COLORADO
Division of Water Resources
Department of Natural Resources

May 5, 2015

Dianne E. Ray, CPA
State Auditor
Colorado Office of the State Auditor
1525 Sherman St., 7th Floor
Denver, CO 80203

Dear Ms. Ray:

In response to your request, we have prepared an updated status report regarding the implementation of audit recommendations contained in the February 2014 *Performance Evaluation of the Dam Safety Program*. The attached report provides a brief explanation of the actions taken by the Department of Natural Resources to implement each recommendation.

If you have any questions, please do not hesitate to contact me at 303-866-3581 x8295 or by email at scott.cuthbertson@state.co.us.

Sincerely,

Scott C. Cuthbertson, P.E.
Deputy State Engineer

Enc: Status Report

ec: Monica Bowers, Deputy State Auditor - Office of the State Auditor
Robert Randall, Deputy Director – Department of Natural Resources
Dick Wolfe, State Engineer/Director – Division of Water Resources
Bill McCormick, Chief of Dam Safety – Division of Water Resources

AUDIT RECOMMENDATION STATUS REPORT

AUDIT NAME: Performance Evaluation of the Dam Safety Program (Evaluation)
AUDIT NUMBER: 1347P
DEPARTMENT: Department of Natural Resources
DATE OF STATUS UPDATE: February 19, 2015

SUMMARY INFORMATION

Recommendation Number	Agency's Response	Original Implementation Date	Implementation Status	Revised Implementation Date *(Complete only if the implementation date has changed.)*
1a	Agree	June 2015	Partially Implemented	
1b	Agree	June 2014	Implemented and Ongoing	
1c	Agree	June 2014	Implemented and Ongoing	
1d	Agree	June 2015	Partially Implemented	November 2015
2a	Agree	September 2014	Implemented	
2b	Agree	June 2015	Partially Implemented	November 2015
2c	Agree	June 2015	Implemented and Ongoing	
3a	Agree	September 2014	Implemented and Ongoing	
3b	Agree	September 2014	Implemented and Ongoing	
3c	Agree	September 2014	Implemented and Ongoing	
3d	Agree	September 2014	Implemented and Ongoing	
4a	Agree	December 2014	Implemented and Ongoing	
4b	Agree	December 2014	Implemented	
4c	Agree	December 2014	Implemented	
5a	Agree	September 2014	Implemented and Ongoing	
5b	Agree	June 2015	Implemented and Ongoing	
5c	Agree	June 2014	Implemented and Ongoing	
5d	Agree	June 2014	Partially Implemented	November 2015
6a	Agree	December 2014	Implemented	
6b	Agree	December 2014	Implemented	

DETAIL OF IMPLEMENTATION STATUS

Note: The Department of Natural Resources agreed with all audit recommendations.

RECOMMENDATION NO. 1:

The Division of Water Resources should strengthen processes to ensure that dams are inspected timely and that inspection reports are complete by:

a. Implementing mechanisms to track the amount of time required to inspect dams and conduct other work such as design reviews, periodically analyzing time tracking data, and adjusting workload assignments as needed to ensure that inspections are completed timely.

   Current Implementation Status for Rec. No. 1a: Partially Implemented

   Agency's Update: The primary benefit of this recommendation has been accomplished by including the subject matter in the monthly team coordination meeting.

   The "monthly team coordination meeting" is referenced in numerous places in this report. To clarify, this is a two-hour conference call that occurs the first Tuesday of every month. All dam safety engineers are required to participate in this meeting. The agenda includes general discussions from the chief; discussion of work issues in each engineer's territory, discussion of design review workload and any other current issues. This meeting provides a monthly check of how work on issues of importance is going. For example, the Evaluation recommendations have been an agenda item on all monthly calls so each month the engineers have heard the chief stress the need to work on the goals identified in the Evaluation. We believe this report will show the effectiveness of this management approach in several of the Evaluation findings.

   Complete implementation of recommendation 1a is awaiting the development of time codes in the division's time keeping system. As soon as the Kronos codes are created, the chief will have the metrics required to confirm the information shared during the monthly coordination meeting.

b. Establishing benchmarks or goals for completing at least high-hazard inspections timely and monitoring Dam Safety Engineers against the benchmarks or goals on a routine basis throughout the year.

