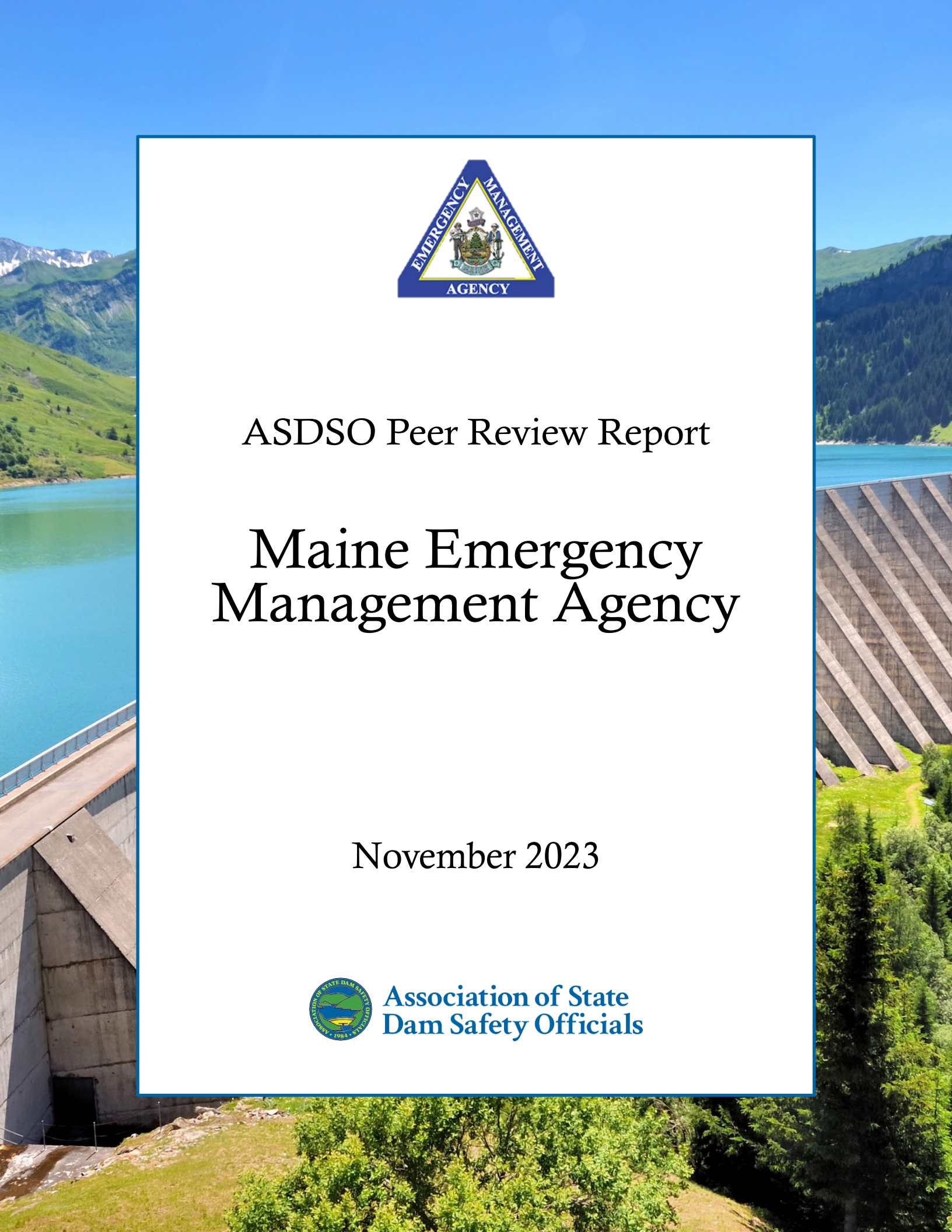

ASDSO Peer Review Report

Maine Emergency Management Agency

November 2023

Association of State Dam Safety Officials

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ASDSO Peer Review Report of the Maine Emergency Management Agency

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239 S. Limestone St.

Lexington, KY 40508

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of the Maine Emergency Management Agency

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1.0 Executive Summary

The Association of State Dam Safety Officials (ASDSO) conducted a peer review of the Maine Dam Safety Program (DSP) to provide guidance for the DSP through an overall evaluation of the program's mission, objectives, policies, procedures, and other factors. The Peer Review Team (Review Team) evaluates the competence of the DSP relevant to the generally accepted standards of practice for dam safety. This report contains the findings and recommendations of the Review Team.

ASDSO assembled a two-person team from the Peer Review Program's panel of dam safety experts. The Review Team was approved by the Maine Emergency Management Agency (MEMA) and the peer review process commenced on February 16, 2023, with a virtual Kick-Off Meeting.

This peer review was conducted in five phases, Observation, Identification of Findings, Confirmation of Findings, Conclusions, and Development of Recommendations. These phases are discussed in more detail in the body of this report.

The Review Team observed that the DSP has a robust program for the development of Emergency Action Plans (EAP). All High and Significant hazard potential dams in the state have an EAP and are updated and exercised on a regular basis. This is a very important aspect of any dam safety program and DSP staff are to be commended for achieving this goal. The DSP is also focused on completing mandated periodic inspections of High and Significant hazard potential dams and has taken several steps, including bringing back the retired State Dam Safety Inspector, and plans to use grant funds to hire consultants, to ensure that inspections are completed. Steven Mallory, Director of Operations and Response, and Tara Ayotte, Dam Safety Administrator, and all DSP staff are commended for working hard to "keep the program's head above water" in the face of much adversity in the past few years. All MEMA staff working in dam safety related areas demonstrate dedication to the program's purpose, technical competence, and a desire to improve the program.

There are, however, many challenges for the DSP. Difficulty in hiring and retaining engineering staff, mostly related to inadequate pay and budget, has been a major impediment to the DSP in

achieving its goals. The lack of staff and budget has forced the DSP to focus on EAPs and inspections, but other vital areas of an effective dam safety program have gone unaddressed. Identifying deficiencies through periodic inspection is crucial, but ultimately does nothing for public safety if dams are not repaired and completed in an acceptable manner. The DSP must develop a comprehensive risk-based compliance and enforcement policy to bring dams into compliance with state safety standards, and the program must exercise its authority to review the design and construction of dam repair and rehabilitation projects. The Team has included all its findings and recommendations in the body of the report. However, we would like to comment here on our overall review of the Maine DSP for added emphasis on the recommendations we believe to be most significant.

1. Fill the vacant State Dam Inspector position as soon as possible.
2. Develop and implement a comprehensive Compliance and Enforcement policy and procedures that encourage voluntary compliance or if necessary, enforced compliance.
3. Develop a risk-based prioritized list of dams that do not meet current safety standards and begin to implement the Compliance and Enforcement policy and procedures to reduce dam safety risk.
4. The dam safety statutes provide the authority to review the design and construction of new and reconstructed dams and MEMA must begin to implement this authority for public safety purposes.
5. Implement a comprehensive database management system to guide all administrative and regulatory activities.
6. Establish written policies and procedures for all program aspects. These should include written processes for inspections, follow-up, and enforcement for dams with deficiencies.
7. Develop written rules, policies, procedures, and guidelines for all inspections including Dam Safety Program and owner inspections for periodic, construction and special inspections.

The DSP Peer Review Report (Report) also identifies additional areas for potential improvement of the DSP and proposes recommendations to assist in these efforts to strengthen their DSP and improve their dam safety policies, procedures, and practices.

Findings and recommendations of this Peer Review are discussed in **Chapter 6** of this report. Recommendations are compiled in **Appendix A: Compilation of Recommendations**. The recommendations have also been categorized and prioritized to assist in the efficient and successful implementation of the recommendations. This categorization and prioritization are discussed in detail in **Chapter 7** of this report and are further described in **Appendix B: Categorization and Prioritization of Recommendations**.

2.0 The Peer Review Process

The ASDSO Peer Review Program has been in place since 1989. Over 100 peer reviews have been performed for state dam safety regulatory programs, and for federal and private sector dam owners. This Report documents the observations, findings, conclusions, and recommendations made by the Review Team in its assessment of the MEMA DSP. The Review Team's work included the review of a substantial amount of information provided by the MEMA. The peer review process also included interviews with MEMA staff. This peer review process provides conclusions, and if appropriate, recommendations for the MEMA to further improve its DSP.

3.0 Peer Review Team, Methodology, and Scope

3.1 Members of the Peer Review Team

The Peer Review Team that visited the Maine DSP was composed of the following members:

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See **Appendix E: Biographical Sketches of the Peer Review Team** for more information about the team members

3.2 Peer Review Methodology and Scope

This Report is divided into eight sections: (1) Executive Summary, (2) Introduction and Background of the Peer Review Process, (3) Team, Methodology, and Scope, (4) Acknowledgements, (5) MEMA DSP History and Dam Inventory Statistics, (6) Assessment of Regulatory Context, Administration and Management and Program Implementation, (7) Categorization and Prioritization of Recommendations, and (8) Certification.

The Review Team utilized the following five phases to complete this DSP Peer Review:

Phase 1. Observations

Observations result from the Review Team acquiring information by witnessing, listening, or, in the case of document reviews, reading.

Phase 2. Findings

Findings are empirical facts identified by the Review Team, based upon their observations. Key findings are the more critical of the facts observed.

Phase 3. Confirmation of Findings

Confirmation of findings is achieved through concurrence by the regulator being reviewed that a finding is a true and correct fact. Disagreement by the regulator should be backed by contradictory evidence, not just opinion. The desire is to have general agreement between the regulator and the Review Team prior to the development of conclusions and recommendations.

Phase 4. Conclusions

Conclusions synthesize and interpret confirmed findings and make reasoned judgements corresponding to the findings. Conclusions are the Review Team's assessment of findings based upon DSP evaluation criteria.

Phase 5. Recommendations

Recommendations are suggested, categorized, and prioritized actions developed by the Review Team, intended to help improve the DSP.

Important components of a DSP were assessed including Regulator and Owner Roles and Relationships, Legislation and Authority, Organizational Hierarchy, Program Administration, Staffing, Funding and Budgeting, Program Management, Policies, Practices, and Guidelines, Communications, Information Management, Education and Training, Continuous Improvement, Inventory, Hazard Potential Classification Definition and Determination, Dam Operation, Dam Maintenance, Surveillance and Monitoring, Dam Inspections and Inspection Reviews, Comprehensive Review and Inspections, Risk Management, Compliance and Enforcement, Emergency Planning and Incident Response, Public Safety Around Dams , Security at Dams, Permitting Process, and Review and Approval of New or Remedial Dam Design, Construction, and/or Removals.

The Review Team has conducted the MEMA DSP Peer review with the following limitations:

- The Review Team reviewed only a small representative sample of dam records to understand how the DSP conducts and documents its dam safety regulatory function for a typical dam.

- No technical aspects of any particular facility were examined. No calculations for correctness, or confirmation of the results of any calculations were part of the Review Team's function. The Review Team provides an opinion of the permitting and design review process based on a representative sample of file documents reviewed, interviews with staff, and the Regulator's inspection and surveillance monitoring programs.
- The effort to ensure that dam safety training is being conducted for **all** personnel with a role in the DSP would involve a concerted effort. A representative sample of training records was reviewed from the Dam Safety Section.
- The Review Team conducted no dam site visits.

4.0 Acknowledgements

The Review Team acknowledges all staff members of MEMA who frankly and openly discussed and responded to questions about the DSP through formal individual and group interviews in Augusta. In addition, the Review Team would like to thank all staff who were instrumental in coordinating the uploading of countless documents for the Review Team to review, for setting the itinerary for the Review Team's on-site visit to the MEMA's headquarters, and the site visit in Belgrade. In particular, the Review Team would like to thank Tara Ayotte as the lead staff person on preparing the DSP and the Review Team for the Peer Review. In addition, the hospitality extended to the Review Team by MEMA's staff during the working trip to their offices was greatly appreciated.

Lastly, the Review Team would like to extend its sincerest appreciation to MEMA's staff that met with the Review Team to discuss the findings of the DSP peer review. Their willingness to openly discuss, consider, and accept the Review Team's findings and recommendations illustrates their willingness to foster a learning organization and will surely lead MEMA's DSP on a journey of continual improvement.

5.0 Maine Dam Safety Program History

This section is from the Maine Dam Safety White Paper, October 2021, prepared by Steven H. Mallory, MEMA Director of Operations and Response.

Dams under the jurisdiction of the State of Maine are administered by the Maine Department of Defense, Veterans, and Emergency Management (DVEM). Maine Emergency Management Agency (MEMA) by Legislative Order 481, An Act to Promote Dam Safety, approved June 28,

2001, by the Governor as public law 2001 Chapter 460, effective September 21, 2001. Apart from Maine State Law, dam safety in the State of Maine is also governed by Federal laws of the United States, Laws of the State of New Hampshire, Federal, and Laws of Canada. Federal laws governing dam safety in the State of Maine and regulated by the Federal Energy Regulatory Commission (FERC). The primary purpose of the Dam Safety Program is to oversee and administer Title 37-B, Chapter 24 of MRS, entitled "Dam Safety". The State Dam Inspector is a professional engineering position e.g., required formal engineering licensure within the State of Maine, which is mandated to be filled by the Commissioner of the Department of Defense, Veterans, and Emergency Management, and is required to inspect and oversee all dam inquiries for which the statue applies. Currently, there are approximately 570 dams that the State Dam Inspector is required to inspect dams for hazard every twelve years, and of those, approximately 110 are inspected for condition every 6 years. The State Dam Inspector also oversees the development of an assistant engineer and participates in State Emergency Operations Response in the role of a technical resource specialist.

Originally the Maine Dam Safety Program (MDSP) was supervised by the Director of Operations at MEMA and had one full time State Dam Inspector (SDI) employed since October 1998 who carried out general administration, conducted dam safety inspections and facilitated the development, review and testing of Emergency Action Plans (EAP's).

The SDI also attended FERC dam inspections when time permitted. Originally the SDI was assisted by the Supervisor and one part time administrative assistant. In the past, administrative assistance to the MEDSP has been provided intermittently by a MEMA employee on an ad hoc basis, a member of the Maine State Guard employed on a 6-month contract, one person employed on three 6-month contracts, one person employed on a 6-month contract and two student interns employed during a summer. The MEDSP does have one technical assistant post and one administrative assistant post allocated to it by the State, but these posts have never been filled.

6.0 Assessment of Regulatory Context, Administration, Management and Program Implementation

Below are the Review Team's observations, findings, and when appropriate, recommendations for the DSP. Recommendation nomenclature is as follows:

ME DSP-Year-Component Number-Recommendation Letter a, b, etc.

For example, from a 2023 peer review of Pennsylvania's (PA) DSP, the first recommendation relative to the Legislation and Authority (Component #2) would be **PA DSP 2023-02-a**. A second recommendation for this component would be **PA DSP 2023-02-b**.

Recommendations that might require revision to either legislation or regulations are in red font and annotated with an asterisk (*). For instance, if the first recommendation relative to the review of the understanding of the roles of the regulator and the regulated dam owners is judged to likely require revision to either legislation or regulation, it would receive the following designation: **PA DSP 2023-01-a***.

All recommendations resulting from this peer review are compiled in **Appendix A: Compilation of Recommendations.**

6.01 ME DSP 2023-01 Regulator and Owner Roles and Relationship

The regulator and dam owners have critical roles in their joint endeavor to minimize the potential for dam failures and protect the health, welfare, and safety of those living downstream of our nation's dams. In addition, the relationship between the regulator and the dam owner is of paramount importance. Many regulators as well as owners undervalue this relationship even though both parties share a common goal: seeking to improve the safety of their dams and to prevent dam failures.

Does the DSP staff understand the role of the regulatory authority?

Staff have a good understanding of their roles.

Does the DSP staff understand the role of the owner?

Staff have an appropriate understanding of owner responsibilities.

What is the perceived relationship between the DSP staff and regulated dam owners? Does there appear to be mutual respect?

The relationship appears to be one of mutual respect.

If needed, how could this relationship be improved?

Any relationship can benefit from continuous considerate communication.

What is the perceived relationship between the DSP staff and federal permitting partners? Does there appear to be mutual respect?

DSP staff reported effective communication and working relations with the FERC on FERC-licensed dams. Unfortunately, FERC no longer provides automatic updates on dams as had previously occurred and it can now be a grueling process to get information including inspection reports.

Do delays in the DSP's permitting process and communications relative to permitting affect the relationship between the regulators and regulated dam owners?

This will be discussed in subsequent sections of this chapter.

For DSPs that are within a department or agency that owns/operates state regulated dams, is the DSP effective in carrying out its mission within its own department/agency, including enforcement? Is there an appropriate separation of duties and is the DSP's regulation of its parent agency's dams adequately supported by its Executive management?

It appears that state-owned dams are given the appropriate level of attention and are independently regulated.

6.02 ME DSP 2023-02 Legislation and Authority

Legislative authority and accompanying administrative regulations or a governing charter document are the foundation of any regulatory DSP. Legislation should provide comprehensive authority and sufficient appropriations to regulate critical DSP component requirements, including design, construction, reconstruction, modification, removal, inspection, operation, monitoring, maintenance, and security of any jurisdictional dam. Ideally, the authority for dam safety regulation is provided within a single agency to provide consistent enforcement.

Maine Revised Statutes Title 37-B: Chapter 24: Dam Safety, gives the Commissioner of the Maine Department of Defense, Veterans and Emergency Management broad authority to regulate dam safety in the state of Maine. That authority has been delegated by the

Commissioner to the Maine Emergency Management Agency which resides in the Department of Defense, Veterans and Emergency Management.

