
**Thomas P. DiNapoli
COMPTROLLER**



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**OFFICE OF THE
NEW YORK STATE COMPTROLLER**

**DIVISION OF STATE
GOVERNMENT ACCOUNTABILITY**

**DEPARTMENT OF
ENVIRONMENTAL
CONSERVATION**

**SELECTED ASPECTS OF
THE DAM SAFETY
PROGRAM**

Report 2006-S-61

AUDIT OBJECTIVE

Our objective was to determine whether the Department of Environmental Conservation's (Department) Dam Safety Section (Dam Safety) has taken timely action to correct conditions at dams that it has identified as deficient.

AUDIT RESULTS - SUMMARY

The Department assigns a hazard classification to dams according to the potential impact on human life and property in the event the dams were to fail. At the time of our audit, Dam Safety officials identified 133 high- and intermediate-hazard dams with a high-priority deficiency that requires further engineering study or remedial work. Intermediate-hazard dams with these deficiencies are not as high a priority as the high-hazard dams.

We reviewed a sample of 27 high- and 5 intermediate-hazard dams and found that many of the deficiencies have existed for years with little remedial action by owners and little or no enforcement action by Dam Safety. Of the 32 dams, 24 remained deficient after periods ranging from 2 to 36 years. Two remained deficient for an indeterminate time.

Dam Safety's inspection and enforcement activities are conducted under various laws, regulations, policy guidelines, and procedures. For certain activities, such as inspection, there are no legal mandates, but rather longstanding practices. In the case of investigations and enforcement, there are specific laws and regulations.

Dam Safety has an internal policy, issued in 1984, that sets timeframes for the frequency of inspections, based on certain criteria. When we tested Dam Safety's actions against

the policy, we found their practice is inconsistent with the policy. Additionally, our tests of the 32 dams previously discussed showed that 5, including 3 high-hazard dams, were not inspected according to time frames required by Dam Safety's current practice.

Dam Safety's practice is to obtain the dam owner's voluntary cooperation to do additional study and correct any deficiencies identified during inspections. Dam Safety defers use of enforcement actions unless absolutely necessary. Dam Safety officials state they have had significant success through voluntary compliance and enforcement. However, many of the remaining high-priority cases are the most difficult to resolve. For such cases, Dam Safety has no policies or procedures that outline when and under what circumstances to take enforcement action to compel dam owners to correct identified deficiencies.

Based on their engineering experience and professional judgment, Dam Safety officials do not believe any dam on the list of deficient dams is in such a critical condition that there is an imminent threat of failure. Nevertheless, Dam Safety officials have issued guidelines to dam owners on how to prepare a written plan of procedures to prevent or mitigate the adverse consequences of a dam failure. This plan is called an emergency action plan (EAP). Dam owners are not required to submit EAPs, but Dam Safety requests owners of high hazard dams to prepare, periodically update, and submit a copy of an EAP. In our review of the 32 dams, 24 of which are designated as high-hazard, we found that only 6 owners had submitted an EAP to Dam Safety.

We also found that Dam Safety does not ensure that the dam inventory database is complete and accurate or ensure all staff

received sufficient training on the proper use of the database.

Our report contains nine recommendations aimed at improving the timeliness of corrective action on deficient dams, maintaining a complete and accurate dam inventory database, and providing for the resources to carry out program requirements. Dam Safety officials indicated they agreed with most of our recommendations and have taken steps to implement changes.

This report, dated March 11, 2008, is available on our website at: <http://www.osc.state.ny.us>. Add or update your mailing list address by contacting us at: (518) 474-3271 or
Office of the State Comptroller
Division of State Government Accountability
State Audit Bureau
110 State Street, 11th Floor
Albany, NY 12236

BACKGROUND

Part 673.1 of the Department's Regulations (Regulations) defines a dam as any artificial barrier constructed for the purpose of impounding (holding back) water. A dam is subject to the Regulations if it meets any of the following criteria:

- it is at least ten feet high;
- its maximum impoundment capacity is at least one million gallons;
- its drainage area is one square mile or greater; or
- it presents a threat to public health, safety, property, or natural resources.

Owners of dams and other structures that impound water are required by Section 15-0507 of the Environmental Conservation Law

(Law) to be operated and maintained in a safe condition. Neither the Law nor the Regulations specify what the dam owners have to do to fulfill this requirement. For example, the Regulations do not specifically require dam owners to have an inspection program. However, the Department is considering changes to the Regulations that dam owners must follow – particularly owners of high-hazard dams, which pose the greatest threat to human life and property. One change would require owners of high- and intermediate-hazard dams to certify on an annual basis that their operation and maintenance plans, as well as their emergency action plans, are current. In addition, owners would be required to hire an engineer to inspect high-hazard dams every two years and to perform a more detailed assessment every ten years.

In addition, neither the Law nor the Regulations require the Department to inspect dams. However, Dam Safety's practice is to conduct dam safety inspections. Dam Safety also conducts technical reviews of proposed dam construction or modification, monitors remedial work for compliance with dam safety criteria, and oversees emergency preparedness.

