



Energy, Mineral and Land Resources
ENVIRONMENTAL QUALITY
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Dam Safety Approval Application Checklist

The following checklist is intended to provide a summary of the information generally required for a full and complete application (Please refer 15A NCAC 2K .0201) submittal for regulatory review in accordance with the Dam Safety Law of 1967 and North Carolina Administrative Code, Title 15A, Subchapter 2K Dam Safety in order to obtain an Approval to Construct, Repair, Modify, or Breach a dam in North Carolina.

Please note that this checklist does not include every possible site-specific requirement or address every potential site condition. Complete initial application submittals are highly encouraged and generally result in expedited technical review and reduced approval timeframes.

Should you have any questions concerning the requirements, please consult the *Dam Safety Law of 1967, North Carolina Administrative Code, Title 15A, Subchapter 2K -Dam Safety*, or contact the State Dam Safety Engineer, Land Quality Section at the address below or at (919) 707-9220.

You may find the required form(s) at the Dam Safety website (<https://deq.nc.gov/about/divisions/energy-mineral-land-resources/energy-mineral-land-permits/dam-safety>).

In accordance with 15A NCAC 02K .0200, the following checklist is provided for the request of Approval to Construct / Repair / Modify / Breach / Other of: _____

I certify that:

- This application submittal is complete and addresses, to the best of my knowledge, all applicable regulatory requirements pertaining to this project work to ensure safe operation of the dam.
- I have assessed the overall condition of the dam and have provided recommendations to bring the dam into complete compliance with the Dam Safety Law of 1967 and 15A NCAC Subchapter 2K – Dam Safety.

NAME OF ENGINEER OF RECORD (EOR) or PROFESSIONAL ENGINEER: _____

SIGNATURE: _____

P.E. SEAL:

DATE: _____



Complete Application	Check Box
Current Hazard Classification¹	
<p>Design Report</p> <p>Owner's Information:</p> <ul style="list-style-type: none"> • Owner(s) Names • Physical/Mailing address • E-mail address (if available) • Phone No. <p>Engineer's Information:</p> <ul style="list-style-type: none"> • Engineer(s) Names • Physical/Mailing address • E-mail address (if available) • Phone No. <p>Dam Inventory Information:</p> <ul style="list-style-type: none"> • Dam Name (STATE-ID) & (NID ID) • Current Hazard Classification (if applicable) • Longitude & Latitude • County • River/Stream • Quadrangle • Drainage Area (ac. or mi²) • Surface Area at Normal Pool (ac.) • Surface Area at Maximum Pool (ac.) • Upstream & Downstream Face Protection(s) • Structural Height (from the highest point on the top of dam to the lowest point on the downstream toe of the dam) (ft.) • Crest Elevation (NAVD88) (ft.) • Hydraulic Height (ft.) • Normal Pool Elevation (NAVD88) (ft.) • Freeboard at Normal Pool (ft.) • Freeboard After Design Storm Event (ft.) • Crest Length (ft.) • Crest Width (ft.) • Upstream Slope (XH:1V) • Downstream Slope (XH:1V) • Storage Capacity at Normal Pool (ac-ft.) • Maximum Storage Capacity at Top of Dam (ac-ft.) • Spillway Information <ul style="list-style-type: none"> ○ Spillway Type(s) ○ Size(s) ○ Material(s) ○ Length(s) and Width(s) ○ Crest Elevation(s) ○ Invert Elevation(s) at Inlet and Outlet 	

1: Refer to 15A NCAC 2K. 0105 and/or Hazard Class Determination form on [NCDEQ's Dam Safety website](#)
 2: Required for sites that disturb an acre or more. Refer to Sedimentation Pollution Control Act of 1973 - § 113A-57.
 3: Refer to Dam Operations Maintenance & Inspection Manual by NCDEQ – LQS on [NCDEQ's Dam Safety website](#)

