STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
LANSING

GRETCHEN WHITMER
GOVERNOR

LIESL EICHLER CLARK
DIRECTOR

February 25, 2021

VIA EMAIL

The Honorable Gretchen Whitmer
Office of the Governor
P.O. Box 30013
Lansing, Michigan 48909

Dear Governor Whitmer:

On May 19, 2020, following heavy rainfall in the Gladwin and Midland County areas, the privately-owned Edenville Dam failed, releasing a torrent of water that caused the downstream Sanford Dam to fail.

The resulting floods forced some 10,000 residents to evacuate. Homes, businesses, roads, bridges, and other infrastructure were destroyed, with damages estimated at $200 million. The unspeakable hardship that followed for thousands of our fellow Michiganders was exacerbated by the global COVID-19 pandemic.

The enclosed report is the Department of Environment, Great Lakes, and Energy's (EGLE) response to your May 27, 2020, letter directing our agency to investigate the events leading up to this disaster and recommend policy, legislative, budgetary, and enforcement reforms "to prevent a catastrophe of this kind from happening again."

To build on the preliminary internal report we submitted to you on August 31, 2020, EGLE launched the 19-member Michigan Dam Safety Task Force to review the statutory structure, budget, and program design of the Water Resources Division's Dam Safety Program; the adequacy of Michigan's dam safety standards; and the level of investment needed in Michigan's dam infrastructure.

Over the past five months, the Task Force met seven times, held 15 work group meetings, and provided ample opportunity for public input. Its deliberations were also informed by the peer review of the state Dam Safety Program, which EGLE commissioned the Association of State Dam Safety Officials to conduct.

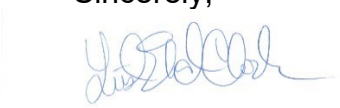
The resulting final report, which received unanimous support from the Task Force, includes 86 recommendations across eight key areas: Funding for Dam Maintenance, Repair, and Removal; Legislation and Authority; Improving Dam Safety; Compliance and Enforcement; Emergency Response; Program Management, Funding, and Budgeting; Safety and Security at Dams; and Outreach and Awareness.

These recommendations, along with steps EGLE has already implemented such as hiring more dam safety engineers, will lead to more robust and effective oversight of Michigan's 2,600 dams, many of which are aging, poorly maintained, and/or inadequately engineered for changing environmental conditions.

Additionally, EGLE has partnered with the Federal Energy Regulatory Commission (FERC) to commission a fully independent forensic investigation of the dam failures, which will consider human factors, regulatory history, the storm event, structural deficiencies, and other factors. Since starting its work in August 2020, the independent investigation team has completed on-site geotechnical investigations and data collections and is now performing modeling and related analyses to recreate the events of May 19, 2020. They expect to complete the investigation 6-12 months from now.

With the enclosed report and forthcoming forensic investigation as our guides, I look forward to working with your office, the State Legislature, and our local, state, and federal partners to make the urgent improvements necessary to protect Michigan residents, our natural resources, and our economy from the kind of devasting impacts the Midland area experienced last May.

Sincerely,



Liesl Eichler Clark
Director
517-284-6712

Enclosure
cc/enc: Mr. Aaron B. Keatley, Chief Deputy Director, EGLE
Ms. Amy Epkey, Senior Deputy Director, EGLE
Mr. James Clift, Deputy Director, EGLE
Ms. Teresa Seidel, EGLE

Michigan Dam Safety Task Force Report

February 12, 2021

Table of Contents

Michigan Dam Safety Task Force Members

EGLE Director Appointees

Evan Pratt (Chair), Water Resources Commissioner, Washtenaw County
Douglas Jester (Vice Chair), Partner, 5 Lakes Energy
John Broschak (Secretary), Vice President of Generation Operations and Compression, Consumers Energy
Paul Ajebga, Director, Michigan Department of Transportation
Melinda (Myndi) Bacon, Senior Consultant, SME Engineering Consulting of Plymouth
Dr. Bryan Burroughs, Executive Director, Michigan Trout Unlimited
Liesl Eichler Clark, Director, Michigan Department of Environment, Great Lakes, and Energy
James (Jim) Dexter, Fisheries Division Chief, Michigan Department of Natural Resources (Alternate)
Dan Eichinger, Director, Michigan Department of Natural Resources
Brett Fessell, River Restoration Ecologist, Grand Traverse Band of Ottawa and Chippewa Indians
Dr. Marty Holtgren, Executive Director, Muskegon River Watershed Assembly
Dr. Dana Infante, Assistant Director of AgBioResearch, Michigan State University
Jim Kochevar, General Manager of Michigan Operations, Cleveland Cliffs
Paul Malocha, Member, Association of State Dam Safety Officials; Project Engineer, Stantec Consulting Services
Tanya Paslawski, President, Michigan Electric and Gas Association
Bill Rustem, Advisor to former Michigan governors William Milliken and Rick Snyder
Dan Scripps, Chair, Michigan Public Service Commission
Dr. Stan Vitton, Professor of Civil and Environmental Engineering, Michigan Technological University
Abby Watkins, Director of Emergency Services, Newaygo County
Glen Wiczorek, Senior Utilities Engineer, City of Ann Arbor
Brad Wieferich, Director of the Bureau of Development, Michigan Department of Transportation (Alternate)

EGLE Support Staff

Dan DeVaun, Michigan Department of Environment, Great Lakes, and Energy
Mario Fusco, Michigan Department of Environment, Great Lakes, and Energy
Amy Lounds, Michigan Department of Environment, Great Lakes, and Energy
Teresa Seidel, Michigan Department of Environment, Great Lakes, and Energy
Luke Trumble, Michigan Department of Environment, Great Lakes, and Energy

PSC Support Staff

Julie Metty Bennett, Public Sector Consultants
Jon Beard, Public Sector Consultants
Mark Coscarelli, Public Sector Consultants
Erin Lammers, Public Sector Consultants
Elizabeth Riggs**,** Public Sector Consultants

Letter from the Chair

Dear Governor Whitmer:

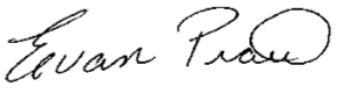
On behalf of my colleagues on the Michigan Dam Safety Task Force, I am honored to share the task force's final report. This report was created through a collaborative effort and every element of the report garnered a high level of consensus. I am proud of the task force's work and appreciate this diverse group, whose members share a deep and sincere commitment to improving the state's dam infrastructure and protecting lives and the water resources of the state.