Dam Safety engineers and technicians periodically do visual field inspections and review other available information, such as inspection reports prepared by the U.S. Army Corps of Engineers (Corps of Engineers) or reports on engineering design, construction, or analyses prepared by a dam owner's engineer. According to Dam Safety officials, these sources enable their employees to become familiar with a dam's construction, to determine a dam's condition and deficiencies, and to assess whether a given condition shows signs of progressing failure. These sources also enable them to identify the need for additional engineering study and remedial

work and provide a good indication of the dam owner's level of inspection and maintenance effort. Dam Safety inspections are limited to the visible parts of the dam, and may not include areas that are not easily accessible, such as those under water. These areas may also need to be inspected, and Dam Safety expects that they will be included as part of the owner's inspection program as necessary.

During our audit period, Dam Safety staffing averaged 6.5 full-time equivalent employees. As of January 31, 2007, Dam Safety had 11 staff, including 9 engineers.

The Department assigns a hazard classification or code to dams according to the potential impact of their failure, as follows:

- Class C (high-hazard) dams are located in areas where failure may cause loss of human life; serious damage to homes or other buildings, public utilities, or transportation routes; and/or extensive economic loss.
- Class B (intermediate-hazard) dam locations would result in less damage than Class C dams and would not result in loss of human life.
- Class A (low-hazard) dam locations would cause minor damage.
- Class D dams are considered by Dam Safety officials to be "defunct dams" imposing negligible or no hazard.

The Department may change a dam's hazard classification as the potential impact of its failure changes over time.

Dam Safety maintains an electronic database with information related to each known dam in the State, such as dam name, location, owner, purpose, last inspection date, hazard

classification, and identified deficiencies. In December 2006, the database contained 6,801 dams, as shown in Table 1.

Downstream Hazard	Hazard Code	Number of Dams	Percent
High	C	385	5.7
Intermediate	B	757	11.1
Low	A	3,895	57.3
No Hazard ¹	D	1,217	17.9
None Assigned ¹	--	547	8.0
Total Dams		6,801	100

1. For reasons such as not yet built, or due to size.

While the Law does not require the Department to inspect dams, it allows the Department to investigate dams if judged necessary for public safety reasons. When a Department investigation classifies a dam's condition as "unsafe" or "unsound," Part 673.5 of the Regulations requires it to issue a notice containing recommended corrective actions and a repair schedule. An "unsafe" dam is defined as having deficiencies of such a nature that failure of the dam is imminent and immediate action is required to eliminate or reduce the danger. An "unsound" dam has deficiencies of such a nature that the safety of the dam cannot be assured. (Our audit did not focus on investigations, but we reviewed investigations if they were noted in the project files we sampled.) According to Dam Safety's database, no dams were rated "unsafe" and two dams (one high-hazard and one intermediate-hazard) were rated "unsound" as of December 14, 2006.

The Law also provides the Department with enforcement powers if the owner of a dam that is rated unsafe or unsound does not respond to address these conditions within the

time specified in the Department's notice. If the owner does not comply with the notice, the Department may serve a hearing notice, and after such hearing, issue an order requiring the dam owner to remove or repair the dam within a reasonable time and in a manner specified in the order. Alternatively, an owner may negotiate a consent order. The Law (section 71-1109) authorizes the Department to fine an owner who violates the order up to \$5,000 for each offense, and each day a violation continues is considered a distinct offense. The Regulations (Part 673) authorize the Department to refer the matter for civil or criminal prosecution by the Attorney General, and to remove or repair the dam and recover Department costs through a lien placed on the real property.

In 1978, the Corps of Engineers inspected dams in response to the need for an inspection of non-federally-owned dams throughout the United States, following the failure of several dams that resulted in loss of life and substantial property loss. In New York, the Corps of Engineers inspected 332 high-hazard dams to determine if they met federal safety criteria. The Corps of Engineers identified 241 dams as needing further investigation or remedial work, while 91 met criteria. Since then, Dam Safety officials indicated that a majority of the 241 dams have undergone some level of review. Either Dam Safety was able to get the dam owner to address the concern or Dam Safety breached the dam. (Breaching a dam is a method used to create an opening in a dam to alleviate a potential dam failure.) Of the 241 dams, 198 no longer have a high-priority deficiency. According to Department officials, numerous other deficient dams were identified and addressed since the early 1980's.

Dam Safety gives high priority to high-hazard dams assigned one or more of the following deficiencies: inadequate spillway capacity,

inadequate stability, no spillway capacity analysis, and no dam stability analysis. These terms are defined in Exhibit A. In December 2006, Dam Safety identified 133 dams (52 high-hazard and 81 intermediate-hazard) as having at least one of these deficiencies that requires further engineering study or remedial work. Dam Safety identified 14 of the 52 high-hazard dams as its highest priority because of the seriousness of the deficiencies and unlikely voluntary action by the owner. Dam Safety noted that intermediate-hazard dams with these same deficiencies would not warrant the highest priority.

Dam Safety officials told us that their condition rating for a particular dam may not agree with the Corps of Engineers' rating for the same dam, partly because the rating definitions are not identical. However, Dam Safety considers the Corps of Engineers' inspection reports when prioritizing projects, particularly in cases where no other information is available. One difference between Dam Safety condition ratings and Corps of Engineers condition ratings is that ratings by the Corps were based on visual inspection. Dam Safety considers these inspections to be a preliminary assessment that identified when additional engineering analysis should be done. Dam Safety officials explained that their ratings are based on their best professional judgment and engineering requirements following their review of available information, which can include detailed engineering analyses and/or newer, more detailed information.