- "Section 1113. Duties of the Department" states that "the department shall inspect existing dams and reservoirs to determine their hazard potential, review the design and construction of new and reconstructed dams, assist dam owners in developing emergency action plans to minimize the effects of dam failure and take all necessary actions in emergency situations of probable dam failure in order to protect life and property."
- "Section 1114. Powers of the Department" further states broad authority for the department to take all actions necessary to protect life and property in an emergency situation.
- "Section 1118. Dam Hazard Evaluation" requires the commissioner to evaluate all dams to assign or reassign a hazard potential classification at least once every 12 years.
- "Section 1119. Dam Condition Inspection" requires a state dam safety inspector to inspect all high and significant hazard potential dams at least once every 6 years.
- "Section 1120. Enforcement" provides the authority to enforce the provisions of the chapter.
- "Section 1127. Emergency Action Plans" requires the owner of a high or significant hazard potential dam to prepare an EAP and update it at least every two years.

Does the DSP have the minimum requirements to meet the legislative authorities outlined in the National Dam Safety Act?

This statute provides authority for at least three of the major components of a dam safety program – inspection, permitting (review of plans and construction), EAP, enforcement – in accordance with the National Dam Safety Act.

However, there may be some concern about permitting authority and what is meant by "review the design and construction of new and reconstructed dams." MEMA does not currently exercise any permitting authority for actual approval or denial of plans and specifications.

Which factors, if any, does the DSP not include as compared to the Model Dam Safety Program?

The statutory inspection interval for high and significant hazard potential dams exceeds the recommended interval in the Model Program. The Model Program recommendation for High is annual and every two years for Significant.

The statute does require a qualified engineer to oversee and approve construction of new and modified dams, but it does not explicitly require a second approval by the department prior to

impoundment after construction or modification. The statute also does not explicitly require inspections by the department during construction.

The statute provides authority for the department to promulgate rules for carrying out the chapter. The department has not done this.

Additional observations:

The Maine Department of Environmental Protection has some permitting authority over dams under the Natural Resources Protection Act and the Maine Waterway Development and Conservation Act. The statute under these Acts requires a permit for certain construction activities for certain dams in the state. This permitting authority is not based on dam safety but environmental and natural resource protection. MEMA and DEP do not currently coordinate on these permit reviews.

Recommendations ME DSP 2023-02 Legislation and Authority

The Review Team recommends:

ME DSP 2023-02a: MEMA has the authority to review the design and construction of new and reconstructed dams and they must begin to implement this authority.

ME DSP 2023-02b*: If MEMA legal counsel determines that the statute is not clear that there is sufficient authority for MEMA to approve the plans and specifications and to approve construction, the department should seek an opinion on their authority and ask the legislature to amend the law to clearly provide this authority.

ME DSP 2023-02c: MEMA should promulgate rules to establish design standards and procedures for permitting of new construction and repairs, including inspection and approval of construction prior to impoundment.

ME DSP 2023-02d*: The statute should be modified to provide an inspection interval consistent with the Model, annual for High, and every two years for Significant. At a minimum, inspection intervals should not exceed five years.

ME DSP 2023-02e: MEMA should establish a written policy for coordination with Maine DEP on the review and permitting of dam construction for structures that overlap their authorities.

6.03 ME DSP 2023-03 Organizational Hierarchy

The proper location of the DSP within the parent agency allows for unhindered communication of dam safety issues with executive management and provides the DS Chief with the ability to affect

important dam safety decisions. Conversely, an improperly placed DSP can negatively impact the effectiveness of the program. Reporting relationships must be clearly defined to properly assign responsibilities important in the regulation of dams. The agency must show commitment to public safety through its unwavering support for the implementation of an effective DSP. The agency should also provide authority to the DSP for all dam safety related matters. This commitment and support are more difficult the deeper the DSP is placed within the agency's organizational hierarchy.

Where is the DSP located within the parent agency organizational structure?

The Maine Dam Safety Program is in the Operations and Response Division of the Maine Emergency Management Agency, in the Department of Defense, Veterans, and Emergency Management.

Does this location negatively impact the effectiveness of the DSP? If so, how?

There is concern about how far down the DSP is in the organizational structure. It is important for the DS program chief to have access to the Agency leader (in this case the Commissioner of Maine Department of Defense, Veterans, and Emergency Management) in times of emergency, such as widespread flooding or dam failures.

Does the organizational structure facilitate communication between the DSP and executive management?

The organization allows the Division Director access to the agency executive management but does not allow direct access to the Commissioner.

Does the DS Chief have appropriate span of control over permitting staff, inspection staff, surveillance and monitoring staff, and compliance and enforcement staff?

The organization allows for the appropriate span of control over all staff activities.

Recommendations ME DSP 2023-03 Organizational Hierarchy

The Review Team recommends:

ME DSP 2023-03a: MEMA should consider revising the chain of command to allow the DSP chief the ability to access the Department Commissioner in emergency situations.

6.04 ME DSP 2023-04 Program Administration

Effective DSPs are highly dependent on a supportive organizational culture. The parent agency should provide a clear organizational vision, guiding principles, goals, and objectives for the safety of dams and the protection of public safety. The vision, mission, goals, and objectives statements must be easily accessed by staff and the public. Administration of the DSP should include policies and procedures for recruitment, hiring, and promotions. Compensation and benefits packages should be comparable with other state agencies and competitive with public and private employers. Physical facilities, working conditions, and the office environment must be satisfactory. The Administration should also recognize professional registration and demonstrate planning for succession to ensure future experienced staff and continuity of operations.

Does the parent agency have clear, written vision, mission, goals, and objectives statements and/or a strategic plan that prioritizes public safety through dam safety?

The MEMA Mission Statement in the 2023 Strategic Plan: “The mission of Maine Emergency Management Agency is to lead and coordinate preparedness, mitigation, response, and recovery efforts within the State across all-hazards to protect life, property, the environment, and the economy of Maine.”

This statement and the strategic plan do not specifically address dam safety, but they do provide a broad framework for the prioritization of public safety and dam safety.

Are written job descriptions available for all employees?

Written job descriptions are available for all employees.

Does the agency’s compensation and benefits package appear comparable to other such dam safety agencies and public sector employers?

MEMA has historically had difficulty recruiting dam safety engineers due to inadequate compensation. MEMA recently reclassified the DSP engineering positions to increase compensation and make them more competitive.

Are employees' working conditions, physical facilities, and office environment satisfactory?

These appear to be satisfactory.

What is the morale of the staff (i.e., Are attitudes of staff toward management and the parent agency satisfactory? Are employees satisfied with their jobs? Is there mutual respect between employees and between employees and management?)

The state dam safety engineer position is currently filled on a temporary basis by the former/retired engineer. The assistant engineer position has only been filled for a few weeks. Based on that, it is difficult to assess morale. In general, all staff seem to be satisfied with their jobs but feel that the program should receive greater support from MEMA administration.

Is staff turnover at a reasonable level?

Staff turnover in the engineering positions has been a significant issue for several years.

Is there acknowledgement of succession planning to ensure future experienced staff and continuity of operations?

Program management recognizes the need for succession planning; however, the small size of the staff makes this difficult. The DSP has only one professional engineer SDI position and this makes it difficult for succession and even continuation of necessary program activities if the SDI position is vacant for any reason.

Recommendations* ME *DSP 2023-04 Program Administration

The Review Team recommends:

ME DSP 2023-04a: Recent reclassification of the engineering and administrator positions was a positive step. If postings for the professional engineer position do not attract sufficient candidates, then higher pay grades should be considered again. The program should continue to periodically assess compensation levels to make sure DSP positions are competitive.

6.05 ME DSP 2023-05 Staffing

Staffing requirements for a DSP largely depend on the scope of the state's statutory authority and responsibilities. Contributing factors include:

- Number, hazard potential classification, location, and condition of dams subject to state jurisdiction.
- Type of inspection program: owner-responsible, state-responsible, or a hybrid
- Level of technical reviews performed (plans, specifications, and comprehensive review and inspections)

- Geography and topography of the state, which may make it necessary to have some non-centralized staff.
- Skills and experience of existing staff
- Overall organization structure of the state agency housing the DSP.
- Population at risk and consequences of failure below state regulated dams

The DSP must have sufficiently qualified and experienced engineering and technical staff and should be led by DSP's Dam Safety Chief /Manager/Head (DS Chief). The DS Chief must be a licensed professional engineer and have between 5 and 15 or more years of direct dam safety experience, depending upon program size and complexity. Technical managers, supervisors, or senior technical staff will also be licensed professional engineers or engineering geologists.

To meet the needs of an effective DSP, several program staff skill sets, as outlined in the **Manual Chapter 3.D.1**, are required or should be available to the DSP via consultants or other resources. The numbers and needs will vary widely with the size and complexity of the DSP.

Based on the factors outlined in the Manual, Chapter 3.D.1, and guidance from the Model Program, does the DSP have an adequate number of staff to provide an effective and efficient DSP?

The program does not have adequate staffing to provide effective implementation of the program.

Does the DS Chief have appropriate experience in dam safety engineering and is the DS Chief a licensed professional engineer?

The current State Dam Inspector (SDI) is a highly experienced and licensed professional engineer who retired in recent years but has returned due to a position vacancy and is operating on a temporary contract of unspecified duration. Under the current organization, the SDI is not the program chief or manager. The program manager is the current Division Director.

Is the DSP appropriately staffed for the statutory mandates and the portfolio of dams being regulated?

The Maine DSP is inadequately staffed for the portfolio of regulated dams. Beyond an inadequate number of engineering staff to meet the Model Program recommendations for the number of regulated dams, the current structure of the DSP with only one professional engineer position does not allow for professional collaboration and review. It also leaves the

program in an untenable position if/when the one professional engineering position is vacant for whatever reason.

Is the DSP appropriately staffed with skill sets as detailed in the Manual, Chapter 3.D.1?

Existing staff have appropriate skill sets and background. Ongoing training is planned for all staff.

Additional observations:

The review team completed a staffing analysis based on guidance contained in the ASDSO Peer Review Manual, Appendix U and guidelines set forth in the Model State Dam Safety Program. The analysis is based on the number of regulated dams, and the distribution of those dams between the high, significant, and low hazard classifications. A broad range of assumptions accompany the analysis, but it is important to recognize that the analysis accounts for time spent on all facets of the model dam safety program, including routine inspections, follow-up on dam deficiencies, follow-up on unsafe dams, construction inspections, comprehensive reviews and inspections, design reviews, hazard classification reviews, emergency action plans and incident response, compliance and enforcement, training, and administrative activities. The Maine DSP is not currently administering many of these activities. The analysis provided an estimate of between 14 and 15 total staff to adequately administer a dam safety program consistent with the Model Dam Safety Program for the number of dams in Maine.

Recommendations ME DSP 2023-05 Staffing

The Review Team recommends:

ME DSP 2023-05a: Fill the SDI position as soon as possible.

ME DSP 2023-05b: Immediately pursue additional funding for at least one additional professional engineer SDI position.

ME DSP 2023-05b: Begin planning to assess program staffing needs based on the Model Program and submit a budget proposal for full staffing of the DSP.

6.06 ME DSP 2023-06 Funding and Budgeting

Funding of a regulatory DSP may vary significantly based on the state's statutory requirements. Principal funding sources for DSPs are direct legislative appropriations, diverse types of fees, and FEMA grant programs. It is important for the DSP to prepare detailed and well written

budget proposals for a fully funded program based on the framework of the Model Dam Safety Program (Model Program) and the specific characteristics of each state.

Is the DSP funded through direct legislative appropriations?

It is the Review Team's understanding that the program is not funded through direct legislative appropriations. Funding comes from federal grants received by MEMA and through the NDSP State Assistance grant.

Is the current funding level adequate to address the key elements of a typical DSP as detailed in the Manual?

The current funding level is inadequate. See the previous section on Staffing for further findings and recommendations.

Are fees collected to augment appropriated funds?

There are no fees collected for the program.

Does the DSP use FEMA Grants to augment appropriated funds for the day-to-day functions of the program? How have FEMA Grants historically been used to improve the DSP?

In recent years, the DSP has used the NDSP State Assistance Grant to fund the updating and exercise of EAPs, the inspection and monitoring of High and Significant Hazard Potential dams, training for staff, and the update of dam inventory data. The DSP plans to continue these activities and possibly also pursue hiring a consultant to assist with an inspection backlog.

Does the DSP maintain a non-lapsing source of funds for required dam hazard emergency actions should the dam owner fail to act responsibly? Is there a process to recover the costs of these emergency actions from the dam owner after the dam hazard emergency?

There is no non-lapsing source of funds specifically for dam hazard emergency actions. Program management speculated that MEMA funding for statewide emergency response could be used.

Is there funding available to dam owners to rehabilitate existing dams?

There is a Dam Repair and Reconstruction Fund established in statute. Under the statute, "the department may provide low-interest loans to municipalities and quasi municipal corporations or districts for engineering, legal and construction costs involved in acquiring title to,

establishing a long-term management plan for, repairs to, reconstruction of, breaching of or removal of a dam…" Dams have been repaired with this fund a limited number of times in the past.

Does the DSP prepare detailed and well written annual budget proposals for a fully funded program based on the framework of the Model Program?

DSP management and staff are not involved in budget preparation for the program. There has not been an effort to develop a budget proposal that would meet the framework of the Model Program.

Recommendations ME DSP 2023-06 Funding and Budgeting

The Review Team recommends:

ME DSP 2023-06a: Program management should prepare a budget request for full funding of the program based on the Model Program to MEMA administration. MEMA should include the request to the legislature and the legislature should fully fund the program.

ME DSP 2023-06b*: MEMA should consider establishing a fee schedule for dam owners to help fund the program.

ME DSP 2023-06b: MEMA should develop a written procedure for the development of an annual budget request for full funding of the program.

ME DSP 2023-06b: MEMA should develop a written agreement and process for funding to use during a dam safety emergency.

6.07 ME DSP 2023-07 Program Management

The hands-on management of the DSP is the responsibility of the DS Chief. This important task should be aided using a project management tool or system to track workload and required submissions of dam owners. Adequate supervision and mentoring must be provided to assure an acceptable quality of work to the current standards and state-of-practice in dam engineering. Internal communications with staff and with executive management are critical.

A portfolio risk assessment should be employed to utilize the human and financial resources available effectively and efficiently. In addition, an Annual Report should be developed to summarize the DSP's importance, its yearly accomplishments, and major compliance or other program issues for the agency's executive leadership.

Are the DSP goals and objectives generally being met?

Compliance with statutory requirements for preparation and submission of EAP's is at 100%. Other program goals are not universally being met. Staff struggle to complete statutory inspection requirements and other program activities/mandates as previously discussed.

Does the DSP have a functioning project management tool or system to track workload, inspections, etc.?

Tracking systems are in place for monitoring EAP requirements and for monitoring inspections.

Is a management review conducted of employee workload and schedules?

Management of employee workload is informal and intermittent.

Is there an excessive backlog of work?

Staff are struggling to keep up with the statutory requirements for inspections. As previously discussed, the DSP does not engage in any activity for review or plans and specification for dam repair and it does not actively pursue enforcement for dam safety issues.

Are consultants used in areas where the DSP does not have expertise or to ensure the program is regulated to the current state-of-practice?

Consultants have been engaged when necessary to assist with inspection activities.

Is there adequate supervision of employees and QA/QC to provide acceptable quality of the work product?

There is one senior engineer, the State Dam Inspector (SDI), and one junior engineer, the Assistant State Dam Inspector (ASDI). This organization does not have adequate staffing to allow appropriate peer review of inspection report products.

Is there adequate communication between the DSP staff and between the DSP's leadership and agency management (i.e., periodic scheduled staff meetings and DSP leadership briefings with agency management, etc.)?

There are routine staff meetings and there appears to be adequate informal communication between management and staff.

Is an Annual Report being completed which summarizes the DSP's importance, its yearly accomplishments, and major compliance or other program issues for the agency's executive leadership?

There is no formal annual report although reports are prepared to fulfill a variety of grant funding requirements.

Does the DSP utilize any type of portfolio risk assessment to plan the utilization of human financial resources for the greatest dam safety return?

This type of risk assessment has not been conducted for the Maine DSP.

Does the agency use automated up-to-date equipment for clerical and administrative work?

Current equipment is utilized for administrative activities.

Is there adequate equipment (field equipment, cameras, safety equipment, vehicles, etc.) for personnel to complete their jobs?

There is adequate technical equipment available, including a dedicated vehicle for program use. Staff are considering acquiring drone technology to assist with inspections.

Does the DSP have and utilize available technology to complete their job (i.e., Software, hardware, information technology support, technical resources, and references, etc.)?

Staff do use appropriate tools and resources. However, a comprehensive and well-designed database for tracking regulatory and program activities does not exist and would greatly enhance the ability to effectively administer the program.

Recommendations ME DSP 2023-07 Program Management

The Review Team recommends:

ME DSP 2023-07a: Implement a comprehensive database management system to guide all administrative and regulatory activities.

6.08 ME DSP 2023-08 Policies, Procedures, and Guidelines

DSP policy should unequivocally state the organization's commitment to public safety through the implementation of an effective DSP. It should provide authority to the DSP for all dam safety related matters. The policy should define the mission, vision, and scope of the DSP, set its overall goals and objectives, and layout the expectations of staff. The policy provides the direction to the organization for implementation of the DSP and is usually set at the agency or program level.

Dam safety policy must be supplemented by written standard procedures and guidelines for all the administrative and programmatic dam safety functions described in this report. These include instructions and guidance provided for owners as well as for internal practices. Standard procedures and guidelines meeting the current accepted practices of dam safety are needed to give structure to the DSP. Lack of adequate documentation of procedures and guidelines makes it difficult to implement the DSP in a consistent manner. Standard procedures and guidelines will enable continuity of operations when departure of a dam safety staff member presents the potential loss of institutional knowledge. Standard procedures and guidelines should be reviewed on a regular basis to assure continued conformance to current accepted practices in dam safety. Written procedures or guidelines should exist for each dam safety activity, and they should be understood and incorporated by staff in the completion of their duties.