Our deliberations complement three other state-initiated, in-depth internal and external reviews: an independent forensic investigation into the dam failures, an outside review of the state's Dam Safety Program (DSP), and an evaluation of the remaining portion of the Edenville Dam. The report builds on a peer review of Michigan's Dam Safety Program by the Association of State Dam Safety Officials (ASDSO) Peer Review Team; looks at the larger issue of dam safety in Michigan; and provides recommendations on policy, budgetary, legislative, and enforcement reforms that can reduce risks and prevent these harms from repeating elsewhere.

The task force, composed of key dam safety stakeholders, representatives from tribal and state agencies, and local government officials from across the state, came together to produce a set of implementable recommendations that prioritize the health and safety of Michigan's residents. Months of research and input from the public and from outside experts have contributed to a plan that we are confident will improve dam safety in the state.

As the Great Lakes State, we have an obligation to lead the region, if not the country, in sustainably managing the rivers and waterways of Michigan for ourselves, the many generations that will follow us, and for the natural habitats that depend on them. In this report, the Michigan Dam Safety Task Force presents a vision for managing dams that will ensure all dams in this state are maintained and operated safely with improved environmental quality and enhanced public safety.

Sincerely,



Evan N. Pratt, P.E.
Chair, Michigan Dam Safety Task Force
Water Resources Commissioner, Washtenaw County

Acknowledgements

This report would not have been possible without the time and talent of many stakeholders across the state. Task force members would like to thank the residents who visited our website and participated via public comment during our meetings. Your input was valuable in informing our thinking and developing recommendations.

We are grateful to the Association of State Dam Safety Officials representatives Bill Bingham, Robert Dalton, Dennis Dickey, and Kenneth Smith, who drafted the report that served as the foundation for task force members' recommendations. Their diligence in creating such a thorough, detailed account of Michigan dams' areas for improvement helped frame and guide our work. We are also grateful to Federal Energy Regulatory Commission (FERC) members David Capka and John Katz, who graciously answered questions regarding Edenville's dam failure and sparked a conversation to improve communication between state and federal agencies.

We greatly appreciate all the Michigan Department of Environment, Great Lakes, and Energy (EGLE) staff who provided much-needed data and fact checking, governmental perspective, and administrative guidance as we honed our recommendations—including Dan DeVaun, Mario Fusco, Amy Lounds, and Luke Trumble. Without their patience, responsiveness, and attention to detail, we would not have been able to produce this report.

Finally, we also acknowledge the efforts of Public Sector Consultants for their support in facilitating our work and producing this report. In particular, we want to thank Julie Metty Bennett, Elizabeth Riggs, Erin Lammers, Jon Beard, Mark Coscarelli, Erika Murdey, and Aimee Cain.

Executive Summary

The dam-building era of the 20th century created an inventory of more than 2,600 dams in Michigan and more than 90,000 dams across the United States. Dams in the state were constructed for a variety of purposes, including creating reservoirs, controlling water-levels, establishing farm ponds and water for livestock, generating hydropower, controlling mine tailings disposal sites, enhancing wildlife habitats, and improving aesthetics. The current custodians of this dam legacy have inherited an aging inventory that requires comprehensive and immediate attention.

In the spring of 2020, the Edenville and Sanford dams in Mid-Michigan failed during a major flood event. One outcome was the multipronged response to the dam failures from state government, as well as a review of Michigan's dam safety operations. Consequently, the State requested two independent reviews, the first to be completed by an independent forensic investigation team to determine the contributing factors of the dam failures.[1] The second review was completed by the Association of State Dam Safety Officials Peer Review Committee, which compared Michigan's program to a model state program and produced recommendations that seek to close the gap between the model program and the current state program.[2]

