



COLORADO
Division of Water Resources
Department of Natural Resources
Dam Safety Branch

February 12, 2020

Mr. Dan Hawkins
Superintendent
Flying Horse Club Golf Course
1880 Weiskopf Point
Colorado Springs, CO 80921
via email: dhawkins@flyinghorseclub.com

When replying, please refer to:
FLYING HORSE NORTH DAM, DAMID 080459
Water Division 1, Water District 8
Construction File No. C-2085

SUBJECT: Acceptance of Construction

Dear Mr. Hawkins,

John Hunyadi of the Colorado Dam Safety Branch conducted a final construction inspection at the referenced dam on September 17, 2019. The purpose of the inspection was to confirm this project was constructed as approved. On January 22, 2020, we received acceptable final construction documents in accordance with Rule 8.3 of the state of Colorado Rules and Regulations for Dam Safety and Dam Construction (2-CCR 402-1; January, 2020).

The newly completed jurisdictional size, Low Hazard dam has a jurisdictional height of 23 feet and a crest length of 450 feet. The reservoir created by the dam covers approximately 7.8 acres and has a normal storage capacity of 109.9 acre-feet.

Based on observations during the final construction inspection and our review of the above mentioned documents, we believe the project has been satisfactorily completed in general accordance with the approved plans and specifications. **Therefore, newly constructed facility is accepted for full use when water is legally and physically available.**

The State Engineer, by providing this construction acceptance does not assume responsibility for any unsafe condition of the subject dam. The sole responsibility for the safety of this dam rests with the reservoir owner and operator, who should take every step necessary to prevent damages caused by leakage or overflow of waters from the reservoir or floods resulting from a failure of the dam. Therefore, it is in the owner's best interest to operate and maintain the facility in a manner such that the safety of the dam and the general public are not jeopardized.

We are enclosing a copy of Rules 11 and 13 of the Rules and Regulations for your reference and use. These rules pertain to general maintenance items and the owner's responsibilities, respectively.

If you have any questions, please do not hesitate to contact me, or John Hunyadi in our Colorado Springs Office at 719-227-5294.



Mr. Dan Hawkins
Flying Horse North Dam Construction Acceptance
DAMID 080459, Construction File No. C-2085
February 12, 2020
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Sincerely,

A handwritten signature in blue ink, appearing to read 'W.T. McCormick, III', with a stylized flourish at the end.

William T. McCormick, III, P.E., P.G.
Chief, Dam Safety Branch

Enc: Copies of Rule 9 and 10 of the "Rules and Regulations for Dam Safety and Dam Construction"

ec: Corey DeAngelis, Division Engineer, Water Division 2
Sydney Alexander, WD 8 Water Commissioner
Doug Hollister, WD 10 Water Commissioner
John Hunyadi, Dam Safety Engineer
Jeremy Franz, Design Review Engineer
Marc Whorton, Classic Consulting, mwhorton@classicconsulting.net
Austin Lenz, Classic Homes, alenz@classichomes.com

State of Colorado
Department of Natural Resources
Division of Water Resources
Office of the State Engineer
Dam Safety

***RULES AND REGULATIONS
FOR
DAM SAFETY AND DAM CONSTRUCTION***

EFFECTIVE DATE: January 1, 2020

2-CCR 402-1



1313 Sherman Street, Room 818 Centennial Building
Denver, Colorado
303-866-3581

OFFICE OF THE STATE ENGINEER
RULES AND REGULATIONS
FOR
DAM SAFETY AND DAM CONSTRUCTION

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Rule 10. Construction, Modification, Alteration, Repair, and Breach of Non-Jurisdictional Size Dams

10.1 Notice of Construction. Any person intending to construct a non-jurisdictional size dam other than a Livestock Water Tank or Erosion Control Dam, shall submit notice of the intent to construct the dam on forms provided by the State Engineer not less than forty-five (45) days prior to the proposed construction. The State Engineer shall determine the potential hazard for loss of life or significant damage due to failure of the structure, and if the submittal and approval of plans and specifications is required prior to construction. The forms shall be submitted to the Division Engineer of the Water Division in which the dam is to be located. The Division Engineer shall respond to the Owner within forty-five (45) days after receipt of the complete notice of intent to construct form. All Owners shall be required to comply with the applicable dam safety and water administration requirements.