AUDIT FINDINGS AND RECOMMENDATIONS

Deficient Dams

According to the Department's Dam Safety Inspection and Remediation Procedures, Dam Safety is responsible for the planned

regulatory inspection and evaluation of dams on a statewide basis. This includes technical judgments and determinations, communication with owners regarding deficiencies, and reviewing and approving engineering reports and plans. If Dam Safety determines that a dam does not meet the minimum safety requirements, the Department's Dam Safety Policy Guidelines require that the owner be informed of the deficiency and be requested to have a professional engineer investigate the problem area and determine if remedial work is necessary. If the owner does not comply, follow-up enforcement action should be based on Dam Safety's established priorities. High-hazard and intermediate-hazard dams that are in imminent danger of failing are the top two priorities. According to Dam Safety's database, none of the dams has been designated as "unsafe" or being in imminent danger of failure. The next three priorities are as follows: high-hazard dams that required additional engineering investigations and remedial work by the owner; intermediate-hazard dams that require remedial work; and larger, low-hazard dams in areas with increasing development and those used for primary water supply that require remedial work.

We judgmentally selected 28 high-hazard and five intermediate-hazard dams that required remedial work to determine what actions Dam Safety took to compel corrective action by the dam owners and if the actions were timely. Dam Safety officials were not able to provide us with the project folder for one of the high-hazard dams. However, according to Dam Safety's database, the high-priority deficiencies for this dam had been corrected.

In regards to the 32 dams, we found that Dam Safety has been slow to compel dam owners to correct the deficiencies identified and that dams generally remain deficient unless the

dam owner voluntarily corrects the deficiencies, which can take years. Dam Safety infrequently places deadlines on owners to correct the deficiencies or takes action to enforce compliance. Of the 32 dams, 26 remain deficient after periods ranging from 2 to 36 years; and 2 dams remain deficient for an indeterminate time. Results are as shown in Table 2.

Years	Number of Dams
2-8	4
12-15	2
22 - 25	7
26-28	10
36	1
Unknown ¹	2
Total	26

1. Deficient for unknown time periods because they are lacking engineering assessments to prove they are in compliance with safety standards for spillway capacity and structural stability.

Remediation was completed on 6 dams after they had been deficient between 20 and 25 years. Our review showed that enforcement actions were taken on only 3 of the 32 dams, but not until they were deficient for up to 20 years or more. For example, one dam was considered deficient since 1981 and rated unsound in November 2000. The owner removed the dam in 2002 after being given a schedule of compliance to remediate the dam by December 2001.

Once a deficiency is identified, owners are expected to hire a professional engineer to perform further engineering analyses on the dam, and then develop a remediation plan. Remediation plans from the owners' engineers are used by Dam Safety as a means to monitor progress against remediation benchmarks. Our review showed that 8 of 26 dams (31 percent) that remain deficient have

not had the required engineering analysis done, and 14 (54 percent) do not have a remediation plan. We also found that there has been little or no correspondence during our audit period between Dam Safety and the owners for 5 of the 26 dams.

Some of the delays may be attributable to the lack of policies or procedures outlining when Dam Safety should initiate enforcement action when other methods have proved unsuccessful. Dam Safety officials also state that those currently on the list of dams that have deficiencies (deficient list) are the most difficult cases, due to complicated issues including ownership disputes. They stated that a lack of administrative, engineering, and legal staff allocated to Dam Safety, as well as a lack of operating funds, has slowed progress at correcting deficiencies.

Officials noted that, during the three years prior to January 1, 2004, Dam Safety staff averaged 6.5 FTEs but declined to between 3.3 and 5.3 FTEs during the period January 1, 2004, to April 2006. Between April 2006 and January 2007, program staff increased from 5 FTEs to 11 FTEs. According to the Dam Safety officials, the unusually-low staff level during our audit period resulted in difficult decisions concerning prioritization of work. They also noted that their attention is diverted from dams listed as deficient due to other program demands such as: the need to take immediate action on other dams as a result of a visual inspection; review of permit applications; the need to provide support to State and local emergency managers during several large flood events; investigation into a dam failure; handling emergency action plans for high-hazard dams; responding to numerous Freedom of Information Law (FOIL) requests; and the development of revisions to the Regulations and related guidance documents.

Our review shows that Dam Safety did not receive capital appropriations to breach dams during State fiscal years 2003-04 and 2004-05. Dam Safety received \$450,000 in capital appropriations in State fiscal years 2005-06 and 2006-07 combined. Officials told us it cost about \$432,000 to breach the last dam in 2003. They also indicated that there are mechanisms in the Department and State budget to mitigate an imminent failure that could cause loss of life, beyond funding currently available to Dam Safety.