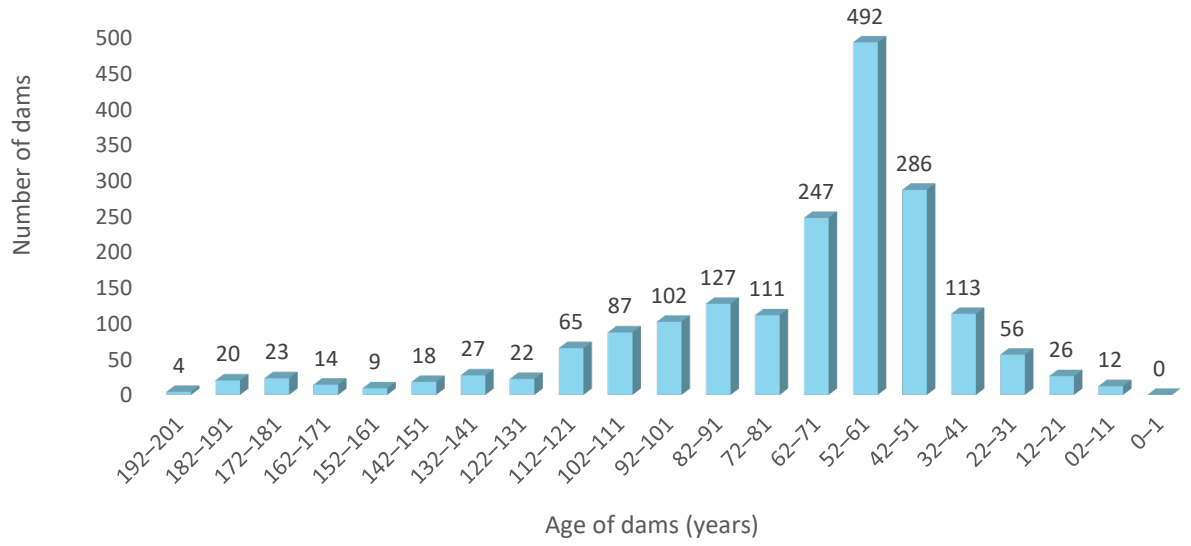
As part of the Michigan Department of Environment, Great Lakes, and Energy's review of the larger issue of dam safety in Michigan, it created the Michigan Dam Safety Task Force to provide a Michigan perspective from experts in relevant professions and roles on ways to tailor the ASDSO's recommendations to Michigan, identify priorities and gaps in the recommendations, and assist in next steps where needed. The expertise of task force members led to the development of several additional recommendations to improve protection of the public trust.

The task force received and considered the report over the course of a five-month process that included seven meetings of the full task force; 15 working group meetings; a dedicated public comment session and solicitation of public input throughout; and research into specific issues where needed, including presentations from subject matter experts. The intense scrutiny of the state's dam infrastructure and dam safety policies and procedures has yielded an abundance of information on which to base recommendations for policy, budgetary, legislative, and enforcement reforms, as directed by Governor Whitmer following the May 2020 disaster.

[1] Report still pending.

[2] Robert Dalton, William Bingham, Kenneth Smith, and Dennis Dickey. September 2020. *ASDSO Peer Review Report*. n.p.: Association of State Dam Safety Officials. https://www.michigan.gov/documents/egle/egle-edenville-MIPeerReviewReport_703962_7.pdf

EXHIBIT 1. Michigan Dams by Age



Note: Per data from EGLE, which only has records on 1,861 of the approximately 2,600 dams in Michigan.

The task force unanimously approved the recommendations as detailed in Chapter 3 of this report, which herein are presented to Governor Whitmer and the Michigan Legislature. All the recommendations make important improvements toward the overarching goal of reducing the total risk of Michigan's dam portfolio over the next two decades. When implemented, the recommended actions will reduce risk of dam failure; provide financing for dam maintenance, repair, and removal; provide adequate authority and resources for the state's Dam Safety Program; address emergency preparedness in case of failure; and increase public awareness of dams leading to greater safety and security.

EXHIBIT 2. Major Funding Needs

Funding Areas	Annual Investment	20-year Investment
Revolving loan program	$20M	$400M
Grants for scoping/design funding for dam rehabilitation and removal	$750K	$15M
Dam safety emergency fund	$5M (initial five-year investment)	
Staffing costs estimate (12.65 full-time employees (FTE))	$1.9M	
Dam Safety Program training plan and budget development	$20K	$400K
IT funding	$50K	$1M

Resources required to implement the suggested reforms have been quantified with a focus on staffing needs and major expenses. Although outside the charge and expertise of the task force, the staffing estimates in this report were provided by EGLE as requested during task force deliberations to provide

the approximate level of effort involved with the recommendations provided. EGLE also intends to develop a plan for moving forward with the legislative changes and budget needs and engage stakeholders in that process.

In consideration of these recommendations, the task force calls attention to the fact that, while most dams in Michigan are in fair condition based on current inspection requirements, deterioration of facilities commonly outpaces investment in facilities. Of the dams in Michigan, more than 80 percent are older than the nominal 50-year design life. Also, spillway capacity is often below projected storm flows, which can lead to dam failure. In addition, there is a lack of funding for dealing with problem dams. Therefore, the state is heading toward a grave situation with many dams if significant investments are not made in the short and medium term.

The recommendations from the Michigan Dam Safety Task Force provide an array of policy objectives along with a variety of implementation strategies for improving dam safety in the state. Continuing the current path of underinvestment is a violation of the public trust, a path that leads to tragic losses of property and life and is ultimately more expensive to Michiganders. The task force strongly urges Governor Whitmer, her administration, and the Michigan Legislature to take meaningful action to advance all the recommendations of this task force—the potential human and economic costs of business as usual are far too great to ignore.

Summary of Recommendations

Funding for Dam Maintenance, Repair, and Removal

Recommendations 1 through 7

The task force recommends the development of a revolving loan and grant program to provide financing for dam maintenance that prioritizes portfolio risk reduction. This will protect the public trust by incenting investment and providing viable avenues for dam rehabilitation and maintenance to reduce dam safety risk. While this set of recommendations supports the many owners who want to retain their dams, removing a dam reduces the greatest amount of risk while also providing substantive ecological benefits. As such, these recommendations also aim to eliminate impediments to removal. Additionally, the task force recommends providing funding for dam removal when the dam owner is unwilling or unable to meet their obligations for maintenance and insurance.

Legislation and Authority

Recommendations 8 through 18

This suite of recommendations focuses on requiring that dam owners meet their responsibilities by licensing dams for a finite period, which may be renewed, and requiring dam owners to maintain adequate financial security such as insurance and setting aside sufficient funds for maintenance and ultimate removal of the dam. The task force further recommends revising and adopting laws and rules to clarify responsibilities and roles of dam owners and the engineers they hire, state agency personnel, and federal entities.