<ul style="list-style-type: none"> ○ Discharge Capacity ● Minimum Flow Requirement (cfs.) ● Year Constructed & Estimated Design Life of the Dam <p>Project Objective/Scope:</p> <ul style="list-style-type: none"> ● Executive Summary of what/why/who/how/where/when, etc. ● Introduction <ul style="list-style-type: none"> ○ Historical Background/Progression ○ Purpose of Reservoir (Recreation, Flood Control, Irrigation, Tailings, etc.) ○ Site Investigation ○ Data Collection Method(s) ○ Project Approach / Construction Sequence ○ Proposed Time of Commencement and Completion ● General Design Criteria (Please see below for details) for: <ul style="list-style-type: none"> ○ Geology and Geotechnical ○ Hydrology & Hydraulics (H&H) ○ Structural ● Construction Quality Control Testing/Inspection ● Vegetative Specifications (for earthen portions of structure, borrow areas, and other disturbed areas) ● Limitation(s) ● Reference Document(s) ● Vicinity Location Map and Plan View of the Dam, Appurtenant Structures, Spillway(s), etc. ● Topographic Contour Map (showing Outline of Impoundment looking downstream) 	
Geotechnical Analysis	
Hydrologic & Hydraulic (H&H) Analysis	
Structural Analysis	
Operations & Maintenance (O&M) Plan	
Technical Specifications	
Erosion & Sediment Control (E&SC) Plan²	
Emergency Action Plan (EAP) (for Intermediate and High hazard dams)	
Check or Money Order for \$200.00 Initial Application Processing Fee (Please refer G.S. § 143-215.28A. and/or 15A NCAC 2K .0222)	
Estimate of Construction Cost (Includes ALL labor and materials costs for dam and appurtenances; does not include Costs of Land, Rights-of-Way, Design, Quality Control, or Roadway across dam)	
Two (2) hardcopies, One (1) digital copy (DamSafety@ncdenr.gov) of the complete application, and digital copies of all engineering models	

*Applicant should determine if a Section 404 wetlands permit is required from the United States Army Corps of Engineers (USACE) and/or if Section 401 Water Quality Certification is required from the Division of Water Quality (DAQ).

*Pressurized lines, such as water main, sewer force main, natural gas, etc., should be located outside the limits of the dam embankment. If installation of a pressurized line within the dam embankment is unavoidable, then the pressurized line must be encased in a carrier pipe extending beyond each abutment contact, capped at each end and fully supported within the carrier pipe, and at least one observation vent must be provided.

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Additional / Optional detailed guidance, but not limited to, is given as following:

Geotechnical Requirements	
Description of Each Type of Borrow Material	
Specific Locations and Quantities of Borrow	
Subsurface Investigation showing Location, Profiles, and Description of Soil Properties, Tests, etc.	
Compaction Specifications (including any special provisions for compaction in the vicinity of pipes, seepage filter diaphragm, etc.)	
Dam Crest to be Sloped to Drain Toward Lake	
Borrow and Foundation Laboratory Permeability Tests	
Seepage Analysis and Applicable Seepage Control Measures	
Slope Stability Analysis (showing Soil Parameters, Assumed Phreatic Surface, Stability Computations, etc.) for Various Conditions (Steady-State, Rapid Drawdown, Post-Construction, etc.)	
Monitoring Instrumentation(s) Plan for Constructed and Proposed	
Requirement for Density Testing and Other Construction Quality Control	
Specifications for Geofabric(s)	
Structural Requirements	
Detail drawings of structural elements	
Structural Calculations	
Hydrologic/Hydraulic (H&H) Requirements	
Drainage Area and Surface Area of reservoir (acres)	
Contour Map of Watershed	
Basic Hydrologic & Hydraulic Findings (land cover, slope, soil group, SDF event, Tc, CN, Stage vs. Storage analysis, hydraulic flow length, freeboard after design storm, etc.)	
Spillway Design Flood (SDF)	
Hydrograph (Peak Q_{inflow} and $Q_{outflow}$, Peak time, Peak Elev., Max. Runoff Volume, etc.)	
Method(s)/Model(s) used to calculate the Design Storm Hydrograph	
Spillway Outflows (assumptions – discharge coefficients, effective length, etc. and calculations)	
Engineering Plans/Guide Specifications (i.e. Specs. On Drawings)	
Dimensions of All Outlet Structures	
ASTM Spec. of Pipe(s)	
Detail of Pipe Joint	
Detail of Bottom Drain & Valve Stem	
Detail of Trash Rack	
Detail of Filter Diaphragm for Seepage Control	
Detail of Concrete Cradle (if RCP utilized)	
Detail of Foundation Drains	
Detail of Energy Dissipating Device(s) and Graded Gravel Bedding or Geofabric Under Riprap (including Length of Overlap for geofabric)	
Detail of Emergency Spillway Lining (including bedding, underdrainage, etc.)	
Detail of Construction Joints and Waterstops for Concrete-Lined Channels	
Cross-Section of Emergency Spillway Control Section and Primary Spillway	
Plan View of Emergency Spillway's direction of flow away from dam and Primary Spillway	
Typical Cross-Sections and Profile of Emergency Spillway Channel and Primary Spillway	