Are satisfactory policies and procedures available and easily accessible to managers and staff?

The program has a written template for dam owner preparation of EAPs and a draft template for a dam owner O&M manual. There are no other written policies and procedures, guidelines, or templates in place.

Are technical guidelines available to staff?

The program does not have its own written technical guidelines but relies on federal agency guidelines.

Do adequate employee safety policies and procedures exist?

The program does not have written safety policies and procedures.

Recommendations ME DSP 2023-08 Policy, Procedures, and Guidelines

The Review Team recommends:

ME DSP 2023-08a: The program should establish written policies and procedures for all program aspects. These should include written processes for inspections, follow-up, and enforcement for dams with deficiencies.

ME DSP 2023-08b: Develop an inspection checklist to assist both engineering inspection staff and dam owners with the periodic inspection of dams.

ME DSP 2023-08b: Complete the draft dam owner O&M template.

6.09 ME DSP 2023-09 Communications

Effective internal and external communications are essential. DSPs must have procedures to encourage and document information flow within the program and agency and with dam owners and other stakeholders, including the public.

Regular staff meetings are good vehicles for internal information exchange, such as: setting DSP priorities; and reporting, monitoring, and analyzing dam safety incidents. Staff meetings are also platforms for staff to share experiences and lessons learned and air any concerns within the DSP. It is also imperative that the DSP inform senior management within the program's agency about critical dam safety needs for staffing, budgeting, etc. as well as DSP accomplishments, through routine meetings, communications, and reporting.

State DSPs must also have external communication strategies in place to promote dam safety awareness and educate the public about the safety of dams. It is important that the DSP or agency have a clear policy on public information, as informing dam owners, the general public, and other stakeholders can help reduce the risk from dam failures and better advocate for actions that support safer dams.

Since dam owners are responsible for the safety of their dams, all DSPs must communicate effectively and clearly with them. Effective DSPs develop an understanding of different dam owners' (or their staffs') abilities, limitations, and willingness to fulfil their obligations. This relationship must be based upon trust. A good working relationship will facilitate formal compliance reporting, as well as informal owner contact with the dam safety staff when they have questions or concerns about their dams or requirements of the DSP.

Communications during dam incidents or dam hazard emergencies are a separate and critical type of internal and external communication having specific requirements. Policies and procedures to oversee dam incidents and non-conformance reporting should be in place. Especially important is having procedures at the ready for any dam incidents which have the potential to rise to the level of a dam hazard emergency.

Are regularly scheduled communications between the DS Chief and senior agency management occurring?

Meetings between the division Director and senior agency management occur weekly.

Are regularly scheduled communications between the DS Chief and staff via staff meetings occurring?

There are routine, periodic staff meetings with DSP staff and the Division Director.

Does the DSP have a clear and effective website?

The website is clear and accessible and provides links to various dam safety resources, including the Association of State Dam Safety Officials, FERC, and others.

Does the DSP have an effective and written stakeholder outreach plan (i.e., Identification, education, and engagement of stakeholders)?

There is no coordinated plan for stakeholder outreach. Recent activities include an interview on public television with the division Director.

Does a DSP or agency policy exist on public information or media releases?

There is agency guidance, and the program has signed a non-disclosure agreement with the FERC to not release critical infrastructure information on FERC-regulated dams in Maine.

Does the DSP use the media, exhibitions, or events to promote dam safety?

Promoting dam safety is not a high priority with the program but the division Director has recently provided an interview with public television.

Does the DSP provide information to dam owners to assist them in operating and maintaining their dams safely?

There are links on the program website to provide owners with information for safe operations and maintenance.

Are policies and procedures in place for communications during dam incidents or dam hazard emergencies?

The program is housed within the Maine Emergency Management Agency so there are instruments in place for use during emergencies.

Recommendations ME DSP 2023-09 Communications

The Review Team recommends:

ME DSP 2023-09a: Develop and implement a stakeholder outreach plan.

6.10 ME DSP 2023-10 Information Management

It is important for DSPs to maintain clear records of all documents, including plans, specifications, letters, and reports. The documents should be easily accessible and readily available for use by employees and, in some cases, the general public. The files should be organized such that information on the subject can easily be found both chronologically and by other critical attributes. There should be ample space available to store the documents and the files should be electronically backed up.

Has the regulator established an information management system that includes policies, practices, and procedures to ensure the organization, retention, and safekeeping of critical dam safety documents and data supporting the DSP?

The DSP does not have a written policy and/or procedure for information management. There is an inventory and tracking system based in Excel. It is used to track EAP compliance and updates and inspections of existing dams. There is an expressed desire to have a more robust database inventory to make the inspection process more efficient and aid in follow-up for EAPs, inspections, enforcement, etc. Also, it could aid in coordination with other agencies.

Are all paper documents, including photographs and drawings, electronically scanned and are they available and easily accessible to staff?

The program mostly has paper files. More recent reports, correspondence, etc. are stored as electronic files in cloud storage.

Are electronic files and records backed-up on a regular basis?

Electronic files and records are backed-up as part of cloud storage.

Are project files well organized and do they provide a reasonably complete and accurate chronological record documenting project activity, including telephone calls, conferences, calculations, field and laboratory data, decisions made, etc.?

Review of selected project files confirmed that they are well organized.

Recommendations ME DSP 2023-10 Information Management

The Review Team recommends:

ME DSP 2023-10a: Implement some form of electronic database for inventory and tracking of dam safety data and documents.

ME DSP 2023-10b: Scan all paper documents, etc. into a digital format that can be backed up and included in an information management system.

6.11 ME DSP 2023-11 Education and Training

It is of paramount importance that DSPs provide opportunities and funding for staff to enhance their engineering and other skills through ongoing educational efforts. Professional and technical staff must possess the necessary skills to investigate and assess the safety of dams and to manage a DSP. Difficulties arise when staff take on assignments they are not qualified to perform.

Dam owners and operators need to learn their state's dam safety laws and regulations, the associated responsibilities and liabilities, and the proper operation, maintenance, and inspection of their dams. Typically, the best education and training for the dam owner is provided through contacts with the state's dam safety office. States must sponsor workshops, seminars, and training sessions designed to instruct owners about dams, necessary monitoring, operation, maintenance and inspection procedures, liability, EAPs, and financing for rehabilitation.

Is the DS Chief a licensed professional engineer with appropriate dam safety experience based upon the size of the DSP?

The current State Dam Inspector is a licensed professional engineer, operating in an acting capacity on a temporary contract. He has broad dam safety experience.

Are supervisory, technical, and clerical staff qualified for their respective positions and do they have the skill sets necessary to perform assigned work, as measured by education, training, experience, and familiarity with existing standards in the Model Program?

All staff appear to be qualified for their respective assignments.

Does the regulator develop and implement personal training plans for its entire dam safety staff and maintain training records for each individual?

Formal training plans for staff do not exist.

Do training plans for dam safety include modules for:

- ***Initial general and site-specific training focused on dam safety awareness and regulation of dams.***
- ***DSP policy, procedures, and guidelines regarding dam safety regulation?***
- ***Recognition of potential dam safety deficiencies, including, but not limited to, design basis events for dams?***
- ***Inspection and monitoring techniques?***
- ***Dam-related design or other technical areas as described in Chapter 3 of the Manual?***

Formal training plans for staff do not exist. The current SDI is providing on-the-job training for the ASDI.

Do satisfactory opportunities for employees exist for in-house or out-sourced training for the continuing professional development of employees?

Yes. Staff indicate a favorable environment for continued professional development within the organization. However, internal opportunities for engineering/technical learning are limited as the DSP staff engineers are the only engineers in the agency. Staff also indicate support from management to pursue external training opportunities.

Are new employee orientation procedures in place?

Formal and informal orientation procedures are in place.

Are conscientious efforts made to assign professional and technical employees to projects of various types to expand their experience and career development?

The program staff is small; therefore, staff have opportunity to experience all facets of the program.

Does the DSP encourage employees to prepare and present technical papers at conferences and/or forums?

Management does not discourage staff from such opportunities.

Recommendations ME DSP 2023-11 Education and Training

The Review Team recommends:

ME DSP 2023-11a: Continue to encourage staff to pursue training opportunities with professional engineering organizations to maintain current dam safety skills.

6.12 ME DSP 2023-12 Continuous Improvement

The state of practice in dam safety is constantly changing. Continuous improvement of DSPs can only occur if dam safety managers and staff continually share results, knowledge, and lessons learned from:

- Changes in the state of practice in dam safety,
- Education and training,
- Lessons learned from case histories of incidents and failures and the staff's own experience with regulated dams, and
- Findings from internal reviews or external audits of their DSP.

Changes in State of Practice

Does the DSP strive to be current with the state of practice of dam safety regulation?

Given staffing levels, the program is focused on completing periodic inspections and has not had the resources or time to focus on keeping current with the state of practice such as risk informed decision making.

Does the DSP encourage and support its staff to attend conferences, workshops or training courses offered by dam safety-related organizations or agencies such as the Association of State Dam Safety Officials (ASDSO); United States Society on Dams (USSD); American Society

of Civil Engineers (ASCE; the U.S. Army Corps of Engineers (COE); the Department of Interior - Bureau of Reclamation (Reclamation); the Department of Agriculture, Natural Resources and Conservation Service (NRCS); the Mine Safety and Health Administration (MSHA); the Federal Energy Regulatory Commission (FERC;) and the Federal Emergency Management Agency (FEMA)?

The program has made a commitment to staff training. Including sending the recently hired engineer to dam safety courses and conferences.

Lessons Learned

Do dam safety staff periodically meet to discuss their experiences with regulated dams or share information from conferences, seminars, and training sessions?

DSP staff have a regular staff meeting.

Internal Assessments

Does the DSP routinely review and evaluate its own performance?

In recent years, the program Director completed an evaluation of the program. This was a one-time effort.

Recommendations ME DSP 2023-12 Continuous Improvement

The Review Team recommends:

ME DSP 2023-12a: As the program matures, develop a process for periodic internal review of the program.

6.13 ME DSP 2023-13 Inventory of Dams

State and federal regulatory DSPs typically maintain dam inventory databases of information necessary to set DSP priorities and goals and to conduct essential dam safety activities. Databases should have excellent capabilities to track such things as inspections, surveillance and monitoring data, condition assessments, reporting due dates, and correspondence with owners. Inventory information is critical for DSP use, for information requests, for reporting, and for prioritization of program tasks. Maintaining an inventory and practicing good records management (discussed later), assists in the management of an effective DSP.

Does the DSP maintain a dam inventory in the form of a database or a spreadsheet to provide such data as size; storage volume; hazard classification; and location data of its dams and to assist in tracking inspections; surveillance and monitoring data; condition assessments; reporting due dates; and correspondence with owners?

The program maintains a spreadsheet of their inventory of dams. The spreadsheet has not been developed into a robust database and does not include tracking of inspections, surveillance and monitoring data, condition assessments, or correspondence.

Does the regulator's dam inventory include parameters that are tracked in the National Inventory of Dams (NID)?

The inventory does include the parameters used in the NID and the program does collaborate with the NID.

Recommendations ME DSP 2023-13 Inventory of Dams

The Review Team recommends:

ME DSP 2023-13a: Implement a comprehensive database management system to guide all administrative and regulatory activities. (This is the same as **ME DSP 2023-07a).**

6.14 ME DSP 2023-14 Hazard Potential Classification Definition and Determination

There are areas of DSPs where the use of consistent terminologies or processes across state programs is essential. Hazard potential classification, especially the use of terms "high" and "significant," is one of these areas. It is important to periodically review hazard creep and its impact on hazard classification. It is also important to distinguish between the potential for "loss of human life" and "population at risk."

Guidance for hazard potential is published in FEMA Publication 333, "Hazard Potential Classification System for Dams." This classification system ranks a dam as "High," "Significant," or "Low" hazard based on the damages or consequences that would occur if the dam failed. The hazard potential definitions for hazard classification, as accepted by the Interagency Committee on Dam Safety (ICODS), are as follows:

- High Hazard potential dams are those where failure or mis-operation will cause probable loss of human life. Significant economic, environmental, and lifeline losses are possible, but not necessary, for this classification.

- Significant Hazard potential dams are those dams where failure or mis-operation results in no probable loss of human life. Can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be in areas with population and significant infrastructure.
- Low Hazard potential dams are those where failure or mis-operation results in no probable loss of human life and low economic and or environmental losses. Losses are principally limited to the owner's property.

The Model Program recommends the periodic review of hazard creep and classification at least every five years. Dam breach inundation analysis is the means for determining or revising the hazard classification of a dam. An accepted and hydraulically consistent computational model must be used to conduct the inundation analysis for significant and high hazard dams.

Estimating the potential loss of life for the population at risk downstream of a dam" involves many uncertainties and judgment by the analyst – including distance below the dam, amount of warning time available, time of day, and human factors such as evacuation routes or ability for elderly, children, or injured persons to evacuate.

Does the DSP define high, significant, and low hazard classification in accordance with definitions contained in FEMA Publication 333?

Hazard Potential Classifications are in line with national guidelines.

Does the DSP require the periodic hazard creep and classification review as recommended by the Model Program for high and significant hazard dams?

This occurs during periodic inspections. The potential hazard assessment of Low hazard potential dams only occurs once every twelve years per statute.

Recommendations ME DSP 2023-14 Hazard Potential Classification Definition and Determination

The Review Team recommends:

ME DSP 2023-14a*: In accordance with the Model Program, the statute should be changed to require evaluation of the potential downstream hazard of all dams, including Low Hazard Potential, at least once every five years.

6.15 ME DSP 2023-15 Dam Operation

The ultimate responsibility for the operation of a dam rests solely with the dam owner. The regulator's role is to require dam owners to follow appropriate operational duties. An Operation Plan should be in place to detail the daily operational tasks necessary to fulfil the dam's intended purpose.

Does the DSP require dam owners to have Operation Plans identifying the daily, weekly, or monthly operational tasks necessary to fulfill the dam's intended purpose and identifying who is responsible for completing these tasks?

The DSP does have an O&M plan template that has not yet been distributed or implemented for routine use.

Does the DSP require dam owners to record operational information, maintain those operational information records, and report operational records on an appropriate frequency?

The DSP does not currently require owners to record or report this information.

Recommendations ME DSP 2023-15 Dam Operations

The Review Team recommends:

ME DSP 2023-15a: Complete development of the O&M template and implement it for routine use.

ME DSP 2023-15b: When completing inspection reports, include recommendations for appropriate recording and reporting of operational information.

6.16 ME DSP 2023-16 Dam Maintenance

The ultimate responsibility for the maintenance of a dam rests solely with the dam owner. The regulator's role is to require dam owners to follow appropriate maintenance duties. A Maintenance Plan should be in place to detail the daily or periodic maintenance tasks necessary to fulfil the dam's intended purpose.

Does the DSP require dam owners to have Maintenance Plans that identify features requiring maintenance, describing the maintenance procedure, the frequency of maintenance, and who performs the maintenance?

The program does not have written rules, policy or guidelines requiring an Owner Maintenance Plan. Such a plan could be a recommendation of an inspection report. The program has a draft O&M manual template that has not been finalized or implemented.

Does the DSP require dam owners to record maintenance information, maintain those records, and report maintenance records on an appropriate frequency?

The program does not have written rules, policy or guidelines requiring an owner to maintain records of maintenance. Such records could be a recommendation in an inspection report.

Recommendations ME DSP 2023-16 Dam Maintenance

The Review Team recommends:

ME DSP 2023-16a: Develop rules, policy and/or guidelines requiring an Owner Maintenance Plan and appropriate maintenance of maintenance records.

6.17 ME DSP 2023-17 Surveillance and Monitoring of Dams

The surveillance of a dam and its appurtenant structures and monitoring the dam's performance is critical to the early detection of developing issues or impending dam hazard emergencies. These activities by the owner are a critical component of an effective Owner DSP. Likewise, oversight of dam owner surveillance and monitoring by the regulatory organization is critical for an effective Regulatory DSP.

Does the DSP require owners to develop and implement Surveillance and Monitoring Plans (SMP) for each of their dams?

The DSP does not require the development and implementation of SMPs.

Are SMPs required to outline the instrumentation monitoring and assessments that will be part of required periodic inspections?

The DSP does not require the development and implementation of SMPs.

Are SMPs required to establish threshold values and action levels for all monitoring instruments?

The DSP does not require the development and implementation of SMPs.

Are SMPs required to include the evaluation of monitoring data on a continuous basis rather than on some periodic timeframe?

The DSP does not require the development and implementation of SMPs.

Are SMPs required to include an annual Surveillance and Monitoring Report (SMR) for submission to the DSP?

The DSP does not require the development and implementation of SMPs.

Recommendations ME DSP 2023-17 Surveillance and Monitoring

The Review Team recommends:

ME DSP 2023-17a: Develop, document, and implement procedures for preparation and submission of appropriate Surveillance and Monitoring Plans by owners.

6.18 ME DSP 2023-18 Dam Inspections and Inspection Reviews

Dam inspections are a critical element of an effective DSP and are necessary to identify problems. Dam inspections are an important part of a dam safety evaluation based on potential failure modes. Periodic inspections can show changing conditions and/or degradation throughout the life of a project. Inspections at dams can be performed for many reasons, ranging from maintaining a dam inventory to performing comprehensive safety evaluations. Dam inspections are essential to determine dam condition, operability, maintenance, and repair needs, and to identify unsafe conditions.

To help ensure quality and consistency among dam inspectors, most regulatory authorities require inspections to meet certain standards and require the use of their standard inspection forms. The regulator should require submission of the inspection reports for regulatory review to ensure that the owner's engineer has adequately documented deficiencies and provided suitable timeframes for maintenance, repair, or other actions.