The task force also supports providing the DSP with the ability to respond to dangerous dams by initiating an emergency order that allows a dam operator or EGLE to allow temporary variance from a court-ordered lake level. New legislation is recommended to address common land-use issues, public awareness, and ensure accountability of dam owners. Several recommendations support greater communications and transparency to sharing relevant dam structure information between the State and FERC.

Improving Dam Safety

Recommendations 19 through 34

To properly regulate the full portfolio of Michigan dams, including their safety and impacts on the public trust, and to address nonresponsive dam owners and manage at-risk dams before they necessitate emergency response, task force members crafted recommendations addressing dam licensing and ownership. Dams would be licensed for a term that allows a dam owner to benefit from their investment in the dam, but renewing the license would require a comprehensive review of whether a dam should continue to exist. If a dam owner fails to maintain, operate, and fund a dam during the term of a license, the license would be revoked and the process would begin for removal.

The task force recommends that dam owners be required to provide financial security sufficient to cover potential liabilities in the event of catastrophic dam failure. The task force also recommends a requirement of all dam owners to provide proof of financial responsibility or security to ensure the continued safe operation and maintenance of their dam and, for a dam on a stream, to accumulate funds for its ultimate removal with restoration of the site. This reform would also ensure that funding is available for the DSP to mitigate any hazard presented during a dam incident or emergency, should the owner fail to do so. In addition, several recommendations highlight the need for greater consistency and clarity related to the dam permit application process.

The task force also recommends a requirement for owners of high and significant hazard dams to have periodic independent comprehensive reviews conducted by a qualified team. Frequency would vary and be aligned with other reporting and inspection requirements, but not longer than a ten-year periodic cycle. DSP staff should lead the first round.

Compliance and Enforcement

Recommendations 35 through 40

The task force recommends a suite of actions by EGLE that will target DSP resources efficiently through focused prioritization of portfolio-wide compliance and enforcement. Actions would include developing a priority list that employs a risk-based approach to rank the most problematic dams for focused follow-up and establishing monthly meetings of a compliance and enforcement triage team for the purpose of creating, following up on, and tracking dam-specific strategies for the ranked problematic structures or situations.

Other recommendations address updating agency policies for violation management to include clear timelines for actions to alleviate significant risks posed by high and significant hazard dams and utilizing

water-level lowering orders as a compliance tool to reduce the safety risks posed by long unmaintained, deteriorating dams and unresponsive dam owners.

Emergency Response

Recommendations 41 through 47

This suite of recommendations addresses the need for a robust and integrated dam Emergency Action Plan (EAP) to address dam hazard emergencies. The State should develop a standardized EAP format for individual dams. EAPs should be checked annually and any updated information provided to the DSP and the local emergency management agency; they should be substantively reviewed as part of every dam safety inspection and updated as required. In addition, a general statewide dam EAP should be developed in coordination with the EGLE emergency response manager; the DSP; and representatives of state, county, and local emergency response offices to clarify roles and responsibilities and the legal authorities of all parties.

Program Management, Funding, and Budgeting

Recommendations 48 through 80

The task force supports a proactive, risk-based approach to managing and inventorying the regulated dams in Michigan. As such, a portfolio risk assessment program should be utilized, beginning with high hazard dams, to allocate staff and financial resources for the greatest return on dam safety. State dam-owner agencies can and ought to lead by example regarding responsible dam ownership by conducting an inventory-wide assessment of state-owned dams and adopting planning and budgeting routines that consider annual and lifecycle resources and expenses. A centralized and accessible database and inventory framework for information on all Michigan dams is critical to advancing staff's ability to evaluate, assess, prioritize, and facilitate actions.

The task force recommends several items that are within EGLE's purview and require implementation by EGLE and DSP staff. In summary, current program staff are spread too thin and this critical safety mission is buried too deep in the organizational chart to allow for the level of close senior management oversight warranted to protect the public trust. In addition, the program leader role warrants a significant upgrade in responsibility and authority for the same reason. The ASDSO's expertise on best national practices was essential in finalizing these recommendations.

Safety and Security at Dams

Recommendations 81 through 82

The task force recommends EGLE develop and implement programs related to security, public safety, and public awareness at dams. Areas for immediate focus include public outreach and education initiatives, recommended signage templates, and enhanced online interactive mapping tools with dam locations and resources of interest to the public.

The programs need to be implemented in collaboration with local, state, and federal agencies; tribes; and national organizations and will require legislative and rule changes to require development, implementation, and exercising of security and/or safety plans. In addition, Michigan should join the national movement to ensure safety at dams through forming a Safety at Dams Initiative Team. The

actions recommended for this team contribute to growing a dam safety culture through developing an educated and informed public.

Outreach and Awareness

Recommendations 83 through 86

The task force recommends several actions to ameliorate the form and content of providing outreach to and building awareness of diverse audiences beyond the safety and security measures described above. Dam safety awareness seminars are needed for appropriate state agency personnel across divisions and departments as well as for external audiences to develop a dam safety culture in Michigan. A proactive plan to develop advocates could include county officials, dam owners, floodplain managers and residents, legislators, consulting firms, tribal leaders, and other state agencies.

Report Overview

This report presents the recommendations of the task force for improving dam safety in Michigan. It is the culmination of a five-month process that included seven meetings of the full task force; 15 working group meetings; a dedicated public comment session and solicitation of public input throughout; and research into specific issues where needed, including presentations from subject matter experts.