10.2 Modification or Alteration of Non-Jurisdictional Size Dams. Jurisdictional size dams proposed to be modified or altered to non-jurisdictional size shall comply with the following requirements:

10.2.1 For High or Significant Hazard dams, the Owner shall submit plans for approval in accordance with [Rule 6](#). As-constructed documents are required in conformance with [Rule 8.3.1](#).

10.2.2 For Low Hazard or NPH dams, the Owner shall submit written notice of the intent to alter the dam to the State Engineer. The Owner shall submit written notice of the completion of the project.

10.3 Repair or Breaching of Non-Jurisdictional Dams. Repair or breaching of existing non-jurisdictional size dams shall meet the following requirements:

10.3.1 In cases where a non-jurisdictional dam has been found unsafe, the Owner shall submit written notice to the State Engineer to repair, modify, breach or entirely remove the dam prior to construction.

10.3.2 Removal or breaching of a non-jurisdictional dam shall comply with [Rule 9](#).

10.3.3 Modifications to, or repair of, High or Significant Hazard non-jurisdictional size dams shall be performed in accordance with [Rule 6](#).

10.4 Spillway Requirements. Spillway sizing requirements shall meet the criteria for the appropriate hydrologic hazard category.

10.5 Enlargement of Non-Jurisdictional Size Dams. The modification of a non-jurisdictional size dam to a jurisdictional size dam shall meet the requirements of [Rule 6](#).

Rule 11. General Maintenance, Ordinary Repairs, and Emergency Actions

11.1 General maintenance and ordinary repairs that do not require prior approval of the State Engineer include those activities that do not impair the safety of the dam. When questions arise concerning this Rule, the determination of general maintenance and ordinary repair will be made by the State Engineer. General maintenance and ordinary repair activities include the following:

- 11.1.1.1 Removal of brush or tall weeds.
- 11.1.1.2 Cutting of trees with trunk diameter less than 6-inches and removing slash from the embankment or spillway.
- 11.1.3 Rodent control, removal or extermination and repair of minor rodent damage. Damage that has already weakened the dam shall be repaired in accordance with [Rule 6](#).
- 11.1.4 Repair of erosion gullies on the embankment or in the spillway. Large gullies that have already weakened the dam shall be repaired in accordance with [Rule 6](#).
- 11.1.5 Surface grading of the embankment crest or spillway to eliminate potholes and provide proper drainage with properly compacted material, provided that the freeboard is not reduced. Placement of material in excess of 1 foot in depth to provide freeboard is not considered general maintenance and shall be performed in accordance with [Rule 6](#).
- 11.1.6 Placement of additional riprap and bedding on the upstream slope, or in areas of the spillway that have sustained minor damage. Such placement shall be limited to restoring the original riprap protection. Repair of the underlying embankment is not considered general maintenance and shall be performed in accordance with [Rule 6](#).
- 11.1.7 Painting or caulking metal structures, or lubricating mechanical equipment.
- 11.1.8 Patching, sealing, or caulking spalled or cracked concrete surfaces to prevent deterioration.
- 11.1.9 Removing debris, rock, or earth from outlet conduits, outlet channels, or spillway channels.
- 11.1.10 Patching or sealing surface damage to prevent further deterioration within outlet conduits.
- 11.1.11 Replacement of worn or damaged parts of outlet valves or controls to restore to original condition.
- 11.1.12 Repair or replacement of fences intended to keep traffic or livestock off the dam or spillway.
- 11.1.13 Landscaping of new and existing dams and spillway channels is not general maintenance and will not be allowed without the prior approval of the State Engineer. No trees or large vegetation shall be planted within 25 feet of the footprint of the dam.