In addition, Dam Safety does not have a methodology to track the timeliness of dam owner response to its requests or requirements, including when to follow up after an owner has not acted. Instead, Dam Safety relies on file reviews and staff meetings to identify items needing follow-up. These practices are not an effective alternative to a formal tracking and response methodology. Our review of dam files showed several cases where there were delays in Dam Safety follow-up actions after dam owners had not responded.

Dam Safety officials told us that they believe they have a strong inspection program and that this, together with conversations with dam owners, helps identify deficiencies and leads to remediation. They state that voluntary cooperation is preferable because enforcement proceedings are time-consuming for both program and legal staff. In addition, when successful, voluntary compliance leads to the detailed technical review of engineering analyses from engineers hired by the dam owners and approval of plans and permit applications needed to do the repairs. Dam Safety officials state that while the preparation of detailed engineering reports and plans are the responsibility of the dam owner, the technical review of those documents accounts for the vast majority of Dam Safety program staff time. Dam Safety

officials indicated the time required to do technical reviews consumes about 50 percent of staff resources.

Dam Safety officials also state that it is their professional judgment that none of the 32 dams is in imminent danger of failure, but they could not quantify the level of risk to downstream residents and property as a result of the identified deficiencies remaining uncorrected. Although no dams that we reviewed had failed despite being considered deficient for many years, we believe that the longer owners take to correct deficiencies, the greater the deterioration and the cost of repairs. Prolonged delays in correcting deficiencies may also increase the likelihood that the owner will not have the resources to pay for repairs or damage resulting from a dam failure. Therefore, delays could eventually result in the State having to expend the funds to repair or breach the dam and to pay for the related damages.

Recommendations

1. Establish written procedures containing specific time frames for progressing from voluntary compliance to Department enforcement.

(Department officials replied to our draft report they plan to develop written guidelines regarding enforcement procedures that will include the current process of periodically reviewing enforcement cases.)

2. Seek sufficient funding and staff to enforce the timely correction of deficient dams.

(Department officials replied to our draft report they have received a considerable increase in staff since the audit period. They added that they will seek additional staff as appropriate.)

3. Develop a methodology to track when requested materials and responses are due from owners, and when follow-up actions should be taken.

(Department officials advised they currently prioritize the Information Management Systems as part of their annual work plan and spending plan processes. They will make further improvements as funds become available.)

Inspection Frequency

The Department's Policy Guidelines issued on April 24, 1984, state that high-hazard dams should be inspected every two years, all intermediate-hazard and low-hazard primary source water supply dams meeting the major size criteria should be inspected every three years, and other dams should be inspected in response to specific requests. However, Dam Safety officials told us that the Policy Guidelines are outdated and inconsistent with their current practice of inspecting high-hazard dams every two years, intermediate-hazard dams every four years, and low-hazard ones every ten years or more depending on dam size or on an as-needed basis. We also noted, however, that Dam Safety's work plan goal is to inspect 300 dams annually, which is below the number of inspections needed to inspect the 385 high-hazard dams every 2 years and the 757 intermediate dams every 4 years.

To determine if Dam Safety meets its inspection work plan goal, we reviewed the number of reported inspections done annually since State fiscal year 2000-01 from Dam Safety's Planned and Actual Inspection Output reports. A summary of inspections done is shown in Table 3.

Fiscal Year	Number of Inspections	
	Planned	Reported
2000-01	300	372
2001-02	300	447
2002-03	300	477
2003-04	300	(a)
2004-05	300	(a)
2005-06	300	164
2006-07	300	In Process

(a) According to Dam Safety officials, monthly reports of inspections completed were not kept for these years because of staff losses.

Table 3 shows that Dam Safety exceeded its goal of 300 inspections in each of the 3 years ended March 31, 2003. However, results were not available for 2 years, and just 164 inspections were completed in 2005-06. Dam Safety officials noted that the 164 inspections are not representative of the number of inspections performed on a regular basis in the previous years. Dam Safety officials told us that they did not adjust their goals when staffing levels were too low to accomplish planned inspections.

We also reviewed the project files for our sample of 32 dams to determine if inspections were done according to Dam Safety's current stated practice. We checked for the last two inspections performed on each dam to determine the timeliness of inspections. We found that, as of December 14, 2006, five of the 32 dams were not inspected according to Dam Safety's schedule. The elapsed time between the two inspections we reviewed was up to 3.3 years for the three high-hazard dams, and up to 7.8 years for the two intermediate hazard dams. In addition, the time elapsed since the most recent inspection of the five dams was between 4.7 and 6.4 years. Dam Safety officials attribute the

delays to insufficient staff resources and competing workload demands, as reported earlier. Based on our review of the project files for the 32 dams, the files showed no evidence of any negative impacts occurring even though inspections were not done on schedule.

Recommendations

4. Make the Policy Guidelines and the work plan consistent in stating the desired goal for inspection frequency.

(Department officials replied to our draft report that they will consider revising or replacing the 1984 Policy Guidelines.)

5. Devote sufficient staff to accomplish the work plan goal for dam inspections. Maintain records to show accomplishment of the work plan goal and to explain any variation from the goal.

(Department officials replied to the draft report that they are working to improve their work processes to record inspections more accurately.)