This report begins with an Executive Summary meant for quick comprehension of the report's contents. The report itself includes the following chapters: Chapter One provides a summary of the problem of dam safety in Michigan and an introduction to the task force and its role, Chapter Two has an overview of dam safety in Michigan, and Chapter Three contains the task force's recommendations with context and explanatory details. A brief conclusion summarizes task force efforts and recommended actions. References and appendices are located at the end of the report.

Chapter One: Introduction

Michigan has approximately 2,600 dams, most of which were built over 50 years ago. Over time, dams that once had a utility function have ceased to serve their original purpose and have been repurposed for recreation or other uses. Most notably, many of Michigan's dams were built prior to comprehensive regulation.

Considering that many dams were built in the 20th century, dam safety as a systematic, regulatory concern is relatively new in the history of dams. The 1972 National Dam Inspection Act authorized systematic dam safety regulation and inspection in the United States. In 1978, the U.S. Army Corps of Engineers developed the National Dam Inspection Program, which established the Federal Guidelines for Dam Safety in 1979. Following the implementation of these programs, the National Program of Inspection of Non-Federal Dams was completed in 1982 and the State of Michigan enacted its own Dam Safety Statute in 1990. Public Act 451 of 1994, Part 315 Dam Safety is now the operative statute governing dam safety in Michigan.

Only recently has society come to understand the need for comprehensive dam safety. The result is that Michigan's Dam Safety Program—based on the 1994 statute—does not address the acceptable balance of risk versus utility. Improved statutes, regulation, and funding structures should help dam owners become more knowledgeable about their own dams and the risks they carry and should simultaneously increase public awareness.

Part 315, administered by EGLE, governs all dams in Michigan except those regulated by the Federal Energy Regulatory Commission; FERC-regulated dams are power-generating facilities. Revoking a FERC license triggers a transition to state regulation under EGLE, as was the case for the Edenville Dam and Sanford Dam. Both dams were turned over to EGLE in 2019 and then failed during a storm event in May 2020. Moreover, even though the Edenville Dam failure arguably is more an indictment of the FERC process, which is not the subject of this report, the events that occurred in May 2020 have served as a wake-up call for improving Michigan's DSP.

The underinvestment in Michigan's DSP for so many years has had significant consequences. The DSP has operated with only two staff people responsible for overseeing 2,600 dams in both peninsulas. There is a funding gap of at least $225 million in state funding over the next 20 years to manage aging dams, not including predicted costs to remove many dams. More than 300 documented dam failures have occurred since the early 20th century in Michigan, including structure failures like the Edenville Dam and Sanford Dam (21st Century Infrastructure Commission 2016).

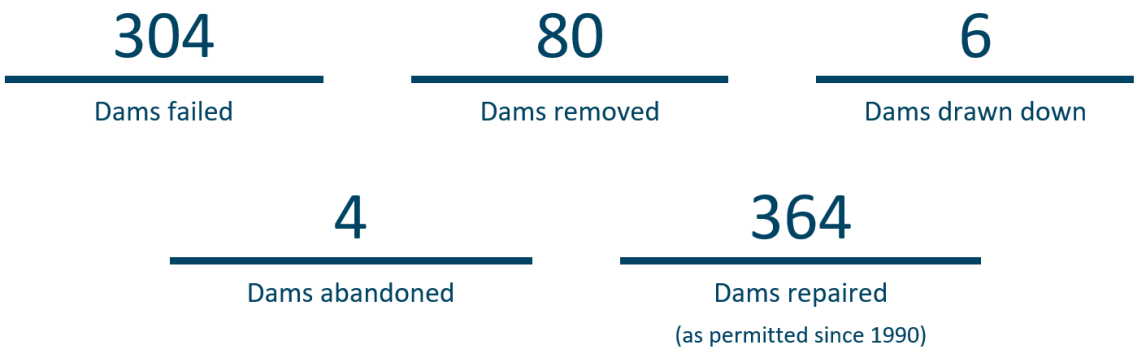
Failing and unsafe dams are not the provenance of Michigan alone. For decades, the nation's inventory of more than 90,000 dams has exhibited performance and capacity problems that have garnered the attention of engineers and policymakers. Since 1998, when the American Society of Civil Engineers (ASCE) issued its first dam infrastructure report card, the collective condition of the country's dams has merited no better than a grade of D (ASCE 2017a). On the scale of A to F, a D reflects infrastructure that is poor and mostly below standard, with "many elements approaching the end of their service life" (ASCE 2017b).

The ASCE ratings of Michigan's dam infrastructure have been similarly subpar. The most recent assessment gave the state's dam network a C minus or "mediocre," which signifies a dam system that is in

fair condition yet shows signs of deterioration across the state. Significant deficiencies in condition and functionality are present with "increasing vulnerability to risk" (Michigan Section of the ASCE 2018). Although most dams in Michigan are in fair condition, the state is heading toward a grave situation with many more dams if significant investments are not made.

While many dam structures continue to serve their intended purpose, others are in disrepair, risking failure that can cause significant ecological and economic damage and threaten public safety. These decades-old dams have deteriorated due to age, erosion, poor maintenance, flood damage, or antiquated design, and they are particularly vulnerable during high-water flow events. Further, dams pose varying degrees of ecological impairment to river systems; with thousands of them on Michigan's waterways, removing dams that are no longer desired can reduce safety risks, reduce burden on dam safety management, and lead to significant ecological improvements.