Routine Owner Inspections

Does the DSP require routine dam inspections by the dam owner?

The DSP does not routinely require dam inspection by the dam owner.

Periodic Regulatory Inspections

Does the DSP require routine and periodic inspections by the dam owner to the frequency outlined in the Model Program?

The DSP statutes do not require routine and periodic inspections by the dam owner.

Does the DSP staff perform routine and periodic inspections of regulated dams?

Program staff perform routine inspections. The statutory frequency is outside the recommendation of the Model Program.

Do written qualification standards exist for staff and dam owner-contracted personnel performing dam inspections?

The statute requires the department to "hire one or more dam inspectors who are licensed as professional engineers."

Are dam owner inspections and/or staff inspections documented with a standard inspection form to help ensure quality and consistency of dam inspections?

The program has a standard inspection report format, but no standard inspection checklist as previously discussed.

Special Inspections

Does the DSP require inspections after extreme or unusual events or after observation of deficiencies or inadequate performance?

There is no written rule, policy, or procedure for special inspections. This could be a recommendation in an inspection report based on the circumstances.

Construction Inspections

Does the DSP require inspections of construction by the DSP staff?

The DSP does not currently require construction inspections.

Does the DSP require inspections of construction by the dam owner's design engineer?

The DSP does not currently require construction inspections by the dam owner's design engineer.

Normally Inaccessible Features Inspections

Does the DSP require inspections of normally inaccessible features of regulated dams?

This could be a recommendation in an inspection report based on the circumstances.

Recommendations ME DSP 2023-18 Dam Inspections and Inspection Reviews

The Review Team recommends:

ME DSP 2023-18a: Develop written rules, policies, procedures, and guidelines for all inspections including DSP and owner inspections for periodic, construction and special inspections.

6.19 ME DSP 2023-19 Comprehensive Review and Inspections

Dams are aging and deteriorating, while downstream populations are increasing. Additionally, standards and requirements are continually changing, and dams constructed decades ago may not meet the most current standards. Important, routine visual inspections are not always sufficient to identify safety risks. Periodic comprehensive reviews of the original design and construction and subsequent performance are imperative. These reviews should be based on complete records and need to be more in-depth than periodic general inspections.

Are periodic Comprehensive Review and Inspections (CRI) that include a review of the original design and construction, performance, maintenance, and repairs for all features of dam projects conducted on a periodic basis? If so, who does them (regulator or owner) and on what frequency?

Periodic CRIs are not currently required by the DSP.

If performed by the dam owner, on what frequency are they performed and are the CRIs filed with the regulatory authority?

Periodic CRIs are not currently required by the DSP.

Are Potential Failure Mode Analyses required to be conducted as part of the Comprehensive Review and Inspections process?

Periodic CRIs are not currently required by the DSP.

How are the findings of the CRIs utilized to improve and/or assure the safety of regulated dams?

Periodic CRIs are not currently required by the DSP.

Recommendations ME DSP 2023-19 Comprehensive Review and Inspections

The Review Team recommends:

ME DSP 2023-19a*: In conjunction with Recommendation ME DSP 2023-02d, the statute or rules should be modified to provide for CRIs at an interval not to exceed ten years for High Hazard Potential and 15 years for Significant Hazard Potential.

6.20 ME DSP 2023-20 Risk Management

Current best practice for implementing risk management and assessing dam risk is to directly identify and assess the unique potential failure modes (PFMs) of a dam through review of the dam's design, construction, and performance and not rely solely on inspections. The Review Team determined what guidance is used by the DSP to inform themselves on the implementation of risk informed decision making (RIDM) and if dam owners are required to perform PFM Analyses to identify potential failure modes of their dams.

Does the regulator have a policy using Risk Informed Decision Making in managing their portfolio of dams?

The program has not adopted the use of Risk Informed Decision Making.

Are dam owners required to perform Potential Failure Mode Analyses to directly identify and assess the unique potential failure modes of their dams?

The DSP does not have rules, policies, procedures, or guidelines for dam owners to require PFMA for their dams. The DSP has not required a PFMA by any dam owner.

Recommendations ME DSP 2023-20 Risk Management

The Review Team recommends:

ME DSP 2023-20a: The DSP should develop a policy for Risk Informed Decision Making to include rules, policies, and guidelines for dam owners of the highest risk dams to perform PFMA.

6.21 ME DSP 2023-21 Compliance and Enforcement

A sustainable DSP needs a proactive compliance culture supported by progressive enforcement, even during times when resources are scarce. Internally, the characteristics modeled by leadership will be mirrored by staff, so it is important that staff continually observe compliance and enforcement as a leadership priority. The concept of compliance and enforcement by the DSP is to obtain compliance by the dam owner voluntarily, if possible, by providing clear direction, tools, and guidance that ensure the dam owner understands their responsibilities and has the tools to stay within compliance. If that fails, the DSP should have tools for enforcement. Programs to ensure and enforce compliance include compliance reporting, annual compliance letters, dam audits, and other reviews. Responsible dam owners will lose motivation if non-compliant dam owners experience no consequences.

Does the DSP have a comprehensive Compliance and Enforcement policy and procedures document that includes a standardized pathway for progressive enforcement?

The program does not have a comprehensive Compliance and Enforcement document.

Does the DSP regularly and consistently enforce its statutes and regulations?

The program does not routinely or consistently enforce its statutes and regulations.

Does the DSP take immediate action to protect life and property during an emergency such as lowering the reservoir level, removing the dam, etc.?

Immediate actions might be suggested or recommended during emergencies but there appears to be a lack of will to enforce compliance with any actions.

Does the DSP take action requiring dams to be rehabilitated as necessary?

Inspection reports may include recommendations for repair or rehabilitation of deficiencies at a dam but following up with compliance and enforcement does not appear to happen or happens only rarely.

Recommendations ME DSP 2023-21 Compliance and Enforcement

The Review Team recommends:

ME DSP 2023-21a: Develop and implement comprehensive Compliance and Enforcement policy and procedures that encourage voluntary compliance or if necessary, enforced compliance.

ME DSP 2023-21b: The DSP should immediately develop a risk-based prioritized list of dams that do not meet current safety standards and begin to implement the Compliance and Enforcement policy and procedures to reduce dam safety risk.

6.22 ME DSP 2023-22 Emergency Planning and Incident Response

All dams, at some point in their life cycle, will experience unusual conditions. Often the unusual condition may be an indicator of the development of a significant issue, which at some point manifests itself as a more serious dam incident. Unusual conditions include much higher-than-normal reservoir levels, changes in seepage, small slides, instrumentation readings outside their normal range, and many others. Most dam failure events begin as unusual conditions; therefore, it is essential that unusual conditions be detected early and addressed. Timely and thoughtful response to unusual conditions and incidents by dam owners, dam safety regulators and emergency management offices is imperative for the safety of the public downstream and for the protection of the owner's investment in their dam.

The regulatory organization also plays a key role during dam hazard incidents or emergencies. The roles that the agency Emergency Response Manager and the DSP specifically will play should be defined in an Agency Dam Emergency Response Plan in accordance with state and agency policy and division or assignment of emergency response authority.

Dam Owner EAPS

Does the DSP require each dam owner to have an emergency procedures plan which includes contacting the regulator during a dam emergency?

The program has a robust EAP program, and all High and Significant Hazard Potential dam owners are required to have an EAP the meets all guidelines.

Does the DSP or any other organization assist dam owners with Emergency Action Plans (such as templates, contacts, etc.)?

The DSP does provide assistance to dam owners in developing, updating, and exercising EAPs.

Does the DSP require EAPs to include Notification Flow Charts; Emergency Detection, Evaluation and Classification; Responsibilities; Inundation Maps; and Appendices, as necessary?

The DSP requires EAPs to meet all applicable guidelines and standards including all the elements listed.

Does the regulator have current EAPs for responding to dam hazard emergencies for all its regulated high and significant hazard dams?

The DSP has current EAPs for all high and significant hazard potential dams.

Does the DSP require, review, and approve annual updates to each regulated dam's EAP?

The DSP requires the update of all EAPs.

Does the DSP require that EAPs be exercised on a periodic basis and are all stakeholders included in these exercises?

The DSP requires periodic exercise of EAPs.

Does the DSP participate in training or exercises to deal with dam hazard incidents?

The DSP participates in training and exercises of EAPs.

Does the DSP require EAPs for the construction period of new dam and existing dam rehabilitation projects?

The DSP does not require EAPs for the construction period of new dams and existing dam rehabilitation projects.

<u>Agency Incident Response</u>

Does the parent agency have written policies and procedures and/or a Dam Emergency Response Plan that clearly defines roles of agency and more specifically, DSP staff to respond to dam hazard incidents?

The DSP does not have written policies or procedures regarding a dam emergency response plan.

Does the DSP have adequate resources (funding and personnel), or have access to additional resources, to adequately act in the case of dam hazard incidents?

As previously discussed, there is no policy or clear guidance on funds that will be used in an emergency.

Recommendations ME DSP 2023-22 Emergency Planning and Incident Response

The Review Team recommends:

ME DSP 2023-22a: The DSP should develop a written policy and procedure for response to dam safety emergency situations.

ME DSP 2023-22b: The DSP should develop and implement rules, policy, or guidelines for an EAP during new or repair/rehabilitation construction.

6.23 ME DSP 2023-23 Public Safety Around Dams

Public safety is of paramount importance at all dams in areas adjacent to the dam and below the dam, particularly in recreational areas. Public safety measures can include things such as physical barriers, operating controls, warning systems, buoy systems, signage, enforcement actions, remediation construction, decommissioning projects, portage development, and public education and outreach. It is essential that every DSP can periodically require owners to conduct public safety assessments and prepare public safety plans to minimize risks to the public, and to openly share with and educate the recreating public about safety near dams.

Does the DSP require dam owners to conduct public safety assessments?

The Maine DSP does not require owners to conduct public safety assessments at their dams. The DSP does not currently have the staff or resources to address public safety at dams.

Does the DSP conduct a Safety Near Dams Outreach and Awareness Initiative?

The DSP does not currently have the staff or resources to address this issue.

Recommendations ME DSP 2023-23 Public Safety Around Dams

The Review Team recommends:

ME DSP 2023-23a: When resources allow, the DSP should develop and implement a written policy and procedure for assessment of public safety around dams.

6.24 ME DSP 2023-24 Security at Dams

Dams are one of the nation's 16 critical infrastructure sections and, as such, physical and cybersecurity at dams is important to protect the dam owner and/or downstream public from damage or loss caused by criminal or terrorist acts. The two specific areas of security are Physical Security and Cyber Security.

Physical Security involves the prevention of and/or protection against attempts to enter the dam and/or surrounding property to attempt to damage or mis-operate the dam in a fashion that aims to cause harm to the dam or initiate an uncontrolled release of water.

Cyber security involves the prevention of and/or protection against attempts to manipulate the operations of gates, valves and other flow control devices at dams that are remotely operated or can be remotely accessed that aim to initiate an uncontrolled release of water.

Does the DSP require or recommend that dam owners assess the physical security risk at each of their dams and develop measures to address these risks?

The program does not have sufficient staff or resources to address security concerns.

Recommendations ME DSP 2023-24 Security at Dams

The Review Team recommends:

ME DSP 2023-24a: As the DSP matures, rules, policies and or guidelines should be developed for dam security.

6.25 ME DSP 2023-25 Permitting Process

Permitting of new dam construction or remedial work of existing dams involves a myriad of administrative activities in addition to the technical review and approval of design plans and specifications. The Review Team should assess the DSP's administrative review process.

Does the DSP require a permit for all the activities outlined in the Manual Section 4.N?

There is confusion about the interpretation of the permitting authority outlined in the statute and what is meant by "review the design and construction of new and reconstructed dams." MEMA does not currently exercise any permitting authority for actual approval or denial of plans and specifications.

Does the DSP have documented steps for the administrative process associated with permit acceptance, permit processing, and permit issuance or denial?

No. Since they are not exercising any authority for permit processing there are no documented processes.

Recommendations ME DSP 2023-25 Permitting Process

The Review Team recommends:

ME DSP 2023-25a: MEMA has the authority to review the design and construction of new and reconstructed dams and they must begin to implement this authority. If the statute is not clear that there is sufficient authority for MEMA to also approve the plans and specifications and to approve construction, the department should seek an opinion on their authority and ask the legislature to amend the law to clearly provide this authority. (This is the same as ME DSP 2023-02a).

ME DSP 2023-25b: MEMA should establish a written policy for coordination with Maine DEP on the review and permitting of dam construction for structures that overlap their authorities. (This is the same as ME DSP 2023d).

7.0 Categorization and Prioritization of Recommendations

Recommendations were categorized based on various factors that are not all related to the relative importance the Review Team may have assigned to various findings and recommendations. Some of those additional factors include:

1. Relative importance.
2. Requirement for major policy revision or development; major agency-wide reorganization; or significant budgeting demands.
3. Cost of implementation.
4. Time required for implementation.
5. Availability and ability of resources within the DSP for implementation.
6. Time dependency based on completion of other recommendations.

Recommendations may be placed into categories like those described below:

Category 1 recommendations are those for immediate action to meet basic DSP requirements and should be accomplished in **0 to 2 years**. Many of these should be relatively easy to accomplish by current DSP staff without major policy revision or development; major agency-wide reorganization; or significant budgeting demands.

Category 2 recommendations are also those for immediate action, but which may require more time to accomplish considering the need for major policy revision or development; major agency-wide reorganization; or significant budgeting demands. **Category 2** recommendations should be completed in **1 to 3 years**.

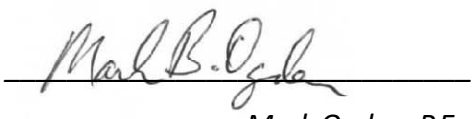
Category 3 recommendations are those for long-term action that are important, but which may take **longer than 3 years** to accomplish. Some may be dependent upon the completion of a recommendation(s) in **Category 1** or **2** in order to be addressed.

The Review Team has also prioritized the recommendations within each category to provide the regulator with an understanding of the relative importance afforded each recommendation by the Review Team or to provide the most efficient order to complete the recommendations. It should be noted that the Review Team believes all recommendations are important to improve the regulator's DSP to meet the current state of the practice. The categorization and prioritization of recommendations within each category are found in **Appendix B: Categorization and Prioritization of Recommendation*s***.

8.0 Certification

This report was prepared by the undersigned members of the Review Team of the Association of State Dam Safety Officials as requested by Lori Spragens, Executive Director, Association of State Dam Safety Officials.

The statements in the report reflect the professional observations, findings, and judgments of the team based on interviews and review of documents presented by the Maine Emergency Management Agency.



Mark Ogden, P.E.

James T. Pawloski, P.E.

Appendix A: Compilation of Recommendations

After staff interviews; document reviews; review of written responses to questions presented to the regulator's staff; review of confidential questionnaire responses; and the Review Team's observations, the Review Team discussed and evaluated the regulator's DSP. It then concluded the peer review by developing a set of recommendations for improvements to the DSP. These recommendations have all been discussed in the body of this report and are compiled below for convenience.

ME DSP 2023-01 Regulator and Owner Roles and Relationships

No recommendations for this section.

ME DSP 2023-02 Legislation and Authority

ME DSP 2023-02a: MEMA has the authority to review the design and construction of new and reconstructed dams and they must begin to implement this authority.

ME DSP 2023-02b*: If MEMA legal counsel determines that the statute is not clear that there is sufficient authority for MEMA to approve the plans and specifications and to approve construction, the department should seek an opinion on their authority and ask the legislature to amend the law to clearly provide this authority.

ME DSP 2023-02c: MEMA should promulgate rules to establish design standards and procedures for permitting of new construction and repairs, including inspection and approval of construction prior to impoundment.

ME DSP 2023-02d*: The statute should be modified to provide an inspection interval consistent with the Model, annual for High, and every two years for Significant. At a minimum, inspection intervals should not exceed five years.

ME DSP 2023-02e: MEMA should establish a written policy for coordination with Maine DEP on the review and permitting of dam construction for structures that overlap their authorities.

ME DSP 2023-03 Organizational Hierarchy

ME DSP 2023-03a: MEMA should consider revising the chain of command to allow the DSP chief the ability to access the Department Commissioner in emergency situations.

ME DSP 2023-04 Program Administration

ME DSP 2023-04a: Recent reclassification of the engineering and administrator positions was a positive step. If postings for the professional engineer position do not attract sufficient candidates, then higher pay grades should be considered again. The program should continue to periodically assess compensation levels to make sure DSP positions are competitive.

ME DSP 2023-05 Staffing

ME DSP 2023-05a: Fill the SDI position as soon as possible.

ME DSP 2023-05b: Immediately pursue additional funding for at least one additional professional engineer SDI position.

ME DSP 2023-05b: Begin planning to assess program staffing needs based on the Model Program and submit a budget proposal for full staffing of the DSP.

ME DSP 2023-06 Funding and Budgeting

ME DSP 2023-06a: Program management should prepare a budget request for full funding of the program based on the Model Program to MEMA administration. MEMA should include the request to the legislature and the legislature should fully fund the program.

ME DSP 2023-06b*: MEMA should consider establishing a fee schedule for dam owners to help fund the program.

ME DSP 2023-06b: MEMA should develop a written procedure for the development of an annual budget request for full funding of the program.

ME DSP 2023-06b: MEMA should develop a written agreement and process for funding to use during a dam safety emergency.

ME DSP 2023-07 Program Management

ME DSP 2023-07a: Implement a comprehensive database management system to guide all administrative and regulatory activities.

ME DSP 2023-08 Policies, Procedures, and Guidelines

ME DSP 2023-08a: The program should establish written policies and procedures for all program aspects. These should include written processes for inspections, follow-up, and enforcement for dams with deficiencies.