Dam Inventory Database Reliability

The dam inventory database must be complete and accurate to be reliable for purposes such as recording dam characteristics, scheduling inspections, tracking deficiencies, and making funding decisions. Dam Safety engineers use the database as one tool to identify dams that need to be inspected and to record deficiencies that need repair. The database is also used by the Corps of Engineers to update its National Inventory of Dams (NID), which, in turn, is used by the Association of State Dam Safety Officials, the Federal Emergency Management Agency (FEMA), and other state and federal agencies. For example, FEMA uses NID to award Dam Safety grant

funds, two-thirds of which is allocated to states in proportion to their number of state-regulated dams.

The inventory database should include every dam that has a project file. To determine whether the database was complete, we traced a random selection of 21 of Dam Safety's files to the database. We found that the database was missing one dam that Dam Safety became aware of in 1996. We told Dam Safety officials of this discrepancy and they have added the dam to the database.

We also compared selected database fields such as condition ratings, deficiencies, remedial codes, and last inspection date to the project files for the 32 dams in our other sample. We found discrepancies in the dam condition ratings, remedial codes, deficiencies, and/or last inspection dates for 21 of the 32 dams. We also queried the database and found that four high-hazard dams had last inspection dates older than two years. We then obtained the project files for the four dams and found that all four had more recent inspections that were not entered in the database. We provided the discrepancies to Dam Safety officials for their review and follow-up.

We also compared Dam Safety's database with NID and identified 40 dams that met the NID criteria but were not yet recorded on NID. We reviewed Dam Safety's transmittal to the Corps of Engineers for the last update to determine if it included the 40 dams. We found that 7 of the 40 dams were not on the transmittal, including 2 intermediate-hazard dams. Dam Safety officials could not explain why the two intermediate-hazard dams were not included. Four dams were not on the transmittal because the hazard code was blank on Dam Safety's database. The remaining dam was not included because it was not completed until 2006.

The database discrepancies may result from insufficient database training and maintenance procedures. A staff person responsible for updating the database questioned the adequacy of the in-house database training received. We also found that there are no written procedures related to database maintenance. For example, procedures have not been established to periodically test the completeness and accuracy of the database for a sample of dams.

Recommendations

6. Develop procedures related to database maintenance including the periodic testing on a sample basis of data entry completeness and accuracy.

(Department officials replied to our draft report that Dam Safety staff currently perform completeness and accuracy checks. However, they will strive to implement additional quality checks as allowed by staff resources.)

Auditor's Comments: Since the database is used to update the NID and FEMA uses the NID to award Dam Safety grants, it is particularly important that procedures for database accuracy are in place. Maintaining an accurate database may be important to securing grants to address staff shortages.

7. Train staff on database procedures.

(Department officials replied that staff attended several training sessions in 2007, and additional courses are planned.)

8. Notify the Corps of Engineers of corrections that need to be made to NID.

(Department officials replied to our draft report that they meet with the Corps of Engineers to review their submittal as well as data and process improvements needed.

However, data base information cannot be corrected until the next submittal.)

Emergency Action Plans

The Department's Dam Failure Policy outlines the steps that dam owners, as well as State and local authorities, should take in the event the Department is notified of any suspected or actual imminent failure of a dam that could result in loss of life or serious property damage. The Policy places primary responsibility on the dam owner to effect necessary emergency repair or actions to alleviate the immediate danger to life and property. The Policy also recognizes local governments are obligated by the Executive Law to use their resources to cope with the emergency.

When necessary, the Department may use its authority as provided for in the Law to safeguard life or property, or protect the natural resources of the State. The Department's authority allows it to take steps to remove the imminent danger, which can include breaching the dam. The Department has provided a copy of its Dam Failure Policy to the owners of all high-hazard dams and to the State Emergency Management Office who are to share it with local emergency managers. The Department also periodically sends out an updated list of internal contacts associated with the Dam Failure Policy.

Dam Safety officials have augmented the Department's policy by issuing guidelines to dam owners on how to prepare a written plan of procedures to prevent or mitigate the adverse consequences of a dam failure. This plan is called an emergency action plan (EAP). Dam Safety requests owners of high-hazard dams to prepare, periodically update, and submit a copy of an EAP to Dam Safety. However, dam owners are not required to submit EAPs. In our review of the 32 dams,

27 of which are designated as high-hazard, we found that only 6 owners had submitted an EAP to Dam Safety. Although Dam Safety officials have made attempts to follow up with dam owners, they have not been successful in many cases. If the Department is to effectively prevent or mitigate an emergency created by a dam failure, then the Department should have a copy of the dam owner's EAP. Therefore, we recommend that the Department expedite development of regulations that will require dam owners to file EAPs with the Department.

Recommendation

9. Expedite the development of regulations that will require dam owners to file EAPs.

(Department officials replied to our draft report that a draft proposal was submitted to the Governor's Office of Regulatory Reform for review and approval.)