EXHIBIT 3. Key Statistics of Dams in Michigan



Background on the Michigan Dam Safety Task Force

In May 2020, the Edenville and Sanford dams in Mid-Michigan were breached during a major flood event that precipitated a multipronged response to the dam failures from state government as well as review of the state's dam safety operations. On May 27, 2020, Gov. Gretchen Whitmer issued a letter to Michigan Department of Environment, Great Lakes, and Energy director Liesl Clark instructing EGLE to review and summarize the department's actions during and following the failures of the two dams and to assess the Dam Safety Program more broadly. Governor Whitmer directed EGLE to:

> . . . lead an investigation into the causes of this disaster. Among other factors, I ask that you examine the storm event, the structural integrity of the dam, the dam owner's compliance, and the handoff of regulatory oversight from the federal to state government. In addition to investigating this incident, please review the larger issue of dam safety in Michigan and provide recommendations on policy, budgetary, legislative, and enforcement reforms that can prevent these harms from repeating elsewhere. (EGLE 2020)

The agency responded to the directive by initiating two independent reviews: one via an independent forensic investigation team to determine the contributing factors of the dam failures and the second via the Association of State Dam Safety Officials Peer Review Team that compared Michigan's program to a

model state program and produced recommendations that seek to close the gap between the model program and the current state program.[3] The report from the ASDSO was presented to EGLE and the task force in September and October of 2020. The results of the forensic investigation team are still pending.

As part of EGLE's review of the larger issue of dam safety in Michigan, it created the Michigan Dam Safety Task Force, composed of 19 key stakeholders, to share their expertise and experience to improve dam safety in the state. The Dam Safety Task Force was assembled to provide a Michigan perspective from experts in relevant professions and roles on ways to tailor the ASDSO's recommendations to Michigan, identify priorities and gaps in the recommendations, and assist in next steps where needed.

The Michigan Dam Safety Task Force comprises:

- Representatives of local units of government, including municipal dam owners, emergency management officials, and drain commissioners.
- Private stakeholders, such as dam owners and environmental and transportation consultants with dam expertise.
- Academic experts from the civil engineering and natural resources fields.
- Leaders of Michigan's tribal, conservation, and environmental communities.
- Officials from the State of Michigan departments most directly involved in dam safety: EGLE, the [Michigan] Department of Natural Resources (DNR), [the Michigan Department of Transportation] MDOT, and the Michigan Public Service Commission. (EGLE 2020)

Task Force Charge

The Dam Safety Task Force's charge is to review dam safety in Michigan and provide recommendations on policy, budgetary, legislative, and enforcement reforms to prevent a repeat of the May 2020 dam failures. Consequently, the task force reviewed the statutory structure, budget, and program of the Water Resources Division Dam Safety Program; the adequacy of Michigan's dam safety standards; the State of Michigan's overall approach to dam management; and the degree of investment needed in Michigan's dam infrastructure.

The Michigan Dam Safety Task Force Governance Procedures, approved by the task force at their first meeting on September 8, 2020, describes its duties under Appendix C, Article III. That charge is as follows:

The Task Force shall evaluate the statutory structure, budget, and program design of the Water Resources Division Dam Safety Program, the adequacy of Michigan's dam safety standards, and the level of investment needed in Michigan's dam infrastructure. Its work will culminate in a report to Governor Whitmer and the Legislature summarizing its findings and recommending regulatory, financial, and programmatic improvements to help ensure Michigan dams are appropriately maintained, operated, and overseen to protect Michigan residents and aquatic resources.

[3] Robert Dalton, William Bingham, Kenneth Smith, and Dennis Dickey. September 2020. *ASDSO Peer Review Report*. n.p.: Association of State Dam Safety Officials. https://www.michigan.gov/documents/egle/egle-edenville-MIPeerReviewReport_703962_7.pdf

The task force will report to Governor Whitmer and the Michigan Legislature on its findings and recommendations to "help ensure Michigan dams are appropriately maintained, operated, and overseen" to protect residents of the state and freshwater resources (EGLE 2020).

Chapter Two: Overview of Dam Safety in Michigan

Overview of the Michigan Dam Safety Program

The Michigan Dam Safety Program is housed in the Water Resources Division of EGLE with the purpose of reducing and preventing dam failures. The DSP is responsible for administering Part 315, Dam Safety, and Part 307, Inland Lake Levels, of the Natural Resources and Environmental Protection Act (NREPA) 451 of 1994, as amended. Part 315 regulates the construction, repair, reconstruction, maintenance, operation, and removal of dams over six feet in height and over five acres are impounded during the design flood. Part 307 provides for establishing and maintaining legal lake levels and establishing special assessment districts to fund construction, inspection, maintenance, and repair of dams. The DSP has been staffed by a supervisor of Hydrologic Studies and Dam Safety and two licensed professional engineers. A third staff engineer was added in December 2020. As of September 2020, the DSP operated on a total annual budget of $348,000. Funding comes from a memorandum of understanding (MOU) with the DNR for inspection of DNR dams, a grant from the Federal Emergency Management Administration (FEMA) National Dam Safety Program, the State of Michigan General Fund, and permit fees (DeVaun 2020). Program expenditures primarily cover staffing.

Responsibilities of the DSP related to administration of Part 315 include:

- Administrative and technical review of permit applications and issuance of permits for construction of a new dam and enlargement, repair, alteration, removal, abandonment and reconstruction of dams and impoundments
- Safety inspection and reporting for state- and some municipally owned dams at the owner's request
- Review of and response to consultant-generated inspection reports for private and other municipally owned dams
- Review of Emergency Action Plans for high and significant hazard potential dams
- Emergency response during dam incidents and failures
- Compliance and enforcement activities for deficient dams or dam owners
- Outreach and education related to safety and security at dams (1995b)

Responsibilities of the DSP related to administration of Part 307 include:

- Technical review of lake-level studies
- Coordination of EGLE and DNR comments and testimony for circuit court hearings related to establishment or amendment of legal lake levels and establishment of special assessment districts
- Review of and response to consultant-generated inspection reports for Part 307-regulated dams
- Engineering review and approval for: construction of a new dam; and enlargement, repair, alteration, removal, abandonment and reconstruction of dams and impoundments.
- Emergency response during dam incidents and failures
- Compliance and enforcement activities for deficient dams or dam owners (1995a)