ME DSP 2023-08b: Develop an inspection checklist to assist both engineering inspection staff and dam owners with the periodic inspection of dams.

ME DSP 2023-08b: Complete the draft dam owner O&M template.

ME DSP 2023-09 Communications

ME DSP 2023-09a: Develop and implement a stakeholder outreach plan.

ME DSP 2023-10 Information Management

ME DSP 2023-10a: Implement some form of electronic database for inventory and tracking of dam safety data and documents.

ME DSP 2023-10b: Scan all paper documents, etc. into a digital format that can be backed up and included in an information management system.

ME DSP 2023-11 Education and Training

ME DSP 2023-11a: Continue to encourage staff to pursue training opportunities with professional engineering organizations to maintain current dam safety skills.

ME DSP 2023-12 Continuous Improvement

ME DSP 2023-12a: As the program matures, develop a process for periodic internal review of the program.

ME DSP 2023-13 Inventory of Dams

ME DSP 2023-13a: Implement a comprehensive database management system to guide all administrative and regulatory activities. (This is the same as **ME DSP 2023-07a).**

ME DSP 2023-14 Hazard Potential Classification Definition and Determination

ME DSP 2023-14a*: In accordance with the Model Program, the statute should be changed to require evaluation of the potential downstream hazard of all dams, including Low Hazard Potential, at least once every five years.

ME DSP 2023-15 Dam Operation

ME DSP 2023-15a: Complete development of the O&M template and implement it for routine use.

ME DSP 2023-15b: When completing inspection reports, include recommendations for appropriate recording and reporting of operational information.

ME DSP 2023-16 Dam Maintenance

ME DSP 2023-16a: Develop rules, policy and/or guidelines requiring an Owner Maintenance Plan and appropriate maintenance of maintenance records.

ME DSP 2023-17 Surveillance and Monitoring of Dams

ME DSP 2023-17a: Develop, document, and implement procedures for preparation and submission of appropriate Surveillance and Monitoring Plans by owners.

ME DSP 2023-18 Dam Inspections and Inspection Reviews

ME DSP 2023-18a: Develop written rules, policies, procedures, and guidelines for all inspections including DSP and owner inspections for periodic, construction and special inspections.

ME DSP 2023-19 Comprehensive Review and Inspections

ME DSP 2023-19a*: In conjunction with Recommendation ME DSP 2023-02d, the statute or rules should be modified to provide for CRIs at an interval not to exceed ten years for High Hazard Potential and 15 years for Significant Hazard Potential.

ME DSP 2023-20 Risk Management

ME DSP 2023-20a: The DSP should develop a policy for Risk Informed Decision-Making including rules, policies, and guidelines for dam owners of the highest risk dams to perform PFMA.

ME DSP 2023-21 Compliance and Enforcement

ME DSP 2023-21a: Develop and implement comprehensive Compliance and Enforcement policy and procedures that encourage voluntary compliance or if necessary, enforced compliance.

ME DSP 2023-21b: The DSP should immediately develop a risk-based prioritized list of dams that do not meet current safety standards and begin to implement the Compliance and Enforcement policy and procedures to reduce dam safety risk.

ME DSP 2023-22 Emergency Planning and Incident Response

ME DSP 2023-22a: The DSP should develop a written policy and procedure for response to dam safety emergency situations.

ME DSP 2023-22b: The DSP should develop and implement rules, policy, or guidelines for an EAP during new or repair/rehabilitation construction.

ME DSP 2023-23 Public Safety Around Dams

ME DSP 2023-23a: When resources allow, the DSP should develop and implement a written policy and procedure for assessment of public safety around dams.

ME DSP 2023-24 Security at Dams

ME DSP 2023-24a: As the DSP matures, rules, policies and or guidelines should be developed for dam security.

ME DSP 2023-25 Permitting Process

ME DSP 2023-25a: MEMA has the authority to review the design and construction of new and reconstructed dams and they must begin to implement this authority. If the statute is not clear that there is sufficient authority for MEMA to also approve the plans and specifications and to approve construction, the department should seek an opinion on their authority and ask the legislature to amend the law to clearly provide this authority. (This is the same as ME DSP 2023-02a).

ME DSP 2023-25b: MEMA should establish a written policy for coordination with Maine DEP on the review and permitting of dam construction for structures that overlap their authorities. (This is the same as ME DSP 2023 25b).

Appendix B: Categorization and Prioritization of Recommendations

Recommendations have been placed into the categories described below and prioritized within each category:

Category 1 recommendations are those for immediate action to meet basic DSP requirements and should be accomplished in **0 to 2 years**. Many of these should be relatively easy to accomplish by current DSP staff without major policy revision or development; major agency-wide reorganization; or significant budgeting demands.

Category 2 recommendations are also those for immediate action, but which may require more time to accomplish considering the need for major policy revision or development; major agency-wide reorganization; or significant budgeting demands. **Category 2** recommendations should be completed in **1 to 3 years**.

Category 3 recommendations are those for long-term action that are important, but which may take **longer than 3 years** to accomplish. Some may be dependent upon the completion of a recommendation(s) in **Category 1** or **2** in order to be addressed.

Category 1

ME DSP 2023-05a: Fill the SDI position as soon as possible.

ME DSP 2023-21a: Develop and implement comprehensive Compliance and Enforcement policy and procedures that encourage voluntary compliance or if necessary, enforced compliance.

ME DSP 2023-21b: The DSP should immediately develop a risk-based prioritized list of dams that do not meet current safety standards and begin to implement the Compliance and Enforcement policy and procedures to reduce dam safety risk.

ME DSP 2023-02a: MEMA has the authority to review the design and construction of new and reconstructed dams and they must begin to implement this authority.

ME DSP 2023-07a: Implement a comprehensive database management system to guide all administrative and regulatory activities.

ME DSP 2023-08a: The program should establish written policies and procedures for all program aspects. These should include written processes for inspections, follow-up, and enforcement for dams with deficiencies.

ME DSP 2023-02e: MEMA should establish a written policy for coordination with Maine DEP on the review and permitting of dam construction for structures that overlap their authorities.

ME DSP 2023-03b: MEMA should consider revising the chain of command to allow the DSP chief the ability to access the Department Commissioner in emergency situations.

ME DSP 2023-05b: Begin planning to assess program staffing needs based on the Model Program and submit a budget proposal for full staffing of the DSP.

ME DSP 2023-10a: Implement some form of electronic database for inventory and tracking of dam safety data and documents.

ME DSP 2023-06b: MEMA should develop a written procedure for the development of an annual budget request for full funding of the program.

ME DSP 2023-08b: Develop an inspection checklist to assist both engineering inspection staff and dam owners with the periodic inspection of dams.

ME DSP 2023-08b: Complete the draft dam owner O&M template.

ME DSP 2023-15a: Complete development of the O&M template and implement it for routine use.

ME DSP 2023-06b: MEMA should develop a written agreement and process for funding to use during a dam safety emergency.

Category 2

ME DSP 2023-05b: Immediately pursue additional funding for at least one additional professional engineer SDI position.

ME DSP 2023-06a: Program management should prepare a budget request for full funding of the program based on the Model Program to MEMA administration. MEMA should include the request to the legislature and the legislature should fully fund the program.

ME DSP 2023-02b: If MEMA legal counsel determines that the statute is not clear that there is sufficient authority for MEMA to approve the plans and specifications and to approve construction, the department should seek an opinion on their authority and ask the legislature to amend the law to clearly provide this authority.

ME DSP 2023-02d: The statute should be modified to provide an inspection interval consistent with the Model, annual for High, and every two years for Significant. At a minimum, inspection intervals should not exceed five years.

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ME DSP 2023-19a*: In conjunction with Recommendation ME DSP 2023-02d, the statute or rules should be modified to provide for CRIs at an interval not to exceed ten years for High Hazard Potential and 15 years for Significant Hazard Potential.

ME DSP 2023-18a: Develop written rules, policies, procedures, and guidelines for all inspections including DSP and owner inspections for periodic, construction and special inspections.

ME DSP 2023-20a: The DSP should develop a policy for Risk Informed Decision-Making including rules, policies, and guidelines for dam owners of the highest risk dams to perform PFMA.

Category 3

ME DSP 2023-11a: Continue to encourage staff to pursue training opportunities with professional engineering organizations to maintain current dam safety skills.

ME DSP 2023-22a: The DSP should develop a written policy and procedure for response to dam safety emergency situations.

ME DSP 2023-10b: Scan all paper documents, etc. into a digital format that can be backed up and included in an information management system.

ME DSP 2023-04a: Recent reclassification of the engineering and administrator positions was a positive step. If postings for the professional engineer position do not attract sufficient candidates, then higher pay grades should be considered again. The program should continue to periodically assess compensation levels to make sure DSP positions are competitive.

ME DSP 2023-02c: MEMA should promulgate rules to establish design standards and procedures for permitting of new construction and repairs, including inspection and approval of construction prior to impoundment.

ME DSP 2023-06b*: MEMA should consider establishing a fee schedule for dam owners to help fund the program.

ME DSP 2023-09a: Develop and implement a stakeholder outreach plan.

ME DSP 2023-12a: As the program matures, develop a process for periodic internal review of the program.

ME DSP 2023-15b: When completing inspection reports, include recommendations for appropriate recording and reporting of operational information.

ME DSP 2023-16a: Develop rules, policy and/or guidelines requiring an Owner Maintenance Plan and appropriate maintenance of maintenance records.

ME DSP 2023-17a: Develop, document, and implement procedures for preparation and submission of appropriate Surveillance and Monitoring Plans by owners.

ME DSP 2023-22b: The DSP should develop and implement rules, policy, or guidelines for an EAP during new or repair/rehabilitation construction.

ME DSP 2023-23a: When resources allow, the DSP should develop and implement a written policy and procedure for assessment of public safety around dams.

ME DSP 2023-24a: As the DSP matures, rules, policies and or guidelines should be developed for dam security.

Appendix C: Documents Provided for Review

01 Leadership & Guidance

- 01c: Maine Dam Safety Final White Paper
- 01f: Title 37-B Legislative Statues
- 01h: MEMA Organization Chart
- 01j: Maine Dam Safety Projected Budgets 2022-2025

02 O&M

- 02k: Draft – Operations and Maintenance Plan Template
- 02o: Inspection Report Examples
- 02p: EAP Template – 2022 Version
- 02q: EAP Examples
- 02s: 9 Step EAP Development

03 Engineering Technical

- 03z: FY21 NDSP Closeout
- 03z: FY22 NDSP PR4 Summary
- 03z: Dam Safety Acronyms and Abbreviations for Grant Applications

04 Human Resources

- 04ff: Position Descriptions

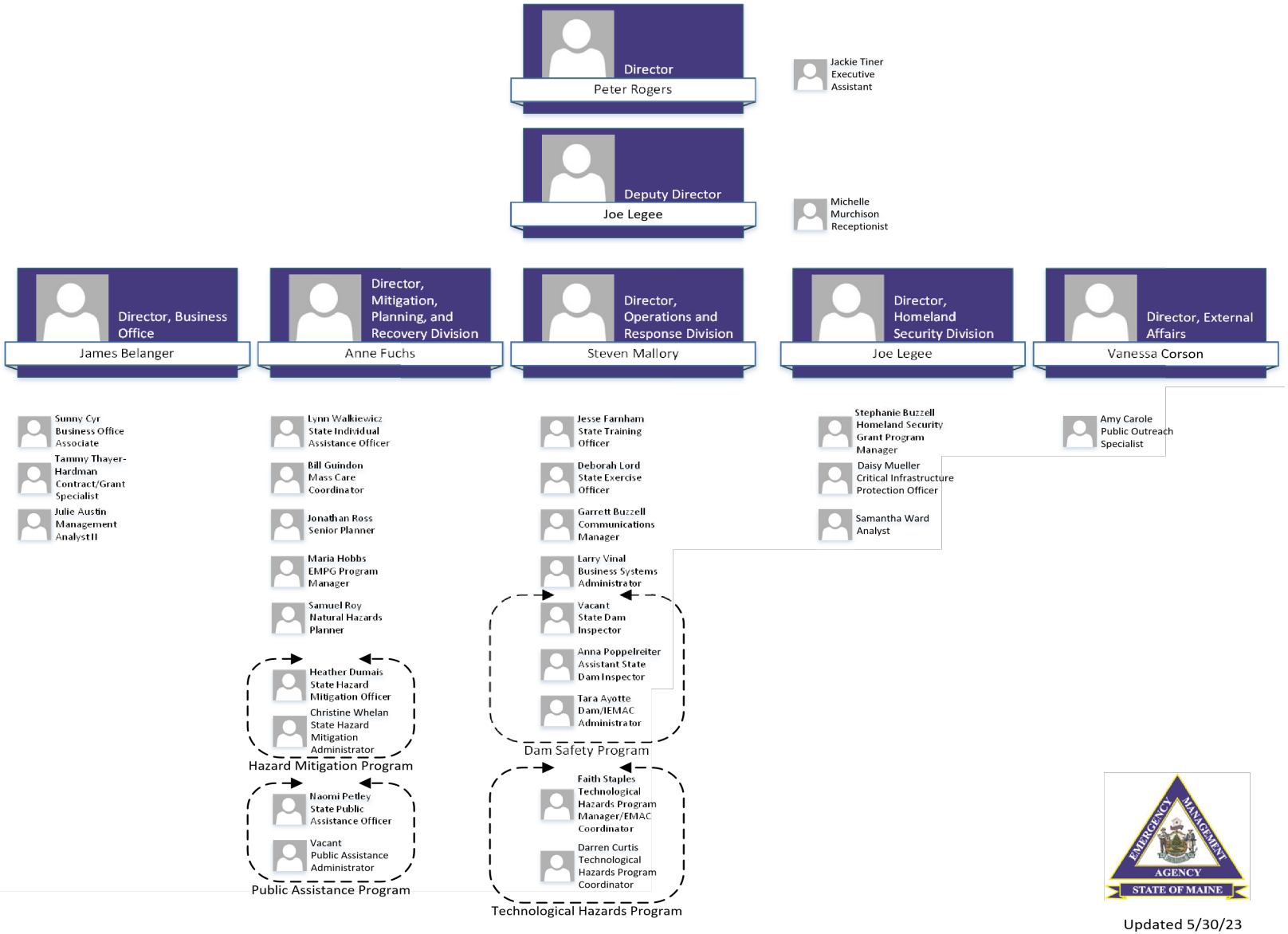
05 Management Reviews & Peer Reviews

06 Records & Miscellaneous

- 06vv: 2021 Abbreviations Inspections
- 06ww: MEMA Final Strategic Plan
- 06xx: 2022 Questionnaire Report

Appendix D: Organization Chart

Maine Emergency Management Agency



Updated 5/30/23

Appendix E: Biographical Sketches of the Peer Review Team

Mark Ogden, P.E.

Mark is a retired project manager/technical specialist with the Association of State Dam Safety Officials (ASDSO). Mark's previous work with ASDSO focused on state program advocacy and federal and state legislative advocacy. Mark continues to oversee special projects for ASDSO including State Program Performance Data and the Dam Failure and Incidents Database. He holds a Bachelor of Science degree in Civil Engineering from The Ohio State University and is a registered Professional Engineer in Ohio and a Certified Public Manager. Mark has over thirty-eight years of experience in dam safety including twenty-five years in state dam and levee safety regulation. He previously served on the Board of Directors of ASDSO and as president in 2007/2008. He worked for the Ohio Department of Natural Resources, Division of Water where he served as the administrator of the Water Management Section with responsibility for the Dam Safety, Floodplain Management, Coastal Erosion Permitting, and Canal Operations Programs.

James T. Pawloski, P.E.

Jim is currently working as a sole owner and practitioner for a dam safety and water resources engineering consulting practice. He has worked on a variety of projects over his 40-year career including projects specific to dams, dam removals, water resources and wetlands. He previously worked for the Dam Safety Program in the Michigan Department of Environmental Quality (DEQ—now Environment, Great Lakes, and Energy [EGLE]). He has recently served as a senior consultant to a large utility that has a number of FERC regulated hydropower facilities in Michigan. He has bachelor's and master's degrees in civil engineering from Michigan State University in East Lansing, Michigan. He is a registered professional engineer in the state of Michigan. He specializes in dams and dam safety and has completed safety evaluations of dams and has been involved as a consultant and/or regulator for the planning, design, construction, and regulatory review and permitting for repairs, alterations, and construction of new dams and for the removal of dams. He has helped manage dam safety programs and has reviewed a number of dam safety programs. He is currently on an Independent Review Panel for the US Department of Interior, Bureau of Reclamation dam safety program. Jim is a past president of the Association of State Dam Safety Officials (ASDSO) and currently serves on several ASDSO committees.

Association of State Dam Safety Officials

November 2023

MAINE DAM SAFETY

WHITE PAPER

October 2021

Steven H. Mallory – Director of Operations and Response

Reformatted June 2023

TABLE OF CONTENTS

INTRODUCTION

This white paper is about the dam safety program in the State of Maine and summarizes the geography of the State in relation to dams, the development of dams, the dam safety program (DSP), some recent dam failures and comments on the vulnerability of Maine dams to terrorist attack.