   Current Implementation Status for Rec. No. 1b: Implemented and Ongoing

   Agency's Update: The performance recommendation was required in large part due to a lack of clear direction as to when inspections were to be performed caused by the existence of two different systems. The division has clearly established that a fixed schedule will be used to inspect dams instead of relying on a risk-based approach, which had caused a significant amount of confusion. The Evaluation found that for the

year analyzed, the division had inspected only 66% of the high hazard dams in accordance with the frequency expectation in place at that time.
In late April and early May 2014, prior to the inspection season, each engineer's performance plan was reviewed with emphasis on the Individual Performance Objective (IPO) for dam inspections. The importance of completing inspections on all high and significant hazard dams was also included in each of the monthly conference calls between May and November. During that time period, the chief of dam safety queried the database several times to check on inspection progress and status. As a result of setting a clearer expectation, the division inspected 331 of the 333 high hazard dams scheduled for inspection. The two dams not inspected were under construction and, therefore, did not require a routine inspection due to the level of attention being provided by the construction inspection process. As a result of implementing the recommendation, the division's performance improved from 66% to, in effect, 100%.

c. Implementing procedures that require Dam Safety Engineers to send the Division a copy of each Engineer Inspection Report that is signed by the dam owner and increase the number of reports reviewed by Division management during each inspection cycle.

Current Implementation Status for Rec. No. 1c: Implemented and Ongoing

Agency's Update: Completed EIRs are sent electronically via email to both the owner and Chief of Dam Safety, who has created a Google Label to track the submittals. Routine audits can be accomplished by simply opening the attachments to the email. Approximately 12% of last year's EIRs were audited. The division also created a report from the electronic media storage software, LaserFiche, that can be used to check for an owner's signature.

d. Modifying the Engineer Inspection Report to include a specific section for engineers to note any issues from previous reports.

Current Implementation Status for Rec. No. 1d: Partially Implemented

Agency's Update: The engineers are using comment fields in the tracking database to capture the referenced information. Complete implementation will be accomplished as soon as OIT application development can make the requested changes to the DAMS database.

RECOMMENDATION NO. 2:

The Division of Water Resources should ensure that dam hazard reclassifications are conducted timely by:

a. Developing clear rules or policies that define how quickly Dam Safety Engineers must complete reclassification reviews from the time a reclassification need is first identified. This could include prioritizing completion of hazard reclassifications

reviews for dams that are anticipated to be reclassified as high or significant hazard from a lower hazard classification.

Current Implementation Status for Rec. No. 2a: Implemented

Agency's Update: This subject has also been added to the monthly coordination meeting. Several styles of hazard classification reviews have been used by the dam safety engineers, each of which generally follows our established guidelines. During the monthly calls we discuss the need to review hazard classification status of dams during inspections and conduct reviews prior to the next inspection cycle. The Chief tracks the status of hazard classification review projects with a spreadsheet. The Evaluation (Table 5) determined that, for the period reviewed, the median number of days required to reclassify a dam was 586 days. Since the Evaluation, the division has identified 28 dams that required a reclassification. The median days required to complete those reclassifications was 27 days.

b. Developing and monitoring a centralized tracking system that captures key information regarding hazard reclassifications including which dams have been flagged for a hazard reclassification review, when the dam was flagged, and other key data for Division management to track to ensure timely completion.

Current Implementation Status for Rec. No. 2b: Partially Implemented

Agency's Update: The recommendation is not scheduled for implementation until later this year, due to the more permanent solution requiring OIT application development to modify the database. The recommendation has been partially implemented in that pertinent information is being tracked in a spreadsheet until then.

c. Reallocating reclassification reviews to other Dam Safety Engineers who have capacity when there are significant backlogs in other divisions.

Current Implementation Status for Rec. No. 2c: Implemented and Ongoing

Agency's Update: This has been accomplished by including the conversation in the monthly coordination meeting where needs and resources are identified and responsibilities adjusted.

RECOMMENDATION NO. 3:

The Division of Water Resources (Division) should strengthen the Emergency Action Planning (EAP) process by:

a. Implementing procedures to periodically review the DAMS database to identify any dams that do not have an EAP recorded and reconcile the DAMS database records with hard copy EAPs on file to help ensure all required EAPs are filed and DAMS is accurate.