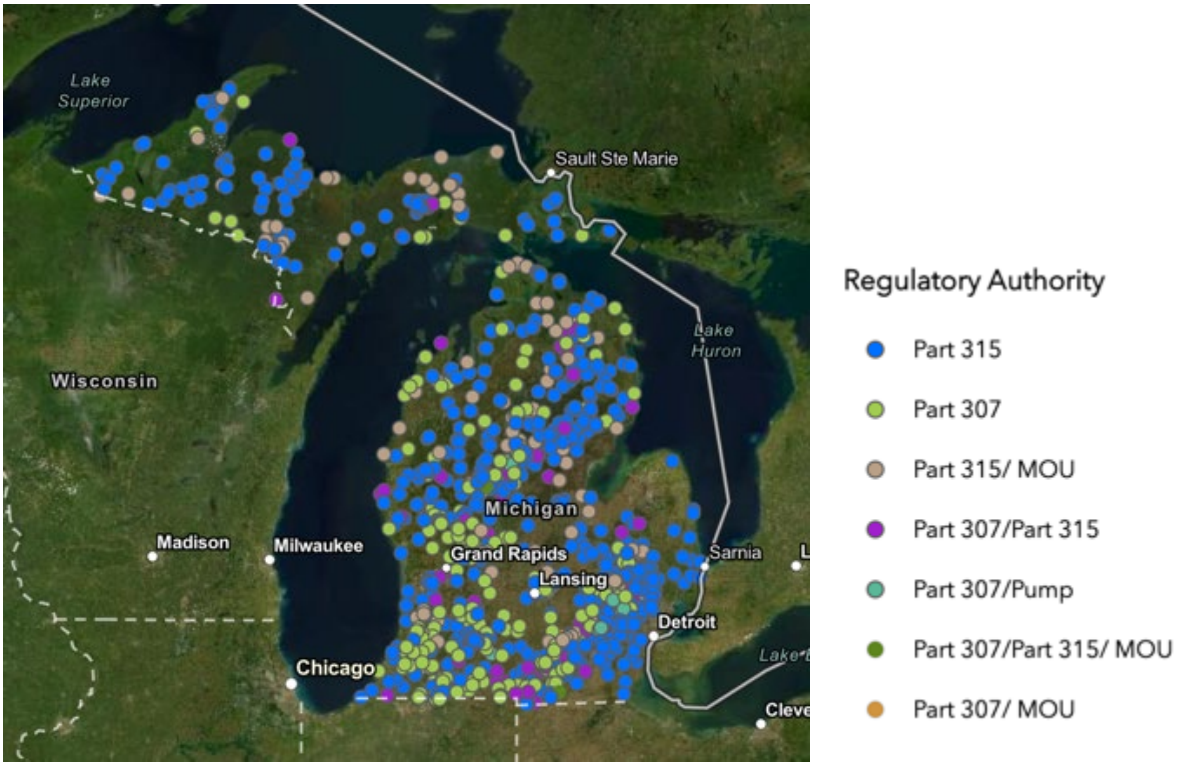
Overview of Dams in Michigan

Dams are in every county of the state. The rivers and waterways of Michigan host an estimated minimum of 2,600 dams, many of which were built decades ago for numerous purposes, including to supply power

and run mill operations. Of those dams, 825 are regulated under Part 315 and another 235 are regulated under Part 307. Information is lacking regarding the number, condition, and ownership of low-head barriers that are not regulated under Parts 307 and 315 (21st Century Infrastructure Commission 2016). There are also 92 hydroelectric dams in Michigan that are regulated by FERC under the Federal Power Act, but not under state regulation under Part 315. However, 11 of these 92 are regulated by Michigan under Part 307 (ASDSO 2020).

Each regulated dam is given a hazard potential classification by the DSP based on the potential downstream impacts caused by failure of the dam. High hazard potential dams are expected to result in loss of life and severe impacts to property. Significant hazard potential dams are expected to result in possible loss of life and significant impacts to property. Low hazard potential dams are expected to result in no loss of life and only minor impacts to property. There are 85 state-regulated (under Part 315), high hazard potential dams in Michigan, 131 significant hazard dams, and 843 low hazard dams. There also eight high hazard dams, one significant hazard dam, and two low hazard dams that are regulated by both the State (under Part 307) and FERC.

EXHIBIT 4. Dams Regulated by the State of Michigan



Source: www.arcgis.com/apps/webappviewer/index.html?id=f8c0637f34864bcbabb9c794fd8e452b

The frequency of dam inspection varies depending on dam hazard potential, with one inspection every three years for high, once every four years for significant, and once every five years for low. Only high and significant hazard potential dams require Emergency Action Plans. Of the 85 high hazard potential dams, 70 percent are in satisfactory condition, 22 percent are in fair condition, and 7 percent (or six dams) are in

poor condition. No dams are in unsatisfactory condition (DeVaun 2020). However, dam failures can result from episodic events that may not be indicated by routine safety inspections.

The DSP's responsibilities include inspection and enforcement for hundreds of dams. That means three staff, and only two until very recently, are expected to regulate up to $4 billion worth of infrastructure dispersed across 1,060 regulated and 1,600 or so unregulated facilities. Compare this workload and number of dams per staff in other states as illustrated in Exhibit 5.