11.2 Emergency Action. Emergency actions not impairing the safety of the dam may be taken before consultation and guidance can be provided by an Engineer, and do not require prior approval of the State Engineer. Emergency actions are interim solutions only and may not serve as a permanent solution to the problem(s) being addressed. Additional remedial actions may be required after the emergency passes. Emergency actions may include:

- A. Stockpiling materials such as riprap, earthfill, sand, sandbags, and plastic sheeting;

- B. Lowering the reservoir level by making controlled releases through the outlet or a gated spillway, by pumping, or by siphoning. Where large releases are to be made, the Division Engineer, Dam Safety Engineer and Local Emergency Manager shall be notified;
- C. Armoring eroding areas by placing sandbags, riprap, plastic sheeting, or other available material;
- D. Plugging leakage entrances on the upstream slope;
- E. Increasing freeboard by placing sandbags or temporary earthfill on the dam;
- F. Diverting flood waters around the reservoir or closing inflow diversions;
- G. Constructing training berms to control flood waters;
- H. Placing sandbag ring dikes around boils at the downstream toe to provide back pressure; and/or
- I. Removing obstructions from outlet or spillway flow areas.

11.3 Emergency Excavation. Lowering the water level by excavating the spillway or embankment is prohibited unless failure of the dam is imminent.

11.4 Emergency Notification. The State Engineer shall be notified as soon as reasonably possible of any emergency condition that exists and any emergency action taken with or without prior approval of the State Engineer.

11.5 Emergency Action Plan. For all High and Significant Hazard dams, the Emergency Action Plan shall be implemented in conjunction with any emergency actions taken.

Rule 12. Safety Inspections Performed by the Owner's Engineer

12.1 Owner Safety Inspection. An Owner may provide a safety inspection report to the State Engineer recommending the safe storage level of a reservoir. The State Engineer may utilize the Owner's safety inspection report in lieu of a State Engineer safety inspection if the inspection is performed, and the report written, by an Engineer meeting the requirements of Rule [4.10](#). The Owner's Engineer shall notify the State Engineer at least fourteen (14) days prior to the scheduled safety inspection. Inspections shall be conducted in accordance with current State Engineer policies and these Rules.

12.2 Scope of Inspection. Dam safety inspections by the Owner's Engineer shall meet the requirements of Rule [4.31](#). The Engineer shall prepare an inspection report that describes the findings and lists actions the Owner must take to improve the safety of the dam to an acceptable level. The report shall provide the information necessary to allow the State Engineer to make a determination of the safe storage level of the reservoir.

12.3 State Engineer Acceptance. The report will be reviewed by the State Engineer prior to acceptance. If the report and findings are accepted, the State Engineer will provide the Owner with a list of required actions and will notify the Owner of the safe storage level.

Rule 13. Owner's Responsibilities

13.1 Liability. The sole responsibility for the safety of the dam rests with the Owner, who should take every step necessary to prevent damages caused by leakage or overflow of waters from the reservoir or floods resulting from a failure of the dam. Therefore, it is in the Owner's best interest to operate and maintain the facility in a manner such that the safety of the dam and the general public are not jeopardized.

13.2 Change in Ownership. Changes in ownership of a dam shall be immediately filed with the State Engineer.

13.3 Site Security. The Owner shall maintain reasonable security measures to prevent intentional misoperation and damage to the facility.

13.4 Dam Observation and Monitoring Plans. All dams shall have an observation and monitoring plan that shall include the following minimum requirements:

13.4.1 Owner Observations. The Owner is responsible for ensuring frequent observation of the dam, especially at times when the reservoir is full, during heavy rains or flooding, and following an earthquake. The observations shall be conducted in accordance with methods acceptable to the State Engineer. Conditions which threaten the safety of the dam shall be reported to the State Engineer immediately.

13.4.1.1 High and Significant Hazard dams shall be observed at least twice a month when the reservoir water level is greater than half the full storage capacity.

13.4.1.2 Low Hazard dams shall be observed at least once every three months.

13.4.1.3 For all dams, routine outlet observations shall include observation of exposed surfaces of the inlet and discharge structures, control valves, gates and vaults; observation of the downstream end of the conduit and adjacent embankment for leakage; and observation of the dam (upstream slope, crest, downstream slope, and natural ground) in the vicinity of the outlet alignment for signs of distress or changed conditions.

13.4.2 Monitoring Instrumentation. The Owner is responsible for installing, maintaining, and monitoring the instrumentation required to adequately monitor the performance of the dam. The instrumentation shall be monitored at a frequency detailed in the approved observation and monitoring plan.

