
4. The dam is damaged to such an extent that, in the opinion of the State Engineer, its failure is reasonably possible.
5. The file associated with the dam is closed pursuant to NAC 535.290.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.340 Restrictions on impoundment of water. (NRS 532.120)

1. Notwithstanding any provision in NAC 535.300, 535.310 or 535.320 to the contrary, an owner or operator shall not impound an amount of water that is greater than the amount for which he or she possesses water rights that are legally established and recognized:
    a. Through a valid claim of vested right;
    b. By decree of a court of competent jurisdiction; or
    c. Pursuant to a permit issued by the State Engineer.
2. If a water right for water impounded by a dam is moved, cancelled, denied, withdrawn or declared forfeited, the owner shall:
    a. Reduce the amount of water impounded to the amount of water rights remaining; or
    b. If the owner retains no water rights, decommission the dam.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.350 Assessment of fee for approved storage. (NRS 532.120, 533.435)

1. Except as otherwise provided in subsection 4, the State Engineer will, not later than December 31 of each year, assess each private, nonagricultural dam that is operated pursuant to an approval to impound, including a temporary approval to impound, the fee for approved storage required by NRS 533.435.
2. The State Engineer will use the approved capacity stated in the approval to impound, including a temporary approval to impound, in effect as of December 31 of the fiscal year of the assessment as the approved storage capacity subject to the fee.
3. For flood control detention basins the State Engineer will use the capacity to the spillway invert elevation as the storage capacity subject to the fee. If a flood control detention basin lacks a spillway, the State Engineer will use the capacity relative to the inflow design flood as the storage capacity subject to the fee.
~~[3.]~~***4.*** The fee is due and payable upon receipt.
~~[4. This section does not apply to a storm water detention dam so long as the dam:~~
    ~~a. Has an unregulated outlet; and~~
    ~~b. Is free-draining.]~~

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.360 Inspections; completion of required repairs. (NRS 532.120, 535.030, ***535.035***)

2. The State Engineer will, pursuant to NRS 535.030, inspect or require an owner to inspect:
    a. A dam classified as high hazard not less than once a year;
    b. A dam classified as significant hazard not less than once every 3 years; ~~[and]~~
    c. Any other dam not less than once every 5 years~~[.]~~***; and***

d. Upon a complaint made by one or more person of the public where the complainant states the reservoir is in an unsafe condition or being utilized in a manner that is unsafe.

3. The State Engineer may at any time inspect, or require an owner to inspect, a dam under construction to determine the condition of any element relevant to the safety of the dam, including, without limitation:
    a. The preparation of the foundation;
    b. The placement and compaction of the material;
    c. The construction of the outlet;
    d. Armoring; and
    e. Filling.
4. The State Engineer will send to the operator:
    a. A copy of each report of a safety inspection;
    b. A list of repairs, if any, that are required; and
    c. A list of repairs or other maintenance, if any, that are recommended.
5. If an operator fails to complete all required repairs in a reasonable time or the State Engineer concludes that a hazardous condition exists that may threaten life or property, the State Engineer may order the operator to lower, drain or cease diverting water into the reservoir until the operator satisfies the State Engineer that the repair has been completed or the condition has been rectified.
6. If the State Engineer determines, pursuant to subsection 3 of NRS 535.030, that immediate remedial action is necessary to safeguard life or property, the State Engineer will:
    a. Take such action;
    b. Post, at the headworks of the dam, a notice that states:
        i. The telephone number and address of the State Engineer's office;
        ii. The specific action the State Engineer is taking; and
        iii. The authority under which the State Engineer is acting; and
    c. Serve a copy of the notice on the operator at the most recent address provided by the operator or owner.
7. The State Engineer may enter onto private land for the purposes of administering this section.
8. The State Engineer may, pursuant to NRS 535.030, require an owner or his or her designee to:
    a. Submit to the State Engineer a proposed schedule of inspections of the dam and any works appurtenant to the dam;
    b. If the State Engineer approves the inspection schedule, cause the inspections to be conducted;
    c. Maintain records of all inspections and any actions taken to correct any deficiencies identified; and
    d. File with the State Engineer, not later than 30 days after each inspection, a copy of the report of the inspector.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.370 Operation and maintenance. (NRS 532.120)

1. An ***owner and/or*** operator shall:

a. Operate and maintain his or her dam and works appurtenant to the dam in a safe manner and in accordance with all applicable permits, laws and regulations.
b. Take all necessary action allowed by law to prevent the failure of the dam.
c. Notify the State Engineer and local responsible authorities of any:
    i. Problem or unusual event at the dam; or
    ii. Change in the name or address of an operator or owner of the dam, reservoir, shoreline or water right associated with the dam.
d. Modify his or her dam to meet changing downstream hazard conditions or upstream watershed modifications.
e. Maintain an operation manual and log for each dam owned.

2. If a dam has multiple owners, each owner must be party to an agreement that allocates responsibility for the maintenance of the dam and regulation of water impounded by the dam among all the owners. A copy of the current agreement must be maintained in the office of the State Engineer.
3. The State Engineer will direct communications relating to a dam to the operator. Notice to the operator shall be deemed notice to every owner.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.380 Transfer of approval to impound. (NRS 532.120)

1. If there is an actual or proposed change in the ownership of a dam for which an approval to impound, including a temporary approval to impound, has been granted by the State Engineer, the new or prospective owner may obtain the transfer to him or her of the approval to impound.
2. Conveyance of a title to a water right associated with a dam pursuant to NRS 533.382 through 533.387, inclusive, shall constitute transfer of any approval to impound also associate with the dam.
~~[2.]~~ ***3.*** The State Engineer will transfer the approval to impound if:
    a. The holder of the approval to impound consents in writing to the transfer; and
    b. The new or prospective owner of the dam submits, in writing:
        i. Proof that he or she is, or proposes to become, an owner of the dam;
        ii. The date of the change in ownership; and
        iii. An acknowledgment that the new or prospective owner has received a copy of the approval to impound that is in effect and is aware of its terms, including, without limitation, any conditions or restrictions on operation imposed by the State Engineer.
3. Nothing in this section affects any duty, responsibility or other obligation to which a party to the transfer of the approval to impound is otherwise subject pursuant to the provisions of this chapter or chapter 535 of NRS.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.390 Violations. (NRS 532.120, 535.010, 535.050) A person who violates any provision of this chapter may, depending on the nature of the violation:

1. Be assessed a civil penalty;
2. Be punished pursuant to subsection 8 of NRS 535.010; and
3. If the State Engineer orders the removal of the dam pursuant to NRS 535.050, be required to bear the expenses of such removal.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.400 Variances. (NRS 532.120) The State Engineer may, upon a showing of good cause, grant a variance from any provision of this chapter, including, without limitation, an extension of time to comply with any such provision.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.410 Exemptions. (NRS 532.120) Nothing in this chapter grants an exemption from any applicable federal, state or local requirement.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)

NAC 535.420 Effective date of documents. (NRS 532.120) An application, correspondence, plan, report or other document submitted to the State Engineer pursuant to this chapter takes effect on the day when a physical copy is received in the office of the State Engineer and is stamped accordingly.

(Added to NAC by St. Engineer by R124-02, eff. 5-30-2003)