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Size and Schedule of Toe Drain Pipe (including size of holes and number of holes per lineal foot)	
Varmint Guard for Toe Drain	
Riser Uplift Prevention (Anti-Flotation) Calculation	
Calculations for Frequency Usage of Vegetated Emergency Spillway and Velocities of Flows through Emergency Spillway (under NCAC 15A 2K .0205)	
Breach Routing	
Drawdown Analysis	
Provision for Maintaining Minimum Stream Flow Release Requirements (NCAC 15A 2K .0500)	
Upstream/Downstream Slope Wave Protection	
Stream Diversion/Water Management Plan(s) During Construction	
Technical Specifications	
<p>General Requirements</p> <ul style="list-style-type: none"> -Summary -Administrative Requirements -Construction Progress Schedule -Submittal Procedures -Quality Control/Assurance Requirements -Temporary Facilities and Controls -Temporary Environmental Controls -Surveying -Control of Water (i.e. drawdown of water for safe construction) -Product Requirements -Execution and Closeout Requirements 	
<p>Existing Conditions</p> <ul style="list-style-type: none"> -Maintenance of Existing Conditions -Structure Demolition 	
<p>Concrete and Reinforcement</p> <ul style="list-style-type: none"> -Concrete Forming and Accessories -Concrete Reinforcing -Cast-In-Place Concrete -Shotcrete -Backfill Concrete -Grouting -Concrete Repair 	
<p>Earthwork</p> <ul style="list-style-type: none"> -Soils for Embankments including necessary laboratory testing (e.g. grain size, dispersity, etc.) -Aggregates for Earthworks -Geosynthetics for Earthwork -Instrumentation and Monitoring Systems (e.g. piezometer details, locations, etc.) -Clearing and Grubbing -Excavation Classifications (e.g. suitable, unsuitable, rock, rippable materials, ec.) -Fill Placement (Soil testing and monitoring requirements e.g. required density/compaction, frequency of testing, fill moisture conditions, etc.) -Erosion and Sediment Control -Drain Pipes -Soil Nail Wall 	

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-Drilling and Pressure Grouting -Foundation Preparation (prohibit blasting at/near the dam to the maximum extent possible, etc.) -Articulating Concrete Block Revetments -Excavation Support and Protection -Tiebacks -Rock Anchors -Mechanically Stabilized Earth (MSE) Wall	
Metals	
Woods, Plastics, and Composites	
Thermal and Moisture Protection	
Openings	
Finishes	
Utilities	
Transportation	
Waterway and Marine	
Operations & Maintenance (O&M) Plan³	
Activation of Bottom Drain	
Storm preparedness and reservoir drawdown prior to storm	
Instrumentation Readings	
Periodic Monitoring/Observations	
Controlled initial filling, lowering and raising of operating levels at up to one (1) foot per day, etc.	
Variance may be applicable for emergency drawdown conditions under the direction of Engineer of Record and/or Regulatory Officials	
Erosion & Sediment Control (E&SC) Plan	
Two (2) phases of construction at minimum	
Location(s) of Temporary and Permanent Control Measures	
Construction Details of All Control Measures	
Maintenance Requirements Specifications during construction	
Responsible Party for Maintenance during construction	
Temporary and Permanent Vegetative Stabilization Specifications (seedbed preparation, soil amendments, seeding rates, etc.)	
Standard details utilized for all standard E&SC measures	

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