13.4.2.1 Monument surveys accurate to 0.01 foot are required annually for five years (including the year of installation of the monuments) on new and recently enlarged dams, and then once every five years thereafter. Monitoring of movement monuments for Significant Hazard dams is not required beyond the first five years unless otherwise deemed necessary by the State Engineer. The State Engineer may also approve other methods for monitoring movement monuments on the dam and may require monitoring at any frequency deemed necessary based upon review of inspection data and past measurement results.

13.4.2.2 The Owner is responsible for ensuring that all instrumentation data is properly recorded in an acceptable format and sent to the State Engineer annually. The State Engineer may require that instrumentation data for High and Significant Hazard dams be evaluated by the Owner's Engineer and the analysis sent to the State Engineer annually, unless more frequent reporting is required.

13.4.2.3 The Owner shall promptly notify the State Engineer of any abnormal changes in the instrumentation data, as compared to historical patterns and trends.

13.5 Outlet Operation. The Owner shall maintain the outlet works in an operable condition.

13.5.1 Outlet Inspections. The requirements of outlet inspections are as follows:

13.5.1.1 Outlet Exercise. An annual test of the outlet gate(s) and valve(s) for proper operation is required. The Owner shall notify all potentially impacted parties prior to exercising the outlet gate in cases where sediment release, water quality, or downstream flooding is a concern.

13.5.1.2 Outlet Inspection Access. Outlet structures for all dams will be observed during safety inspections. Owners shall provide safe access for inspection of outlet facilities.

13.5.1.3 Internal Outlet Inspections. Internal outlet inspections shall consist of a close inspection of the interior of the conduits, outlet wells, and access ways. In cases where it is unsafe or not possible for a person to enter, the Owner shall provide for an inspection using video or other remote sensing equipment capable of detecting flaws or imperfections within the conduit. An Engineer shall oversee the inspection and provide a written report of inspection findings to the State Engineer. The State Engineer shall coordinate with the Owner and make all reasonable efforts to minimize expense and waste of water while ensuring dam safety.

13.5.1.3.1 High and Significant Hazard dams shall receive an internal outlet inspection at least once every ten (10) years unless the condition indicates that more frequent inspections are necessary. An inspection of the entire outlet conduit shall only be required on dams without upstream gates if ordered by the State Engineer.

13.5.1.3.2 Low Hazard and NPH dams shall receive an internal outlet inspection when required by the State Engineer to determine the safe storage level.

13.5.1.3.3 The Owner shall inform the State Engineer any time the water level in a dam without upstream gates on the outlet conduit will be lowered to the invert of the conduit, or any time the normally inundated conduit will be otherwise dewatered and available for inspection.

13.6 Responsibility for Maintenance. The Owner is responsible for adequate and timely maintenance of the dam. The Owner shall establish a maintenance plan to ensure that the maintenance, as identified in [Rule 11](#), is accomplished.

13.7 Emergency Preparedness. Owners shall be prepared to take emergency actions to prevent unusual or emergency situations at their dams from escalating to dam failure. To the extent possible, Owners shall also make preparations to reduce the consequences of potentially dangerous reservoir releases when such releases are unavoidable or necessary.

13.7.1 Emergency Action Plans (EAP). An EAP shall be developed and distributed by the Owner for all High and Significant Hazard dams. The EAP shall contain the following information, at a minimum:

13.7.1.1 Essential Dam Information. This section shall include a description of ownership and operations personnel (dam tenders/caretakers), the dam location including a vicinity map and site map, and the characteristics of the dam and appurtenant structures.

13.7.1.2 Event Level Determination and Expected Actions. This section shall include a description of the emergency level classifications and the expected actions of each of the agencies included in the emergency response team for each of the emergency levels. The following emergency level classifications shall be included, at a minimum:

A. High flow below dam – Non-failure,

- B. Unusual condition at dam – Non-failure,
- C. Potential Dam Failure – Immediate action required, and
- D. Evacuation Required – Dam failure in progress or unavoidable.