AUDIT SCOPE AND METHODOLOGY

We conducted our performance audit in accordance with generally accepted government auditing standards. We audited Dam Safety's inspection activities and actions taken to correct deficiencies at dams that the Department reported as deficient. Our audit covered the period January 1, 2004, through February 28, 2007. We reviewed Dam Safety's dam database as of December 14, 2006, and compared it with NID. We also interviewed Dam Safety and Department officials and reviewed laws, rules, and regulations, and dam safety policies and procedures. We selected a judgmental sample of 33 dams (28 high-hazard and 5 intermediate-hazard) and requested the project files. To determine if the Department took prompt action to correct deficiencies identified and if inspections were done in compliance with Dam Safety practice, we

reviewed the files for 32 of the 33 dams. (One file for a dam that was identified as deficient in 2003 could not be located.) Our sample included high-hazard and intermediate-hazard dams with at least one of the identified deficiencies. We excluded dams under the jurisdiction of the Federal Regulatory Energy Commission, which are not regularly inspected by Dam Safety. Our sample included all nine high-hazard dams that had a high-priority deficiency in June 2003 but not in December 2006. We also selected seven high-hazard dams that were deficient in December 2006 but not in June 2003. The remaining 17 selected (12 high-hazard and 5 intermediate-hazard) dams were selected from a population of 52 high-hazard and 81 intermediate-hazard dams with at least one of the identified high-priority deficiencies.

We judgmentally selected ten dams based on the amount of water impounded by the dam, the dam condition rating, and the rating from the Corps of Engineers. The remaining seven dams were randomly selected. We also tested whether the dam project files supported the data contained on the inventory database. In addition, we selected a random sample of 21 project files to determine if the dam was recorded on the inventory database. We also compared the number of annual planned inspections to the number of reported inspections.

In addition to being the State Auditor, the Comptroller performs certain other constitutionally and statutorily mandated duties as the chief fiscal officer of New York State. These include operating the State's accounting system; preparing the State's financial statements; and approving State contracts, refunds, and other payments. In addition, the Comptroller appoints members to certain boards, commissions and public authorities, some of whom have minority

voting rights. These duties may be considered management functions for purposes of evaluating organizational independence under generally accepted government auditing standards. In our opinion, these functions do not affect our ability to conduct independent audits of program performance.

AUTHORITY

We performed this audit pursuant to the State Comptroller's authority as set forth in Article V, Section 1, of the State Constitution and Article II, Section 8, of the State Finance Law.

REPORTING REQUIREMENTS

A draft copy of this report was provided to Department officials for their review and comment. Their comments were considered in preparing this final report, and are included as Appendix A. Appendix B contains State Comptroller's comments that address selected matters contained in the Department's response.

Within 90 days after final release of this report, as required by Section 170 of the Executive Law, the Commissioner of the Department of Environmental Conservation shall report to the Governor, the State Comptroller, and the leaders of the Legislature and fiscal committees, advising what steps were taken to implement the recommendations contained herein, and where recommendations were not implemented, the reasons therefor.

CONTRIBUTORS TO THE REPORT

Major contributors to this report include Carmen Maldonado, Gerald Tysiak, Stephen Goss, Wayne Bolton, Gayle Clas, Ryan Shipley, and Paul Bachman.

EXHIBIT A

Glossary of Selected Dam Safety Terms

Spillway - A structure over or through which flow is discharged from a reservoir. A dam may have one or more spillways, which together comprise the dam's spillway system.

Spillway Capacity - The maximum spillway outflow that a dam can safely pass.

Spillway Capacity Analysis - Evaluation of a dam's spillway system to determine whether it can safely pass the required flow. Methods for determining the design flow are described in the Department's "Guidelines for Design of Dams." Design flow standards are based on a dam's hazard classification.

Stability - The condition of a structure or a mass of material when it is able to resist the applied load without suffering any significant deformation or movement.

Stability Analysis - Evaluation of a dam's stability to determine whether it can safely withstand the required loads. Load cases, and required factors of safety for each, are described in the Department's "Guidelines for Design of Dams."

APPENDIX A - AUDITEE RESPONSE



ELIOT SPITZER
GOVERNOR

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
ALBANY, NEW YORK 12233-1010

ALEXANDER B. GRANNIS
COMMISSIONER

OCT 16 2007

Ms. Carmen Maldonado
Audit Director
Office of the State Comptroller
Division of State Government Accountability
123 Williams Street – 21st Floor
New York, NY 10038

Dear Ms. Maldonado:

The New York State Department of Environmental Conservation (Department) has reviewed the State Comptroller's draft report, *Selected Aspects of the Dam Safety Program* (2006-S-61). The enclosed pages contain the Department's response to the draft report.

Thank you for the opportunity to respond. If you would like any additional information, or have any additional questions, please contact Tom Kulzer at (518) 402-9147.

Sincerely,

A handwritten signature in black ink, appearing to read "Alexander B. Grannis".

Alexander B. Grannis

Enclosure

**Department of Environmental Conservation
Division of Water Dam Safety Program 2006-S-61
Response to Comptrollers Draft Audit Findings**

The New York State Department of Environmental Conservation (Department) has reviewed the draft findings submitted to the Department by the Office of the State Comptroller (OSC) on September 12, 2007 in connection with OSC's audit of the Dam Safety Program within the Division of Water (Division). The Department's response is broken into three sections. The first section provides general comments regarding the Division's Dam Safety Program. The second section comments on the described findings within the Dam Safety Program that lead up to the report's recommendations. The third section provides specific comments on the recommendations contained in the report.