Background - State of Maine is situated in the Northeast corner of the United States. The State has a population of 1.3 million people living on 35,400 square miles, 95% of which is wooded with hard and softwood forest. Maine has a complex 630-mile border which traverses rivers, lakes, watersheds, and over land. Maine has 470 miles of border with Canada of which 225 miles are with Quebec (Canada) in the northwest (NW) and 245 miles are with New Brunswick (Canada) in the Northeast (NE). Maine also has 160 miles of border with New Hampshire (NH) in the west (W) and a 230-mile-long Atlantic coastline with 3,500 miles of shoreline. River borders in Maine total 230 miles, including 45 miles with NH along the Salmon Falls and Piscataqua Rivers in the SW, 85 miles along the St Francis and St. John Rivers with Canada in the NW and north (N) and 100 miles along the Monument Brook and St Croix Rivers with Canada in the NE. Maine also has 285 miles of straight overland border, 165 miles of which is with Canada. Rivers flowing into Maine from NH are the Ossippee, Saco, Cold, and Androscoggin. Rivers flowing into Maine from Canada are the Ruis Doucet, Daaquam, Northwest, Lac

de Lest, and Noire. Rivers flowing out of Maine into NH include the Cold (A tributary of the Androscoggin). Rivers flowing out of Maine into Canada are the Limestone, Aroostook, de Shute, Prestile, Meduxnekeag, and Sheean. Maine also has a 120 miles border with Canada along the Western Mountains watershed in the NW.

Landform in Maine has resulted from glacial action, continental rebound and erosion resulting in the creation of several hundred inland lakes with a combined surface area of 4,500 square miles. These lakes are a major water resource in Maine, and many are now controlled by low head dams built at their outlets enabling the storage of large volumes of water at minimal cost. Topography in Maine is mainly rolling sandy hills, interspersed with occasional mountains or monadnocks of resistant bedrock composed of shale, slate, and schist with igneous intrusions. Along Maine's W and NW border with NH and Canada are the Appalachian Mountains which form the headwaters of four Maine river systems namely the Androscoggin, Kennebec, Penobscot, and St. John. The most widespread surface deposit in Maine is a highly erosive un- stratified glacial till composed mainly of sand mixed with some clay, silt, and cobbles. Mean annual precipitation (MAP) in Maine, including snowfall, varies between 44" at the coast to 36" on the NW border with Canada. Snowfall varies between 48" at the coast to 120" in the NW mountains. Surface runoff in Maine is about 55% of MAP. Peak river flows in Maine occur during the melt at the beginning of spring between March and May.

Maine has 9 major rivers, 21 smaller coastal rivers supporting over 1,000 dams. Dams have been built in Maine and NH for at least 300 years and have strongly influenced both human settlement and regional economics. In the 18th and 19th centuries, dams were small, empirically built structures composed of till, stone, timber, earth and more recently concrete. Their purpose was to impound or divert water to generate power, supply water, or drive logs. Many of these older dams still exist. Most are low hazard and few, if any, have construction records. By the mid-19th century, the scale and tempo of hydropower development in Maine increased notably. Between 1900 and 1960, 35 large hydro-electric projects were constructed, 31 forming the core of Maine's Federally regulated high hazard hydropower dams. Out of the first 20 high hazard dams with highest potential for damage in Maine, 17 are dams built during this era. The final epoch of large dam construction in Maine occurred between 1962 and 1980, when the United States Department of Agriculture sponsored the construction of 14 flood control earth dams, 8 of which are located in Aroostook County in northern Maine. These flood control dams form the majority of State regulated high hazard dams. Together with its lakes, Maine has been blessed with plentiful and excellent water resources which sustain a vibrant tourist, hydropower, and paper manufacturing industry.

In Maine the tendency is to operate dams at full capacity throughout the summer and then to lower the impoundments by late fall in anticipation of flooding and filling during the melt in April. Hurricanes normally expected between August and October can also cause extensive flooding along the larger rivers. Low river flows may be expected toward the end of summer in August. These water resources sustain a large timber and

paper making industry. In the past, large areas of forest were cleared by settlers for crop cultivation but today much of this land is again forested.

In the future it is likely that re-licensing or construction of dams in Maine will be dictated by environmental issues. These days the trend is to remove dams to create free flowing rivers for fish passage rather than build them. Large dam construction in Maine seems now at an end.

Dam Safety Administration – Dams under the jurisdiction of the State of Maine are administered by the Maine Department of Defense, Veterans, and Emergency Management (DVEM). Maine Emergency Management Agency (MEMA) by Legislative Order 481, An Act to Promote Dam Safety, approved June 28, 2001 by the Governor as public law 2001 Chapter 460, effective September 21, 2001. Apart from Maine State Law, dam safety in the State of Maine is also governed by Federal laws of the United States, Laws of the State of New Hampshire, Federal, and Laws of Canada. Federal laws governing dam safety in the State of Maine and regulated by the Federal Energy Regulatory Commission (FERC. The primary purpose of the Dam Safety Program is to oversee and administer Title 37-B, Chapter 24 of MRS, entitled "Dam Safety". The State Dam Inspector is a professional engineering position e.g. required formal engineering licensure within the State of Maine, that is mandated to be filled by the Commissioner of the Department of Defense, Veterans, and Emergency Management, and is required to inspect and oversee all dam inquiries for which the statue applies. Currently, there are approximately 570 dams that the State Dam Inspector is required to inspect dams for hazard every twelve years, and of those, approximately 110 are inspected for condition every 6 years. The State Dam Inspector also oversees the development of an assistant engineer and participates in State Emergency Operations Response in the role of a technical resource specialist.

The Maine Dam Safety Program Originally – Originally the Maine Dam Safety Program (MDSP) is supervised by the Director of Operations at MEMA and had one full time State Dam Inspector (SDI) employed since October 1998 who carried out general administration, conducted dam safety inspections and facilitated the development, review and testing of Emergency Action Plans (EAP's).

The SDI also attended FERC dam inspections when time permitted. Originally the SDI was assisted by the Supervisor and one part time administrative assistant. In the past, administrative assistance to the MEDSP has been provided intermittently by a MEMA employee on an ad hoc basis, a member of the Maine State Guard employed on a 6-month contract, one person employed on three 6-month contracts, one person employed on a 6 month contract and two student interns employed during a summer. The MEDSP does have one technical assistant post and one administrative assistant post allocated to it by the State, but these posts have never been filled.

The Maine Dam Safety Program Currently –

Currently the Dam Safety Program lost its State Dam Inspector who was a Professional Engineer (PE) and the assistant Engineer (EI), both of these engineers have resigned. Both The Professional Engineer and the Engineer in Training left for the private sector leaving the PE position vacant since May, and the EI open since September. The Agency has advertised this position for many months and has only received one application and that applicant was not qualified. A reclass for this position had been filed with Human Resources to help improve the wage but the engineer left State government. A concerning factor that the Professional Engineer mentioned in emails leading up to his resignation was the wage disparity and the duration that it would take for the reclass to take effect. An inquiry also was made into providing a stipend to assist with the low pay for this position and the answer has not been provided at this time, but according to the Department of Environmental Protection they offer an 11 percent stipend, but they are in the same position as engineers are leaving for the private sector.

The assistant Dam Safety engineer left the agency in September and cannot be filled until a professional engineer is in place.

Currently we have an Administrator who is responsible for overseeing Emergency Action Plans (EAP) for these dams and ensures that the inspections and assessments are mailed to the respective owners. The Director of Operations and Response oversees these three positions. Currently both the Admin and the Director are attempting to keep the program solvent by answering emails and recently hired the original dam safety engineer who retired on contract to inspect and assess the high hazard dams as acting capacity.

The MEDSP has files on 1138 dams of which 907 are the responsibility of the State of Maine. Of the remainder 174 are the responsibility of FERC, 50 NHDES, and an undetermined number of rivers flowing into Maine from Canada. In addition to dam condition inspections, the MEDSP is responsible for facilitating and maintaining emergency action plans (EAP's) for 113 High and Significant Hazard State Dams and keeping and updating EAP's for 47 FERC dams. Since 1998 the program has been operated by using Federal assistance which are provided by grants totaling $192,198 from the Federal Emergency Management Agency (FEMA). This grant has enabled the MEDSP to hire transport, purchase equipment and employ personnel to assist with the program.

The Director of Operations of MEMA has also implemented a MOU with the United States Department of Agriculture (USDA) Natural Resources Conservation Services (NRCS) for them to assist MEMA with the inspection of the dams and to ensure they are safe. The purpose of the MOU is to provide a mechanism to foster interaction and coordination between the Maine Emergency Management Agency (MEMA) and the USDA Natural Resources Conservation Service (NRCS). Furthermore, this MOU will establish a structure and mechanism for cooperation between NRCS and MEMA but

does not preclude the independent execution of contracts or other agreements by individual Agencies. NRCS has oversight on 18 dams in which 12 are High hazard and 2 are significant hazard. In exercising this MOU, NECS will assist MEMA in assessments and inspections of at the least 14 dams.

The Maine Dam Safety Program Current Environment – Vulnerability of Maine Dams

Recent attacks by terrorists have greatly increased the vulnerability of the civil infrastructure in the USA. Dams in particular present targets which if breached could cause massive damage to an industrial- society. Factors which make dams naturally vulnerability to terrorist attack in Maine are:

- proximity to long unprotected partially patrolled international borders,
- wooded approaches providing cover for attackers,
- undefended and intermittently patrolled roads, long winters of snow and short daylight hours,
- easy road access to most dam's and the remoteness of some large projects.

To some extent these factors can be controlled by State or Federal action but not by the Dam Owner. Other factors which affect a dam's vulnerability to terrorist attack are:

- insufficient dam security arrangements,
- insufficient bi-lateral co-operation across the State line,
- the variance and competence of the regulation of dams located outside of the State,
- the extent of security measures implemented by the Dam Owner, the State and the Federal Government,
- the ability or willingness of dam owners to finance dam security,
- the design of the dam,
- access and the natural weakening of dams due to age.

No dams in ME are guarded 24/7. Wire fences and locked gates restrict pedestrian and vehicle access to most high hazard dam sites in the State. Most fences can be crossed without much difficulty. 2 High Hazard and 3 Low hazard dams are across the Maine/Canada border, and all dams in Maine are vulnerable to sabotage or an act of war. The 480-mile border with Canada makes emergency management and security and issue with dams on the St. Croix. No current MEMA or FERC dam EAP's in Maine have detailed road closure and/or evacuation plans.

The Maine Dam Safety Program Current Environment – Dam Safety Concerns

Most dams in Maine are beyond their economic age. 79% of Maine Dams are more than 50 years old, many older dams in Me are no longer to generate power and have changed ownership, fallen into disrepair or been removed. It may be illegal to abandon a dam in Maine, but this does not prevent owners, unable to commit resources to dam repairs, from neglecting dams. As a general rule, revenue producing dams in Maine are in reasonable condition, while the smaller “non-revenue” dams are in fair to poor condition.

Many small Maine dams are kept in place by the demands of waterfront property owners who pay additional Town taxes for waterfront property. In the majority of cases waterfront taxes are not directed toward dam operation, maintenance, and/or repairs.

The Maine Dam Safety Program Current Environment – Dam Failures

In the past decade several dam failures have occurred in Maine causing in excess of 1.3 million dollars’ worth of downstream damage.

In 1997, after excessive rains, the privately owned and "significant hazard" Apple Valley Dam failed causing $370,000 damage. Had it not been for the prompt actions of the MOOT it is likely more damage would have occurred. The Owner of Apple Valley Dam subsequently died and final settlement figures have as yet not been determined.

In 2000, a beaver pond in Orrington failed causing extensive local road damage.

In 2000, the State owned "unclassified hazard dam” Owens Marsh Dam failed causing about $1,000,000 of road damage. Neither dams had functional EAP's. Both dams were unattended, low head, sub-standard earth filled dams, which failed as a result of negligence.

In 1999, Moose Pond Storage, a "significant hazard" dam owned by the Town of Denmark, ME had a stop-log gate column failure without any consequences.

On October 20, 1996, 3 dams were damaged by flood waters. Willis Brook Dam owned by the Town of Bridgton (pop.4,307) failed, affecting the public water supply.

Highland lake Dam owned by the Town of Westbrook breached. No downstream damage resulted, and the dam has been rebuilt.

Meserve Dam owned by the Town of Jefferson failed and caused the building to be reconstructed

Littlefield River Dam in Alfred, owned by the State, was damaged and later repaired.

Note. Several of the dams that were damaged by the October 1996 floods in Maine were owned and operated by the state. Under old law, private dam owners were allowed to turn ownership of their dams over to a state agency. Numerous private dams having safety deficiencies have been transferred to the state and may have remained in

a condition of disrepair because the agency in control had insufficient funds to undertake the necessary restoration work. Newly enacted state law has established a formal procedure for dam abandonment that will preclude the state from accepting dams that are in disrepair. Since October 13, 1993, registration of dams with DEP is no longer required. DEP and LURC provide environmental impact review for dam construction or reconstruction (FERC and non-FERC). Dams are classified as high or significant hazard by USDOE and others to describe the degree of risk to communities that would be affected by breach. The failure of dams could threaten downstream residents, property, and the maintenance of streamflow for fish. No dam failure or incident in ME can be attributed to vandalism or an act of war.

The Maine Dam Safety Program Current Environment – Dams with water level restrictions

The following dams have been requested to maintain reduced water levels

- Bunganut Pond, Lyman, was emptied after the discovery of sinkholes in the earth embankment. This was later repaired, and the dam is back in service.
- Symmes Pond, Newfield
- Mount Zircon, Rumford
- Lily Pond, Deer Isle

The Maine Dam Safety Program Current Environment – Mitigation

State inspections help identify problems with both public and private dams. State law requires that all high hazard non-FERC dams (20) and significant hazard non-FERC dams (131) have EAP's. The State has identified 469 low hazard dams and 153 dams of unknown hazard.

FEMA coordinates hazard mitigation dam safety in the non-Federal activities primarily with the Association of State Dam Safety Officials (ASDSO). FEMA fosters State efforts through the *Model State Dam Safety Program,* and technical assistance and public awareness support.

The Association of State Dam Safety Officials, organized in 1984, supports the entire dam safety community, especially at the State level through providing information and maintaining intergovernmental relations. ASDSO distributes the Training Aids for Dam Safety (TADS), which consist of 21 training modules of text and videos. Also available from ASDSO is the Model State Dam Safety Program to help state regulators improve their programs; a resource list on dam safety practices; current research on dam safety issues; and updated reports on state dam safety.

The United States Society of Dams (USSD) is an organization dedicated to the advancement of dam design, construction, operation and maintenance by providing dam information to the public. FEMA funds the distribution of dam safety materials developed by the interagency Committee on Dam Safety (ICODS), ASDSO, States, and the private sector to a large audience free of charge.

Workshops for dam owners, operators and public officials are sponsored by FEMA and managed by ASDSO. State emergency management agencies can request ASDSO public awareness workshops in their states.

KEY FINDINGS

Key Findings #1

The professional engineer position “THE POSITION” requires, and is not limited to, the following Knowledge, Credentials, and Abilities:

By Title 37B, Ch. 24, be experienced in the design and construction of dams including the review of technical calculations for use in analysis and design review.

Possess and maintain a valid Professional Engineer's License issued by the Maine State Board of Licensure for Professional Engineers, with at least 2 years of experience post licensure.

General Civil Engineering knowledge, with a special emphasis in structural analysis and design, water resources analysis and design, hydrology, geotechnical and foundations engineering, construction methods, surveying principles, contract administration, technical inspections, and dam maintenance and operations.

Be able to travel statewide at any time in any weather condition throughout the entire year for dam inspections, emergency responses, or at the request of dam owners.

Strong written and communication skills for technical writing, public interaction, and working with State legislative authorities for rule changes and adoption.

Interpersonal and public communication skills.

Supervisory and management practices of developing employees.

Budgetary and financial application experience and knowledge of financial cash flow and reporting.

Interdepartmental coordination with other Engineering Leaders (DEP, IFW, DMR, DACF, Private, Municipal, and Federal Authorities) to effectively manage all dams with all owners under all situations of public safety, wildlife, recreational, and marine interests.

Professional and effective communication between other States and agencies in relaying dam safety hazards to infrastructure and human life in emergency situations

Knowledge of the Incident Command System (ICS) and periodic training updates.

Key Findings #2

THE POSITION has the authority to make the following decisions:

- Hazard Classifications of dams, including reclassifications and dam removals. This decision affects how the dam is regulated by the Dam Safety Statute and can lead to monetary investments into dam repairs and construction projects by the dam owner. THE POSITION also has the authority to order a dam's removal, repair, and water level reduction for a waterbody in the event a dam poses an immediate hazard to public safety.
- Condition Assessment of certain dam classifications based on metrics and professional experience and knowledge. Financial outcomes and responsibilities of dam owners above applies.
- Personnel decisions, such as hires, disciplinary actions, performance improvement plans, performance reviews, termination recommendations, and professional development tracks
- Budgetary and financial recommendations and oversight of program funds
- Legislative statutory changes and research into program guidance measures from within State Government or the private sector.
- Review and approval of engineering plans, agreements, construction contacts, calculations, and operation and maintenance of dams.
- THE POSITION also is the point of contact and has approval authority for loan program disbursement monies through a jointly administered Dam Repair and Replacement Program (revolving loan, approximately $300,000).
- THE POSITION also advises and looks to apply to Federal grants when available.

Key Findings #3

THE POSITION is the overseer of the program budget and sets budgetary line items from national dam safety grant and EMPG grant allotments (Totals approximately $275,000 per year). The Dam Safety Program receives monies for the program from FEMA.

FY21 - $67,241

FY20 - $69,748

FY19 - $77,355

FY18 - $74,485

FY17 - $76,586

FY16 - $82,139

FY15 - $77,668

FY14 - $83,793

FY13 - $57,528

FY12 - $59,188

The only dedicated Grant funds for the program are from FEMA and the amount is variable as you can see above. MEMA has had to utilize other Federal Grant funds to help support the program. The Emergency Management Performance Grant funds have historically assisted and are the main source of funding for this program.