13.7.1.3 Notifications. This section shall include a list of all members of the emergency response team. The appropriate individuals from each agency on the emergency response team shall be identified and included as well as at least one backup individual. The notification list shall include representatives from each of the following agencies/entities, at a minimum:

- A. Dam Owner,
- B. Local Communications Dispatch Center,
- C. Local Sheriff's Office,
- D. Local Emergency Managers (County, City),
- E. State Division of Homeland Security and Emergency Management (DHSEM),
- F. Colorado Department of Transportation (CDOT),
- G. Colorado State Patrol (CSP),
- H. Colorado Department of Public Safety (CDPS),
- I. Division of Water Resources (DWR), and
- J. National Weather Service (NWS).

13.7.1.4 Communication. This section shall include a description of how communication with each of the agencies on the emergency response team shall be made when the EAP is activated at any of the emergency response levels described.

13.7.1.5 Locally Available Resources. This section shall identify locally available or pre-positioned equipment, manpower and materials to be used to prevent incident escalation and when possible, prevent the dam from failing. Resources typically identified in this section include:

- A. Heavy equipment contractors;
- B. Rental equipment suppliers for pumps and heavy equipment;
- C. Material suppliers for sand and gravel, concrete, sand bags, plastic sheeting; and
- D. Diving Contractors.

13.7.1.6 Evacuation Information. This section shall present information provided to aid the emergency response team with the evacuation of the inundation zone below the dam. The following information shall be included, at a minimum:

13.7.1.6.1 Inundation Mapping. Dam failure inundation maps shall be provided for High and Significant Hazard dams to aid emergency managers in developing evacuation plans. Inundation maps shall be provided in electronic PDF and GIS shape file formats. Inundation maps shall include the following information, at a minimum:

- A. Lateral limits of the dam breach flood extending downstream from the dam to a location where the potential for loss of life and significant property damage no longer exist; and
- B. Cross sections at critical locations along the flood path showing lateral extents of flooding, depth of flooding, arrival time of the initial and peak flood wave (from the start of the dam breach), and flood wave velocity.

13.7.1.6.2 Critical Infrastructure. From examination and study of the inundation maps and consultation with local entities, critical infrastructure within the inundation area should be identified for incorporation into the local emergency managers evacuation planning.

13.7.1.6.3 Spillway and Outlet works discharge rating tables/curves. Spillway and outlet discharge rating curves and tables shall be provided to aid emergency response for the high flow conditions EAP activation level.

13.7.2 Termination. The responsibilities for termination of an EAP activation shall be described.

13.7.3 EAP Distribution. The Owner shall submit an electronic copy of the EAP to all members of the emergency response team as shown on the notification list.

13.7.4 EAP Updates. The Owner shall review the EAP annually and update as necessary and appropriate. EAP updates shall be included in a single PDF containing the complete EAP and distributed electronically to all emergency response team members shown on the notification list.

13.7.5 EAP Testing. The Owner shall test the EAP periodically to ensure the effectiveness of the EAP. The contact information shown in the notification list shall be reviewed annually to ensure it is up to date, and to obtain information for revisions or corrections as necessary.

Rule 14. Exempt Structures

14.1 Exempt Structures. See section 37-87-114.5, C.R.S., with the following clarifications:

14.1.1 Highways, road-fills, and railroad embankments with ungated culverts are exempt.

14.1.2 Structures that store water only below the lowest point of the natural ground are exempt from these Rules, unless an outlet works is constructed to release water.

14.2 Livestock Water Tanks. Livestock Water Tanks as defined in the Livestock Water Tank Act of Colorado, Title 35, Article 49, C.R.S., are exempt from these Rules.

14.3 Erosion Control Dams. Erosion Control Dams, as defined in section 37-87-122, C.R.S., are exempt from these Rules.

14.4 Dams or other water impounding structures regulated by other State agencies (e.g. COGCC, CDPHE, DRMS, etc.) may be exempt from these Rules to avoid dual regulation. The State Engineer may provide technical consultation as necessary for the permitting of such structures.

Rule 15. Restriction of Recreational Facilities within Reservoirs

15.1 No person, including any state or federal agency, quasi-municipal corporation, or political subdivision, shall construct any permanent recreational structure within a reservoir below the elevation of the crest of the spillway unless:

- A. The facility is capable of being restored with a minimum amount of cleaning or expense, and either,