General Comments

We note that this audit covered a time period prior to the current administration and prior to a substantial recent increase of resources for the Dam Safety Program. This audit proceeded in a professional, cooperative, and timely manner to ensure that there was no undue interruption in the Dam Safety Program's ability to ensure continuity in its work performance, given the increased workload normally associated with heavy spring rains and the dam safety inspection season. This audit report reinforces concerns that the Department had previously identified but was unable to address due to limited non-personal services funding and decreased staff during the audit period. Work toward addressing these concerns was initiated during the decreased staffing period from about February 2006 through about December 2006. This was achieved through a temporary reassignment of Division staff from lesser priorities to the Dam Safety Section (Section). The additional Division staff assisted the Section in researching and drafting regulations, developing related guidance documents, conducting public outreach, responding to time-sensitive Freedom of Information Law (FOIL) and other information requests, and initiating a Request for Proposals for dam rehabilitation projects funded by the 1996 Clean Air/ Clean Water Bond Act. The Department's recent efforts to refill vacant items and hire additional program staff also contributed to technical programmatic progress within the Division. As a result, the Department has developed revisions to its dam safety regulations, performed public outreach, and submitted a draft proposal to the Governors Office of Regulatory Reform for review and approval. In addition, the Division has initiated an effort to update Dam Safety Program guidance and has prepared preliminary guidance documents.

However, the Department, as a regulatory agency, must emphasize certain concepts that are integral to both the public's understanding of the risks associated with the State's inventory of dams and the future success of the Dam Safety Program:

- There is increased risk to the public safety if the audit report is recommending the Department take on additional responsibilities concerning inspections and detailed technical investigations on behalf of owners, or that there should be any reduction to the dam owner's responsibilities, or if comments in the audit report reflected a belief that the Department should replace dam owners as the party responsible for the State's dams.

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* See State Comptroller's Comments, page 21

- While inspections and enforcement are high priority tasks associated with the Dam Safety Program, Division staff available during the audit period was limited and had to balance the added Section workload with other programmatic requirements. For example, Division staff must also provide technical assistance on pre-application plans and conduct detailed technical reviews of the permit applications submitted by owners voluntarily proceeding with dam repairs and upgrades. Permit application reviews are subject to the timeliness requirements of Article 70 of the Environmental Conservation Law. The Section also expends significant staff time responding to FOIL requests which are also subject to specific timeliness requirements.

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Comments on Described Findings

The Department has chosen not to check every detail included in the audit. Statements not reviewed include details which the Department feels would not impact the audit's general reflection of the program, the finding itself, or the associated recommendation. However, some specific comments which the Department feels are of importance have been identified and recommended corrections have been provided in the following table.

* See State Comptroller's Comments, page 21

Described Conditions Comments Table

Item Number	Page	Report Text	Comment
1	2 of 13	SUMMARY	There should be discussion in this section concerning the owner's responsibility versus the limited authority and responsibilities provided to the Department in the Environmental Conservation Law.
2	2 of 13identified 133 high and intermediate hazard dams with	The sentence is not clear. The same priority is not given to high and intermediate dams; therefore the words "and intermediate" should be deleted from this sentence. Priority Intermediate Hazard dams are not necessarily those with codes indicating inadequate spillway capacity or stability, or no spillway capacity or stability analysis.
3	2 of 13	Dam Safety's policy is to obtain the dam owner's voluntary....	The term policy should be changed to practice.
4	3 of 13	One change would require owners of such dams....	It is unclear to which dams the term "such" refers. The proposed regulations requiring annual certification apply to both Class B and C dams. The last sentence is accurate as stated.
5	4 of 13	While the Law does not requireit requires	The sentence should read. While the Law does not require the Department to inspect dams, it allows the Department to investigate dams if judged necessary for public safety reasons.
6	5 of 13	...and after such hearing, issue a consent order	The word "consent" should be deleted from this sentence. A new sentence should follow that reads, "Alternatively an owner may negotiate a consent order."
7	5 of 13	...inspected 332 high hazard dams....	The words following dams should be deleted and replaced with "to determine if they met federal safety criteria."
8	5 of 13	Of the 241 dams, 198 no longer have a high priority deficiency.	A sentence should be added to note that numerous other deficient dams were identified and also addressed since the early 1980's.
9	5 of 13	... may not agree with the Corps of Engineers' rating for the same dam.	The following words should be added to this sentence "partly because the rating definitions are not identical."
10	5 of 13	...(52 high hazard and 81 intermediate hazard)	See 2 above.