Key Findings #4

Reclassification or FJA historically have been submitted to the Human Resources Department for a reclassification. The justification for reclassification is due to the amount of responsibility that THE POSITION entails for being the sole regulator of state dam safety in the State of Maine, the supervisory nature of managing at least one full time assistant engineer and potential seasonal interns, the statewide interaction of all dam owners and engineering officials, the ability to directly work with State legislators for statutory changes and rulemaking authority, and the ability to approve construction plans and set program budgets for expenditure throughout the fiscal year with the ability to personally affix a stamped seal afforded to a Licensed Professional Engineer.

THE POSITION is currently classified as a Civil Engineer II, but that classification does not mention certain authorities explained above and is not classified as a supervisory position when in fact THE POSITION is a supervisory position in managing an assistant engineer and, when applicable, seasonal engineering interns.

Similar engineering positions at the Maine DOT and Maine DEP, which include being supervisory in nature with statewide responsibilities as the point of regulatory contact, professional engineering licensure credentialing, amount of years post licensure, and overall experience in professional engineering activities, are all classified significantly above a Civil Engineer Senior Environmental Engineering Positions at

the Maine DEP are classified as "Supervisory, Grade 28, with an 11% stipend added onto the step amounts as a form of Stipend" and can be verified, and Civil Engineer III positions at the DOT are classified as "Supervisory, Grade 30, no stipend". The Civil Engineer III Position through the Maine DOT captures most of the job duties of the State Dam Inspector, but it does not fully capture following State Dam Inspector duties as referenced: meet with local, Federal, State, industry members, and community groups to represent the Department; represent the Department or the region at national conferences; conducts independent research and recommends alternative approaches to leadership for informed decision making; plan/organize and direct a team of professionals through a

statewide public process with high visibility and complexity in the areas of environmental impact; review proposals and other contractual agreements to prepare for external services; determines and allocates funds among the program; draft and finalize programmatic guidance and oversight, including budgetary and financial, and legislative and statutory proposals.

Therefore, as the sole professional engineer state dam regulator in the State of Maine Government with the added public visibility and the statewide contact for national dam safety programs and technical assistance in Maine, responsibility for both program management and financials through loan program administration, and authority to set out on rulemaking and guidance procedures above and beyond that of both a Senior Environmental Engineer and Civil Engineer III, the request is being made to reclassify the State Dam Inspector position as "CIVIL ENGINEER III - SUPERVISORY UNIT 9 - GRADE 30. with 7% Stipend" and with the appropriate step increment based on prior performance evaluations. The CIVIL ENGINEER III classification with 7% stipend added per step allows for the position to be classified as requiring Professional Engineering Licensure per MRS Title 37-B, Chapter 24.

Other Maine DOT engineering classifications, such as Project Manager, do not require a professional engineering license as part of the terms of the position.

This Unit Change and Grade reclassification with the additional 7% stipend per step closely aligns with experienced senior level and above professional engineering positions and pay scales that are classified as supervisory in nature around State of Maine Government (see attached examples, key takeaway #4). The stipend allows for the requirement of a Professional Engineering License in Maine, but with the benefit of salary be equal to and slightly above the Project Manager given the other duties and responsibilities above the Grade 31 Level. This level also closely aligns with confidential positions of engineering work (see attached examples, key takeaway #4) in State of Maine Government that also receive the benefit of increased retirement contributions from the State (approximately 7%). The attached Engineer position classified as a Public Service Coordinator II Confidential position, which mirrors the requirements of THE POSITION, has a stated range of $62,004.80 - $84,344.00, but if the salary is translated from a Confidential to Supervisory Classification, the range roughly becomes $65,725 - $89,400 if the retirement benefit is added in, to the direct salary. Having THE POSITION reclassified to this level will ensure that THE POSITION duties reflect the true nature of the position, as well as meet salary levels of other senior level engineering positions within the State of Maine Government

Key Findings #5

In 2021, the 130th Maine Legislature LD 1488 brought up as Resolve, to study and Recommend Improvements to Maine's Dam Safety – Fiscal Note for Bill as Amended by Committee Amendment. Due to concerns of the Maine legislature a Resolve that the

Department of Defense, Veterans, and Emergency Management, in consultation with other State agencies as required by the Maine Revised Statutes, Title 37B-B, section 1112, appropriate federal agencies, state, and local emergency management officials, hazard assessment and public safety experts, including dam safety experts, civil engineering organization, environmental organizations, municipal dam operators, and private dam owners, shall conduct a study of the State's Dam safety efforts under Title 37-B, chapter 24 that assesses the condition of dams in the State and the ability of the department to ensure safe operation of dams and to protect public safety. This was a proposed resolve due to the nature of the Dam Safety Program without any methodology or explanation of funding for the program. In the resolve ten questions were asked and most of the questions are hypothetical and if not impossible to answer with fact, on speculation. Ex. Current age and estimated operational lifespan of each dam. Ex. Total number of registered dams and unregistered dams. We are still finding dams today and with over a thousand dams in the State, it would be not be an accurate account of the number of dams in the State of Maine. The resolve also did not explain or define what constitutes a dam, the MDSP has guidelines, but it is interpretative and defined in law, but not in the resolve.

Recent information that has not been published publicly is that this Legislation proposal has been shelved for reasons unknown to this author at this time. Even if this legislation is not valid it just goes to prove the importance of legislation to improve the Maine Dam Safety program and it also demonstrates the need for assistance in this program.

Key Findings #6

In the development plan for the State of Maine Dam Safety Program Draft Report that was issued in 2000 it was reported by the current Dam Safety Inspector that:

1. It is clear that the Maine DSP is critically understaffed, short of resources and possesses both latent and patent defects which need immediate attention if public safety is not to be further compromised.
2. Shortage of staff, equipment and money is creating within the DSP gross inefficiencies in manpower utilization and a poor response to dam inspection and implementation of EAP's.
3. If the FEMA budget is approved for the next 3 years, it will enable the State of Maine to verify the hazard rating of high and significant hazard dams, facilitate regular and reliable periodic inspections of them, and bring the DSP up to date in the best interests of the dam owners and the people of the State of Maine. It will also create confidence in people in the path of dam failure flooding that the Department is in control of the situation.
4. The present legislation is unlikely to approve the money required to implement this program. The grant funds budgeted here will kick start the program and enable essential preprogram tasks to be implemented without further delay. It is

imperative that the State approve substantial increases in the annual budget for the DSP.

5. It is imperative that a periodic program of dam inspection·, dam EAP and SOP be implemented immediately, with sufficient resources to ensure the sustainability of the DSP within the parameters of the law.
6. It is recommended that the 3-year grant submitted to the Federal Emergency Management Agency by the State of Maine, in the sums of $50,036.00 for the year 2000, $50,036.00 for the year 2001 and $50,036.00 for the year 2002 be approved.
7. It is to be noted that the plan includes a grant sum of $57,000.00 for the year 2003 and that it be tabled for consideration by FEMA when circumstances permit.
8. That the sums of $215,000.00 for the year 2000, $203,000.00 for the year 2001 and $203,000.00 for the year 2002 be approved for expenditure on the DSP by the State of Maine, together with the hiring of 2 engineers, 1 GIS operator and 2 administrative assistants.

Key Finding Summary

- Non-standard position with non-appropriate pay
- Authority with no linear and defined chain of command
- FEMA funding is not sufficient to maintain any level of proficiency
- Noncompetitive wage is one of the major issues of the Dam Safety program failing
- Legislation is aware of issues with the program at the State level and at the National level. Maine is not alone as all of Region #1 dam safety programs are in jeopardy.
- The Dam Safety Program has been in jeopardy of failing for many years, and numerous reports and studies have been completed and all of them have identified lack of funding as the major concern.

Key Takeaways

Takeaway #1

As identified in the key findings, the professional engineer position requires, and is not limited to, the following, Credentials, and Abilities that is just not standard in the engineering field, no other engineer in the State of Maine employ has the

responsibilities not have the requirements of the Dam Safety Engineer position. THE POSITION requires, and is not limited to, the following Knowledge, Credentials, and Abilities:

By Title 37B, Ch. 24, be experienced in the design and construction of dams including the review of technical calculations for use in analysis and design review.

Possess and maintain a valid Professional Engineer's License issued by the Maine State Board of Licensure for Professional Engineers, with at least 2 years of experience post licensure. In speaking with Professors at the University of Maine, none of their engineering positions in the scholastic setting primarily focuses on Dam Safety. There just aren't any programs designed and/or structured in the Dam Safety realm. Hydraulics and other contributing conditions are taught and experienced, but none are the main focus of Dam Safety Design, operation, and failure curriculum.

Takeaway #2

THE POSITION has the authority to make the following decisions:

Hazard Classifications of dams, including reclassifications and dam removals. This decision affects how the dam is regulated by the Dam Safety Statute and can lead to monetary investments into dam repairs and construction projects by the dam owner. THE POSITION also has the authority to order a dam's removal, repair, and water level reduction for a water body in the event a dam poses an immediate could be made in this position.

> Example 1: Ineffective Communication of a Dam Emergency or general dam knowledge and conditions to the public can result in infrastructure damage and human loss of life.
>
> Example 2: Error in evaluation of a dam condition or hazard can lead to incorrect emergency preparations and the ability of the Department to enforce remedial fixes to dam infrastructure
>
> Example 3: Poor training and supervision of the assistant engineer can lead to a broad problem in dam safety in not addressing programmatic requirements.

The sheer responsibility of the Dam Safety Engineer position and the authority of this position is not properly aligned within the department correctly. The Legislation states that it is the Commissioner's responsibility to make these decisions but there are no internal processes to delegate that authority to the Director of MEMA nor to the State Dam Engineer. The legislative intent of the Dam Safety Law is dated and needs to be updated to reflect current environment such as Certified Mail vs. email notification and processes.

Takeaway #3

Budgetary concerns, in 2021 the Maine Emergency Management Agency received $67,241 to fund the Dam Safety Program from the National Dam Safety Grant from FEMA. As stated in the budget summary, the budget is around $275,000. At least $200,000 short of where the budget needs to be. Reliance from utilizing from other grant funds detracts from the program to be solvent and to be effective and self-sustaining. Recommendation would be to leverage and champion FEMA in obtaining more consistent and more substantial funding from FEMA for full implementation for a successful program.

Takeaway #4

As explained in Key Findings #4, the current pay scale for the State Dam Inspector, Assistant Dam Engineer, Administration position, and even the Director of Operations who supervises this program are well below the normal pay scale for State employees given the responsibilities and tasks assigned. Below I have compared a couple of other State agencies pay scale compared to the State Dam Inspector position. As stated in the key findings a reclass for the State Dam Engineer was submitted to Human Resources with the recommendation to request to reclassify the State Dam Inspector position as "CIVIL ENGINEER III - SUPERVISORY UNIT 9 - GRADE 30. with 7% Stipend" and with the appropriate step increment based on prior performance evaluations. The reclass was submitted well over a year ago and the status is unknown.

State Comparison's for equivalent Engineers:

EX. 1

CIVIL ENGINEER III

Engineering & Physical Sciences - 6344

Engineering Civil Engineering - EPS0018300

Supervisor - Range 30

- 1115

EX.2

PROJECT MANAGER - 6350

Engineering & Physical Sciences - EPS00018302

Engineering - Range 31

Civil Engineering Working Supervisor - 1118

EX.3

SENIOR ENVIRONMENTAL ENGINEER	-	6322
Engineering & Physical Science	-	EPS0018201
Engineering	-	Range 28
Environmental Services Working Supervisor	-	1115

In order to keep the Dam Safety solvent, the pay needs to be similar and equal to other State agencies to ensure retaining employees rather than a revolving door position. The Assistant Dam Engineer pay would also need to be raised to be competitive as well. The Administration position who is responsible for all of the timelines of High Hazard, Significant Hazard, and Low Hazard dams which also includes NRCS Dams, FERC dams and their respective Emergency Action Plans. With all these duties and responsibilities, this position is one of the lowest paid employees at MEMA. A reclass was submitted to Human Resources in July of 2019 and has still not been approved. Not only does the time limit on the reclass make it extremely difficult to ensure a stable employee it detracts from the morale of the organization and that person, as it is apparent that the State does not understand the importance of this program.

Takeaway #5

The 130th Maine Legislature LD 1488 was a Resolve, to study and Recommend Improvements to Maine's Dam Safety – Fiscal Note for Bill as Amended by Committee Amendment. Legislature is concerned with the welfare of the Dam Safety Program but never asked the Dam Safety Program. If asked, the MDSP would advise that we could have a thriving, efficient, and solvent division if funding was provided for three positions. The MDSP has tremendous knowledge, experience, and relationships with the Dam owners for the past twenty years. This experience with Emergency Actions Plans and advice from the Dam Safety team sets it far above any other agency or organization in the State when it comes to dam safety in the State of Maine. If Legislature was concerned with Dam Safety in Maine, Legislation should include a funding solution for the program to keep it solvent.

Takeaway #6

The report that was submitted in 2000 by the State Dam Inspector explained and predicted that if the Dam Safety Program was not funded by the Legislature, or State funding was not secured. "*If State funding proposed in this report is not considered or approved by State, the inspection process will be slowed to an extent that would exceed the inspection cycle for dams specified by the law and constrain the DSP into poor performance. Legislature needs to fund this program so the Dam Safety can thrive and be a solvent State Agency that is responsible to keep the citizens of the State of Maine safe and to protect property.*"

The main threat of the Maine Dam Safety Program is the lack of future approved resources to implement the project according to Maine Dam Safety Law. If State funding

proposed in this report is not considered or approved by the State, the inspection process will be slowed to an extent that would exceed the inspection cycle for dams specified by the law and constrain the Dam Safety Program into poor performance, this has been stated every year in the Federal report that is submitted to FEMA. Lack of funding would increase the risks dams pose to the public and alienate affected dam owners and the general public alike and decrease the credibility of the Dam Safety Program and the Maine Emergency Management Agency. Financial and staff shortages would not be in the best interests of dam safety and would impair the States partnership with FEMA. A further threat to the dam safety program would be withdrawal, non – approval, or non – continuity of FEMA's financial support for whatever reason.

This report explained and cautioned that lack of any action to sustain and secure funding for the program that it was extremely obvious that this program would fail.

Key Takeaway Summary

- Remove Supervisor title and responsibilities to keep pay grade lower
- Place more responsibility to the Director of Operations with guidance from thee Professional Engineer
- Obtain Legislature to fund $350,000 per year to the program to make it solvent and effective
- Legislation is needed to modernize the language of the law such as certified copy mail and reporting lines with the Commissioner
- Readjust the pay grades for all positions in the Dam Safety Program, this includes Director of Operations, Professional Engineer, Engineer in Training, and administration staff.
- Secure more consistent funding from FEMA to ensure the Dam Safety program has all the equipment and support it needs to prevent failing
- Interim methods are in place until Legislation takes action, this is temporary and must be acted on immediately
- Possibility of setting a fee-based schedule for dam possession from dam owners

Conclusion

The Maine Dam Safety Program is in a dire situation, the current environment and status of the program is and has been caused by no dedicated funding stream. The program has relied upon other grants and not its own self supportive funding. For the program to be effective and to protect property and lives, the program needs to have a constant source of funding as well as a complete wage increase for the positions. Multiple studies have shown that this program was expected to fail and struggle unless funding was secured.

Multiple agencies across the State and the Country are losing engineers and general positions to the public sector at an alarming rate. The comparative pay scale of engineers and engineers in training is approximately and conservatively 15-25 percent below what the private sector is offering. According to the Engineering programs at local college and universities recent grads with no experience are entering entry level engineering positions starting at $85,000 a year.

This makes it extremely difficult to attract and keep any candidate. Perfect example is MEMA recently advertised for the Professional Engineer position at the approved pay scale Grade 28 and we received one applicant after three months, unfortunately this candidate was not qualified. The positions must be reclassified.

When the Dam Safety Program was placed in the Maine Emergency Management Agency's purview, the program was supposed to be one Professional Engineer, one assistant engineer, a MEMA employee Ad Hoc, two constant Guard members at 6-month intervals, and summer interns, all overseen by the Director of Operations. Over the years these positions were readjusted and/or terminated and were never refilled due to numerous reasons.

Another issue with the Dam Safety Program is the Title 37B; Chapter 24 which is outdated and not aligned correctly with how the program should operate and function. Legislation should address that the responsibility of Dam Safety be at the Maine Emergency Management Agency and not at the Commissioner of Department of Defense and Emergency Management. The Director of MEMA would be sufficient and would help enable the flow of information better and be more efficient. Currently the roles and responsibilities are not defined and there are no documentation processes on "inspection reporting" at MEMA.

Another possible solution would be for the Legislation or the Department to come up with a Dam ownership fee. Each Dam would be assessed a fee based on classification, size, and other criteria to secure funding for the Dam Safety Program. I would envision this to be aligned the same as the State Emergency Response Commission and fees are stablished based on the threat of damage from the individual dam. I would recommend that a working group be formed to explore the creation of such a Commission.

The Dam Safety program could survive and could lead the nation in Dam Safety if the following changes were made, Legislation to secure funding, legislation to properly align the program within MEMA, and reclass the positions. If these proposed changes would occur the possibility of success of this vital program would greatly increase.

Temporary actions taken:

Rehired and temporarily hired the recently retired Professional Engineer State Dam Inspector on an “Acting Capacity” employee. This is temporary as this individual is only assisting because he does not want to see the program fail.

Reengaged the previous Memorandum of Understanding with the United States Department of Agriculture Natural Resources Conservation Service, and they will share engineering services, inspections, with 18 dams, 12 which are High Hazard, 2, Significant Hazard, and 4 Low Hazard.

Possible additional temporary actions:

Engage with Universities and Colleges to start a work-share program or internship to allow engineering students to work in this field as there are no programs at higher level education institutions where the curriculum is focused on just Dam Safety. I have spoken with the University of Maine and they are interested in working with us in building a curriculum around dam safety and hydraulics. I would also envision at the least a couple of interns in the summer months to travel to dams and assist. If this was implemented, I would also envision a couple of students during active semesters to shadow and assist the program either with data entry or analysis input on inspection and assessment reports.