Current Implementation Status for Rec. No. 3a: Implemented and Ongoing

Agency's Update: A database report has been developed that allows the Chief to track dams with an out-of-date EAP. The report, as shown in the one line sample report below, shows: whether or not the dam has an EAP on file; the dates of the hardcopy EAP and associated inundation map; and, the dates of the electronic version of the EAP and inundation map stored in LaserFiche and retrievable from any location with access to the internet. This report includes the information for all High and Significant Hazard dams, which can be sorted by dates to see where activity is needed to update the information.

To demonstrate the improvements made in this category, Table 6 of the Evaluation reported that an EAP was not available for 16 of the 686 High or Significant Hazard dams and that 54% of the EAPs on file were more than six years old. As of the date of this report, 100% of the now 723 High and Significant Hazard dams have an EAP, 64% of which are less than six years old.

DAMID	Hazard Class	Has EAP	EAP Date	Map Date	LF EAP Date	LF Map Date
040209	2	Y	2012-06-05	2012-06-05	2012-06-05	2012-06-05

b. Implementing a process for Division staff to review all EAPs in conjunction with the regular dam safety inspection process to determine if the documents are still on file, complete, and current and to follow up with dam owners to obtain copies of any missing documents and for dam owners to revise any EAPs that are incomplete or not current. The Division should also develop written policies and procedures requiring Division staff to review new or updated EAPs submitted in the future for all required elements and attributes upon receipt and to follow up with dam owners to obtain complete EAPs when elements are missing.

Current Implementation Status for Rec. No. 3b: Implemented and Ongoing

Agency's Update: Engineering Inspection Reports (EIR) include the EAP status and what information needs to be updated by the owner. The EIR's are transmitted to the dam owner by the dam safety engineer either by traditional paper copies and mail or, more often, using paperless electronic means. In either case, where necessary and appropriate, in addition to the EIR, engineers transmit an EAP template for the specific dam, EAP guidance documents and information on the FEMA funded inundation mapping grant program. We do this to stress the importance of an EAP and to assist and encourage owners to update their EAP's.

c. Implementing a process for the Dam Safety Branch to regularly report to Division management on the number of dams for which the Branch has verified that EAPs are on file, contain all required elements, and are current.

Current Implementation Status for Rec. No. 3c: Implemented and Ongoing

Agency's Update: Engineers update the database as part of the EIR preparation. A new database report allows the Chief to run periodic checks to determine the status of the EAP. The Evaluation (Table 6) found that only 54% of the EAPs in the database had been updated in the last six years. Since the Evaluation, the division has already improved this number to 61% and will continue to make improvements.

d. Implement additional methods to help ensure that owners of high and significant hazard dams conduct annual reviews and periodic testing of their EAPs as required by regulations. This could include asking dam owners to provide periodic documentation or attestations that the reviews and testing were completed.

Current Implementation Status for Rec. No. 3d: Implemented and Ongoing

Agency's Update: The division coordinated and hosted four regional EAP exercises this last year. A regional exercise allows multiple dam owners to participate and the increased scope makes it worthwhile for the emergency management community to participate as well, which adds significant value to the exercise. Regional exercises were held in Salida, Glenwood Springs, Ft Collins and Denver. There were 167 participants, 25 different dam owners, 13 municipalities, 15 counties, 3 state agencies and 3 private engineering firms. The division also participated as a vendor at the Colorado Emergency Management Association (CEMA) annual conference in February 2015 to help raise the awareness of the EAP program.

RECOMMENDATION NO. 4:

The Division of Water Resources should:

a. Evaluate options to motivate dam owners to address violations of dam safety statutes and regulations related to the construction or safe operation of any reservoir. Such evaluation should include consideration of penalties such as direct fining authority as well as incentives that encourage dam owner compliance.

Current Implementation Status for Rec. No. 4a: Implemented and Ongoing

Agency's Update: As the Evaluation identified, statute (§37-87-107, C.R.S.) directs the state engineer to determine the safe storage level of reservoirs. Beyond that, rules adopted by the state engineer address such things as outlet inspections, maintaining up to date EAPs, etc. The state engineer has statutory authority (§37-92-501) to order compliance with such rules and will use such authority when cooperative compliance

proves unsuccessful. This recommendation was also addressed in the division's December 31, 2014 report to the Legislative Audit Committee. The report described the Division's evaluation of using fining authority or establishing fees for additional inspections required when dams are under restrictions.

b. Evaluate the feasibility of seeking statutory changes to allow the Division to charge inspection fees to dam owners to cover the costs for each inspection that is performed on a restricted dam that is outside the routine dam safety inspection schedule.