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* See State Comptroller's Comments, page 21

Described Conditions Comments Table

Item Number	Page	Report Text	Comment
11	5 of 13	Dam Safety officials explained....	This sentence should read as follows. Dam Safety officials explained that their ratings are based on best professional judgement and engineering requirements following their review of available information, which can include detailed engineering analyses and/or newer, more detailed information.
12	6 of 13	Dam safety infrequently places deadlines on owners.....	This sentence should be worded in the past tense to say "During the audit period, Dam safety infrequently placed....Since the Division has received increased staffing, more emphasis has been placed on ensuring compliance.
13	7 of 13	Officials told us it cost about \$432,000 to breach the last dam in 2003.	The following sentence, included in the preliminary report, should be added back into this paragraph as follows. There are mechanisms within the Department and State budget to mitigate an imminent failure that could cause loss of life, beyond the funding currently available to the Dam Safety Section.
14	8 of 13	Table 3 footnote	The word "monthly" should be inserted before reports of inspections. The inspection reports are actually in the individual project files.
15	9 of 13	Dam Safety officials attribute	The following sentence, deleted since the preliminary, should be added back into this paragraph. Based on our review of the project files for the 32 dams, the files showed no evidence of any negative impacts occurring even though inspections were not done on schedule.
16	10 of 13	The Department also periodically sends out an updated list of contacts	The word "internal" should be added between "or and "contacts"

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* See State Comptroller's Comments, page 21

Specific Comments

The following is a response to the specific recommendation contained in the preliminary findings.

Recommendation 1. Establish written procedures containing specific timeframes for progressing from voluntary compliance to Department enforcement.

Department Response: We plan to develop written guidelines regarding enforcement procedures in the Dam Safety Program, and this subject will be included in those guidelines. We expect the guidelines will formalize the current process of periodically reviewing enforcement cases and priorities, consistent with staff resource availability. The Department notes that an improved information management system will help track enforcement cases more easily.

Recommendation 2. Seek sufficient funding and enforce the timely correction of deficient dams.

Department Response: The Department has received a considerable increase in Dam Safety Section staff since the audit period, including additional legal and regional staff resources. The Department will seek appropriate levels of staffing and non-personal services funding to adequately address programmatic needs, such as travel for inspections, technical training as well as information management systems.

Recommendation 3. Develop a methodology to track when requested materials and responses are due from owners, and when follow-up actions should be taken.

Department Response: The Department concurs that an improved tracking methodology should be implemented and feels that an Information Management System would prove to be an additional tool to effectively support this program. The Division currently prioritizes its Information Management (IM) systems through a comprehensive team planning method as part of its annual workplan and spending plan processes. The IM Team ranked an improved Dam Safety system, currently in the conceptual phase, as its top priority for SFY 07/08. However, while the Department has received increased staffing for the Dam Safety Program in recent years, we did not receive any additional non-personal services funding to address associated programmatic needs. Future design and implementation phases may need to be limited should additional funding remain unavailable.

Recommendation 4. Make the Policy Guidelines and the work plan consistent in stating the desired goal for inspection frequency.

Department Response: The Department will consider updating or replacing the 1984 Policy Guidelines as part of its planned update of Dam Safety Program policies and procedures.

Recommendation 5. Devote sufficient staff to accomplish the work plan goal for dam inspections. Maintain records to show accomplishment of the work plan goal and to explain any variation from the goal.

Department Response: The Department is working to improve its work processes so that inspections are recorded more accurately. The Division will continue to develop and monitor its goals and accomplishments as part of its annual Division-wide workplanning and spending plan process.

Recommendation 6. Develop procedures related to database maintenance including the periodic testing on a sample basis of data entry completeness and accuracy.

Department Response: Completeness and accuracy checks are currently performed as part of the routine review of files by Dam Safety Section staff. We will seek to improve the quality of the data during the existing review process. The Department will strive to implement additional quality check procedures as allowed by staff resources.

Recommendation 7. Train staff on database procedures.

Department Response: Internal data base retrieval and reporting training has been held on several occasions in 2007, and will be held on an ongoing basis as the need is identified. Formal external ACCESS training opportunities have been provided and will also continue as needed. Once the improved database is implemented, the Department recognizes that it will need to train both Dam Safety and Regional staff in its use.

Recommendation 8. Notify the Corps of Engineers of corrections to be made to NID.

Department Response: Dam Safety Program staff strives to meet annually with the Corps of Engineers to review New York's NID submittal, and identify data and process improvements needed. However, once published, the data cannot be corrected until the next submittal. The Department will seek improved submittal quality as part of its database improvement project.

Recommendation 9. Expedite the development of regulations that will require dam owners to file EAPs.

Department Response: The Department has prepared revised Dam Safety regulations, performed public outreach and submitted a draft proposal to the Governor's Office of Regulatory Reform for review and approval.

APPENDIX B - STATE COMPTROLLER'S COMMENTS

1. The Department expresses concerns that the report may be interpreted to be recommending that the Department take on additional responsibilities for dam inspections and investigations, or a reduction of dam owner's responsibilities. The report accurately describes the responsibilities of the Department and dam owners on pages 3 and 4. Our report does not recommend either an increase in the Department's responsibilities for dams, or a reduction in the responsibilities of dam owners.
2. The Department describes factors that limited staff resources available for inspections and enforcement activities during the audit period. We acknowledged and described these factors on page 7 of the report.
3. The responsibilities of both the owners and the Department are described in the Background section immediately following the Summary on page 3.
4. We have revised the report to reflect information in the Department's response.
5. The section of the report referred to is consistent with Department comments as written. The last sentence already states that intermediate-hazard dams with the four deficiencies are not Dam Safety's highest priority.
6. We believe the report accurately describes the conditions noted during the audit period as written.
7. We added "Auditor's Comments" after the recommendation in the body of the report.