Another avenue as previously mentioned is the utilization of an engineer or engineers from our sister agency DVEM as they do have engineers. If some of these engineers whether professional engineers or engineers in training, we could have them temporarily assigned to MEMA to assist in inspections, assessments and/or reports. This was the past practice of the original Dam Safety Program.

I have also discussed the sharing of engineers across all of the State Agencies, my reasonings as I have stated before are that some of these engineers are in training and they need to work under at the least 3 different professional engineers, to obtain their Professional Engineer license. This would allow these engineers who would be temporarily assigned to MEMA which will be training in different disciplines within different fields of engineering, may capture a more permanent employee who excels in this specific field.

Another alternate avenue would be to contract the High Hazard Dams to a private engineering firm, albeit this is a very expensive option and it would be difficult to maintain the legislative responsibilities with this option, but it would hopefully enable the Dam Safety Program to stay current with its responsibilities and to get caught up on assessments and inspections.

Other States are just focusing on High Hazard Dams inspections and assessments which is a less than favorable option as the MEDSP receives around 5-6 calls per month in regard to dams that are assessed at significant hazard, or even unclassified dams which would cause these dams to not be inspected when they actually could cause tremendous loss of property, and/or human and animal life. If the MEDSP just

concentrates on high hazard dam's then the significant hazard ones could actually become high hazard and cause problems without any oversight. The State of Rhode Island only concentrates on High Hazard dams but in all fairness the geographical conditions are not comparable between the two States. We would also not be able to address failing dams and/or problem dams that may have political ramifications.

Currently when a complaint comes in about a dam the Director of Operations does the fact finding and research on the dam and then if possible, attempts to resolve the situation involving the Acting State Dam Inspector's expertise when necessary.

Again, in summary the Dam Safety program in the State of Maine is a crucial and vital program to keep the citizens of the State of Maine safe and to protect their property and their way of life. The main solution on keeping this program effective and solvent is to secure funding so that it can be self - supporting and to create a stable platform that is a beneficial and worthy program.

I am available as always for discussion and I can provide documentation and further explanation on any items mentioned above. Thank you.

Steven Mallory – Director of Operations

Maine Emergency Management Agency

207 624-4476

MAINE DAM SAFETY PROGRAM – REPORT (Per L.D. 1488 Resolve, To Study and Recommend Improvements to Maine's Dam Safety)

Maine Emergency Management Agency
Director Peter J. Rogers
45 Commerce Drive, 72 State House Station, Augusta ME 04333
207-624-4400

List of Report Requirements:

1. Results of the peer review
2. Summary of the stakeholder review, to include:
    a. Discussion of recommendations to address any deficiencies identified in the peer review.
3. Any recommendations for the improvement of dam safety resulting from the stakeholder review, to include:
    a. Suggested legislation.

Supplemental Documentation:

1. ASDSO Peer Review Report, Maine Emergency Management Agency, November 2023
2. Maine Dam Safety White Paper – Reformatted June 2023

Contents

Executive Summary

The following Maine Dam Safety Report captures the results from an extensive review of the State Dam Safety Program. Facilitated by the Association of State Dam Safety Officials (ASDSO), the Maine Emergency Management Agency (MEMA) conducted a comprehensive review of the Dam Safety Program and its component's ability to operate a proficient and effective program. This review was a key effort in MEMA's systematic approach to continuously monitoring and implementing improvements to Maine's Dam Safety Program.

In May of 2022, the 130th Maine Legislature passed into law, LD 1488, Resolve, To Study and Recommend Improvements to Maine's Dam Safety. This Resolve required:

A. A dam safety peer review, to be conducted by the Association of State Dam Safety Officials (completed and attached for reference); and
B. The establishment and meeting of a stakeholder group to review the results of said peer review and discuss any recommendations.
C. A report to the joint standing committee of the Legislature having jurisdiction over veterans' affairs that includes the results of the peer review received pursuant to section 1, a summary of the stakeholder review under section 2 and any recommendations for the improvement of dam safety resulting from the stakeholder review, including suggested legislation.

In response to the legislative requirements, a dam safety peer review was completed by the ASDSO on November 14th, 2023. Following the results of the review, a stakeholder group was established and convened on January 4th, January 18th, and February 1st. The stakeholder group was comprised of the following agencies:

- Federal Energy Regulatory Commission
- United States Department of Agriculture, Natural Resources Conservation Service
- Federal Emergency Management Agency
- Cybersecurity and Infrastructure Security Agency
- United States Army Corp of Engineers
- Department of Veterans and Emergency Management
- Maine Department of Transportation
- Maine Department of Inland Fisheries and Wildlife
- Maine Department of Environmental Protection
- Maine Department of Marine Resources
- Maine State Police
- Maine Department of Agriculture, Conservation, and Forestry
- Maine Emergency Management Agency
- Maine Office of Geographical Information Systems

- Brookfield Renewable
- Kleinschmidt
- Eagle Creek Renewable Energy
- Association of State Dam Safety Officials
- Matagamon Lake Association
- Aroostook County Emergency Management Agency
- The Nature Conservancy

Using the categories established in the peer review, recommendations have been prioritized for proposed resolution.

A. Category 1 - recommendations are those for immediate action to meet basic DSP requirements and should be accomplished in 0 to 2 years. Many of these should be relatively easy to accomplish by current DSP staff without major policy revision or development; major agency-wide reorganization; or significant budgeting demands.

B. Category 2 - recommendations are also those for immediate action, but which may require more time to accomplish considering the need for major policy revision or development; major agency-wide reorganization; or significant budgeting demands. Category 2 recommendations should be completed in 1 to 3 years.

C. Category 3 - recommendations are those for long-term action that are important, but which may take longer than 3 years to accomplish. Some may be dependent upon the completion of a recommendation(s) in Category 1 or 2 in order to be addressed.

Results of the peer review and stakeholder discussion of recommendations.

A. Category 1 - recommendations are those for immediate action to meet basic Dam Safety Program (DSP) requirements and should be accomplished in 0 to 2 years.

ME DSP 2023-05a: Fill the SDI position as soon as possible.

Discussion: Ongoing, one applicant in three years; pay is not in line with engineers pay scale across the State. Currently, retired State Dam Inspector is serving in Acting Capacity.

ME DSP 2023-21a: Develop and implement comprehensive Compliance and Enforcement policy and procedures that encourage voluntary compliance or if necessary, enforced compliance.

Discussion: Dependent on legislature with enforcement language and approval.

ME DSP 2023-21b: The DSP should immediately develop a risk-based prioritized list of dams that do not meet current safety standards and begin to implement the Compliance and Enforcement policy and procedures to reduce dam safety risk.

Discussion: Dependent on legislature with enforcement language and approval.

ME DSP 2023-02a: MEMA has the authority to review the design and construction of new and reconstructed dams and they must begin to implement this authority.

Discussion: In coordination with Maine Department of Environmental Protection, with licensing component.

ME DSP 2023-07a: Implement a comprehensive database management system to guide all administrative and regulatory activities.

Discussion: Group identified to utilize a Maine Department of Transportation platform.

ME DSP 2023-08a: The program should establish written policies and procedures for all program aspects. These should include written processes for inspections, follow-up, and enforcement for dams with deficiencies.

Discussion: In progress but will need to align with any changes in legislation.

ME DSP 2023-02e: MEMA should establish a written policy for coordination with Maine DEP on the review and permitting of dam construction for structures that overlap their authorities.

Discussion: Dependent on legislature with enforcement language and approval.

ME DSP 2023-03b: MEMA should consider revising the chain of command to allow the DSP chief the ability to access the Department Commissioner in emergency situations.

Discussion: Dependent on legislature with approval.

ME DSP 2023-05b: Begin planning to assess program staffing needs based on the Model Program and submit a budget proposal for full staffing of the DSP.

Discussion: In progress, please see proposed budget under **ME DSP 2023-06a***.*

ME DSP 2023-10a: Implement some form of electronic database for inventory and tracking of dam safety data and documents.

Discussion: Group identified to utilize a Maine Department of Transportation platform.

ME DSP 2023-06b: MEMA should develop a written procedure for the development of an annual budget request for full funding of the program.

Discussion: In progress, but dependent on funding from the Legislature.

ME DSP 2023-08b: Develop an inspection checklist to assist both engineering inspection staff and dam owners with the periodic inspection of dams.

Discussion: In progress.

ME DSP 2023-08b: Complete the draft dam owner O&M template.

Discussion: This has been completed.

ME DSP 2023-15a: Complete development of the O&M template and implement it for routine use.

Discussion: Under review by Acting State Dam Inspector.

ME DSP 2023-06b: MEMA should develop a written agreement and process for funding to use during a dam safety emergency.

Discussion: Dependent on legislature with approval, currently no funding nor mechanism from Legislature with enforcement and legal procedures.

B. Category 2 - recommendations should be completed in 1 to 3 years.

ME DSP 2023-05b: Immediately pursue additional funding for at least one additional professional engineer SDI position.

Discussion: Dependent on legislature with approval of proposed budget.

ME DSP 2023-06a: Program management should prepare a budget request for full funding of the program based on the Model Program to MEMA administration. MEMA should include the request to the legislature and the legislature should fully fund the program.

Dam Safety Propsed Budget	Salary	
Engineer 1	117,000	
Fringe	58,500	
Engineer 2	110,000	
	55,000	
Asst Engineer 1	85,000	
	42,500	
Asst Engineer 2	85,000	
	42,500	
Admin 1	75,000	
	37,500	
Admin 2	75,000	
Supervisor - 50/50	50,000	Additional funding from State Admin/EMPG/HSGP
	25,000	
Equipment	25,000	
Training	10,000	
Fees and Dues	2,500	
Travel	10,000	
Office Costs	1,000	
Totals	906,500	

ME DSP 2023-02b: If MEMA legal counsel determines that the statute is not clear that there is sufficient authority for MEMA to approve the plans and specifications and to approve construction, the department should seek an opinion on their authority and ask the legislature to amend the law to clearly provide this authority.

Discussion: Maine DEP has some permitting authority over dams under the Natural Resources Protection Act and the Maine Waterway Development and Conservation Act. The statute under this Act requires a permit for certain construction activities for certain dams in the state. This permitting authority is not based on dam safety but is instead based on environmental and natural resource protection. MEMA and Maine DEP do not currently coordinate on these permit reviews. MEMA and DEP will coordinate and develop policy that ensures continuity between all agencies with construction and permitting, to include considerations for the water levels of dams.

ME DSP 2023-02d: The statute should be modified to provide an inspection interval consistent with the Model, annual for High, and every two years for Significant. At a minimum, inspection intervals should not exceed five years.

Discussion: Stakeholder group agrees but this would require legislation to increase staff and funding add more language to align with Model programs.

ME DSP 2023-14a: In accordance with the Model Program, the statute should be changed to require evaluation of the potential downstream hazard of all dams, including Low Hazard Potential, at least once every five years.

Discussion: More staffing for the program is required if Maine is to follow the Model Program.

ME DSP 2023-19a: In conjunction with Recommendation ME DSP 2023-02d, the statute or rules should be modified to provide for CRIs (Comprehensive Review and Inspections) at an interval not to exceed ten years for High Hazard Potential and 15 years for Significant Hazard Potential.

Discussion: A more detailed review of the file, previous inspections, etc. have become more valid in recent years (Similar to the FERC Part 12 requirements) including revisiting the original design parameters and evaluating those parameters in addition to the required hazard and condition inspections. The acting state dam inspector is currently doing these CRI's for almost every inspection/report since his return in 2021.

There was also a comment regarding the FY24 HHPD Grant for High Hazard dams that are not federally designed, sponsored, regulated, etc. Currently Maine has identified 8 State regulated High Hazard dams (6 dam owners) that qualify for the HHPD Grant. The dam safety team is working on notifying those dam owners of the grant opportunity and the 35% match requirement. There are 2 dams that need to be confirmed that the population at risk (PAR) is greater than 1000.

ME DSP 2023-18a: Develop written rules, policies, procedures, and guidelines for all inspections including DSP and owner inspections for periodic, construction and special inspections.

Discussion: With proposed budget this is achievable.

ME DSP 2023-20a: The DSP should develop a policy for Risk Informed Decision-Making including rules, policies, and guidelines for dam owners of the highest risk dams to perform PFMA.

Discussion: With proposed budget this is achievable.

C. Category 3 - recommendations are those for long-term action that are important, but which may take longer than 3 years to accomplish.

ME DSP 2023-11a: Continue to encourage staff to pursue training opportunities with professional engineering organizations to maintain current dam safety skills.

Discussion: With proposed budget this is achievable.
ME DSP 2023-22a: The DSP should develop a written policy and procedure for response to dam safety emergency situations.

Discussion: Dependent on legislative approval.

ME DSP 2023-10b: Scan all paper documents, etc. into a digital format that can be backed up and included in an information management system.

Discussion: Group identified to utilize a Maine Department of Transportation platform.

ME DSP 2023-04a: Recent reclassification of the engineering and administrator positions was a positive step. If postings for the professional engineer position do not attract sufficient candidates, then higher pay grades should be considered again. The program should continue to periodically assess compensation levels to make sure DSP positions are competitive.

Discussion: With proposed budget this is achievable.

ME DSP 2023-02c: MEMA should promulgate rules to establish design standards and procedures for permitting of new construction and repairs, including inspection and approval of construction prior to impoundment.

Discussion: In coordination with Maine Department of Environmental Protection, with licensing component.

ME DSP 2023-06b: MEMA should consider establishing a fee schedule for dam owners to help fund the program.

Discussion: Other States have legislative authority to require fees, these fees are not consistent with other States. Some States charge for new construction, others have annual operating fees. Other fees, for example could be filing fees, and other States require Dam Owners to have Dams inspected at their own expense, and then submitted to the State.

Other States examples:
AK – Construct fee, Inspection fee, annual operating fee, other fees.
AZ – Inspection fee, other fees
AR – Construct fee, annual operating fee
CA – Construct fee, Inspection fee, annual operating fee.
CO – Construct fee
CT – Construct fee, Inspection fee
DE – Construct fee, other fees
FL – Construct fee,
HI – Construct fee, other fees.
ID – Construct fee, other fees
IL – Construct fee, other fees
IN – Construct fees, other fees
KS – Construct fees, Inspection fee
MD – Construct fee,
MA – Construct fee, Inspections at owners own expense, other fees.
MI – Construct fee, other fees
MN – Construct fees, Inspection fee, other fees
MS – other fees
MT – Construct fee, Inspections at owners own expense.
NE – Construct fee, other fees
NV – Construct fee, Inspection fee, Annual operating fee
NH – Construct fee, Annual Operating fee, other fees
NM – Construct fee, other fees
NC – Construct fee
ND – Construct fee

OH – Construct fee, Annual Operating fees.
OK – Construct fee, Inspection fees.
OR – Annual Operating fee.
PA – Construct fee, Inspection fee, other fees.
PR – Other fees.
SD – Construct fee, Inspection fee.
TN – Construct fee, Inspection fee.
TX – Construct fee, other fees.
UT – Construct fee, Inspection fee
VT – Construct fee
VA – Construct fee, Annual Operating fee, other fees
WA – Construct fee, Annual Operating fee
WI – Construct fee, other fees
WY – Construct fees, other fees

The stakeholder group discussed that fees could hamper smaller organizations, such as nonprofits, small dam owners with volunteer organizations. Charging a fee could also increase citizens utility bill. NRCS indicated they also do not have funds to assist their sponsors (USDA designed and built dams) with repairs. Further conversations led to the recommendations that if the Legislature moves forward with a fee schedule that the Maine Emergency Management Agency Dam Safety Program shall establish a fee schedule for dam owners to help fund the program. A fee schedule would be highly beneficial for the program and the dam owners that the program supports.

ME DSP 2023-09a: Develop and implement a stakeholder outreach plan.

Discussion: This has been completed.

ME DSP 2023-12a: As the program matures, develop a process for periodic internal review of the program.

Discussion: With proposed budget this is achievable.

ME DSP 2023-15b: When completing inspection reports, include recommendations for appropriate recording and reporting of operational information.

Discussion: With proposed budget this is achievable.

ME DSP 2023-16a: Develop rules, policy and/or guidelines requiring an Owner Maintenance Plan and appropriate maintenance of maintenance records.

Discussion: With proposed budget this is achievable.

ME DSP 2023-17a: Develop, document, and implement procedures for preparation and submission of appropriate Surveillance and Monitoring Plans by owners.

Discussion: With proposed budget this is achievable.

ME DSP 2023-22b: The DSP should develop and implement rules, policy, or guidelines for an EAP during new or repair/rehabilitation construction.

Discussion: With proposed budget this is achievable.

ME DSP 2023-23a: When resources allow, the DSP should develop and implement a written policy and procedure for assessment of public safety around dams.

Discussion: With proposed budget this is achievable.

ME DSP 2023-24a: As the DSP matures, rules, policies and or guidelines should be developed for dam security.

Discussion: With proposed budget this is achievable.

Conclusion

The Peer Review Team observed that Maine has a robust Dam Safety Program for the development of Emergency Action Plans (EAP). All High and Significant hazard potential dams in the state have an EAP and are updated and exercised on a regular basis.

The program is also focused on completing mandated periodic inspections of High and Significant hazard potential dams and has taken several steps, including bringing back the retired State Dam Safety Inspector, and plans to use grant funds to hire consultants, to ensure that inspections are completed.

MEMA is dedicated to the program's purpose, technical competence, and a desire to improve the program. There are, however, many challenges for the program.

Working alongside the ASDSO, Maine DEP, Maine DOT, Maine Legislature, and other key stakeholders, the program will seek to address the areas identified in the peer review and discussed among the stakeholder group.