Current Implementation Status for Rec. No. 4b: Implemented

Agency's Update: This recommendation was addressed in the division's December 31, 2014 report to the Legislative Audit Committee and resulted in the committee pursuing a statutory change. House Bill (HB) 15-1247 proposed a $2,000 fee for dams on the restricted storage list, levied by the state engineer if the inspection prompted by the dam being on the restricted list would not have already been required by the routine inspection schedule (High Hazard dams would never be assessed a restricted list inspection fee as those dams are already inspected annually). The fee would not be levied until the dam had been on the restricted storage list for more than two years and then only if the owner of the dam was not actively pursuing remediation of the dam to remove the storage restriction. The bill was amended to remove the proposed restriction fee.

c. Report to the Legislative Audit Committee and to the Water Resources Review Committee no later than December 31, 2014 on options to improve dam owner compliance and pursue statutory changes related to sanctions, incentives, and fees for inspections of restricted dams as appropriate.

Current Implementation Status for Rec. No. 4c: Implemented

Agency's Update: This recommendation was addressed in the division's December 31, 2014 report to the Legislative Audit Committee and resulted in the committee pursuing a statutory change through HB 15-1247.

RECOMMENDATION NO. 5:

The Division of Water Resources should improve the timely review and approval of dam construction, alteration, and repair plans and specifications and of final construction by:

a. Establishing specific timeliness goals for each step in the design review and approval process under the control of Division staff.

Current Implementation Status for Rec. No. 5a: Implemented and Ongoing

Agency's Update: This subject is also part of the monthly coordination meeting. The state engineer has the statutory duty (§37-87-105(3), C.R.S.) to approve or reject design plans within 180 days and complete final project review within 60 days of the completion of construction. These statutes set our ultimate timeliness goals and progress on all design review projects. The status of projects against the timeliness goals is tracked each month in our conference calls. This has improved awareness of all projects in the state and has allowed workload distribution as needed to ensure all project reviews are finished within the statutory time frame or sooner. In addition, the division is careful to make sure the design review only identifies deficiencies or opportunities to add value to the design plan without unduly affecting the cost of the project as opposed to "re-designing" the dam.

b. Tracking the time it takes Division staff to complete each step of the overall design review process, as well as each step, and using the results of the tracking to identify solutions to address delays that occur within the Division.

Current Implementation Status for Rec. No. 5b: Implemented and Ongoing

Agency's Update: The division has accomplished this by using a shared Google Sheet to track project submissions, review assignments and check the status of projects at the monthly coordination meeting.

c. Considering the implementation of formal pre-application meetings to assist dam owners and owners' engineers in preparing plans and specifications that better meet the Division's requirements.

Current Implementation Status for Rec. No. 5c: Implemented and Ongoing

Agency's Update: The division has implemented formal, pre-application meetings and issued an updated Project Review Guide in June 2014 to guide the applicant's preparation for that meeting.

d. Tracking causes of delays in final project approval to determine if approvals after 60 days are occurring due to dam owners not submitting their required documents timely or due to Division staff not completing the approval process timely, and taking corrective actions to expedite both processes.

Current Implementation Status for Rec. No. 5d: Partially Implemented

Agency's Update: The engineers are using a comment field in the data base to track this information, but will not be able to adequately track the information until OIT application development can complete modifications to the database.

RECOMMENDATION NO. 6:

The Division of Water Resources should evaluate the adequacy of the fees charged for the design review function. This should include:

a. Conducting a cost-benefit analysis of current dam safety functions, including a review of the costs of providing design reviews for new dams and modifications to existing dams compared with current fee revenue, and identifying the appropriateness of statutory changes to the design review fees.

   Current Implementation Status for Rec. No. 6a: Implemented

   Agency's Update: This recommendation was addressed in the division's December 31, 2014 report to the Legislative Audit Committee and resulted in the committee pursuing a statutory change through HB 15-1247.

b. Reporting to the Legislative Audit Committee and the Water Resources Review Committee no later than December 31, 2014 on the results of the cost benefit analysis in part "a" and working with the General Assembly as appropriate on statutory changes to the fee structure.

   Current Implementation Status for Rec. No. 6b: Implemented

   Agency's Update: This recommendation was addressed in the division's December 31, 2014 report to the Legislative Audit Committee and resulted in the committee pursuing a statutory change through HB 15-1247.