EXHIBIT 5. Staffing Full-time Employees by Type and State (regulated dams only) [4]

	Number of FTEs (not funded by FEMA)			Number of FTEs (funded by FEMA)			Number of Dams per
State	Technical	Administrative	Other	Technical	Administrative	Other	Staff Member
Michigan	2.3	0.3	0	0.5	0	0	342
Illinois	4	0	0	0	0	0	491
Indiana	4.5	0	1.5	0	0	0	186
Minnesota	3	0.5	0.6	1	0	0.4	184
Ohio	10.25	0.5	0	1.5	0	0	121
Pennsylvania	23.5	1.5	0	0	0	0	135
Wisconsin	12	0	0.25	0	0	0.5	65

Source: Dalton et al. 2020.

The DSP reviews EAPs produced by dam owners and their consultants to make sure the documents contain the required elements: entities to notify in the event of an impending or actual dam failure, identification of downstream impacts, and specification of actions to be taken. The DSP provides suggestions to improve the effectiveness of EAPs.

DSP staff play a similar role as reviewers for inspection reports. Initial review of an inspection report and drafting of a response letter requires up to four hours. However, if an inspection report identifies significant deficiencies, then extensive planning and coordination with the dam owner typically follows. The DSP reviews 150 to 250 inspection reports each year, on average. Inspection reports are conducted by licensed professional engineers and provide evaluation of the structural condition, operational adequacy, and spillway capacity of the dam. The reports include recommendations when necessary for the structure to meet safety standards and assign an overall assessment of the structure's condition (DeVaun 2020).

A multilevel process with escalating enforcement action is available to the agency when deficiencies are identified in inspection reports or during site visits. Typically, deficiencies are identified in inspection reports along with recommended actions for remediation and a timeframe for implementing those actions. DSP works with the dam owner to resolve any identified issues. Should a dam owner fail to resolve any issues within the timeframe, then EGLE will consider the appropriate escalated enforcement action as listed below. First, a letter is sent to the dam owner directing them to submit a plan and

[4] The FTE estimates in this report were provided to task force members by EGLE during task force deliberations to provide preliminary estimates of the level of effort involved with the recommendations provided by the ASDSO and the task force.

timeframe for remedying identified deficiencies. If the dam owner takes no action, then EGLE may issue the following:

- A Notice of Violation and impose civil fines of up to $10,000 per day of violation
- An order under Section 31518 of Part 315 that requires the owner to take actions to alleviate conditions that endanger the dam
- An order under Section 31519 of Part 315 that requires the owner to limit operations of the dam or to remove the dam when significant damage to public health, safety, welfare, or natural resources is resulting from the operation, condition, or existence of the dam
- An emergency order under Section 31521 of Part 315 orders that the owner immediately repair, draw down, breach, or cease operation of the dam when the structure is in imminent danger of failure or threatening to cause harm to public health, safety, welfare, natural resources, or property (DeVaun 2020)

However, experience and past events show that a typical scenario does not always occur when the exigencies of limited staff time, high workloads, and uncooperative owners are introduced. In the event that a dam owner cannot or will not comply with an emergency order, then EGLE may need to take action to alleviate the danger and recoup its costs by suing the owner (DeVaun 2020).

Ninety-two dams in the state that produce hydroelectric power are regulated by FERC. In its role as an independent agency that regulates interstate transmission of electricity, natural gas, and oil, FERC's primary hydropower role is in relicensing existing hydroelectric dam projects (FERC n.d). The State of Michigan law does not currently provide for regulatory oversight over the safety of these dams under Part 315 unless their licenses are revoked or surrendered.

Chapter Three: Dam Safety Task Force Recommendations

The task force recommends the following improvements to the Michigan Dam Safety Program and associated administrative and funding structures. Recommendation categories are for convenience in this report and are not necessarily reflective of the groupings used for review by the task force. Rationale of the task force is indicated in the box below each recommendation category. Also included are implementation requirements for the category, such as changes to statute, regulation, and/or new funding mechanisms.

Funding for Dam Maintenance, Repair, and Removal

1. Develop a revolving loan program to provide financing and funding that prioritizes portfolio risk reduction. Initial scoring criteria shall prioritize, but not be limited to, high or significant hazard, publicly owned dams until additional portfolio analysis provides sufficient information for broader application. EGLE should solicit stakeholder input in establishing scoring criteria and shall reevaluate the scoring criteria based on portfolio risk metrics and stakeholder input at intervals of no less than five years. Establish a revolving fund capable of funding up to $20M per year over a 20-year period in loans for dam improvements, maintenance, and removals. Include a grant program of up to $80M to incent DSP priorities for risk reduction.

Rationale

Task force members identified the need for establishing a revolving loan program to prioritize actions at significant hazard and high hazard dams. The task force's goal is to minimize dam safety risk and provide viable avenues for dam rehabilitation, maintenance, or removal. Members also emphasized incorporating dam owner and expert input during scoring criteria development, while also recognizing a need to start with a "worst first" approach until additional information is available to improve scoring for strategic investment to reduce risk or otherwise adapt to any changes in program needs over time.

Implementation

- Recommendation 1 requires a legislative change and additional EGLE staffing to administer a revolving loan program.

2. The DSP should have ready access to financial resources to perform emergency response to imminent hazards presented by a dam, should the owner fail to do so in a timely manner. The State of Michigan and its employees should be immune from liability for a failure to mitigate a hazard at a dam, notwithstanding any provision of authority or financial means for it to do so.[5]
3. Create a dedicated dam safety emergency fund that does not revert to the General Fund at the end of budget cycles. This fund would be utilized by the DSP to mitigate any hazard present during a dam incident or emergency, should the owner fail to do so. Michigan should provide an initial allocation to establish this fund. Replenishment of this fund is addressed in Recommendations 4 and 5.

[5] (see Appendix D).

4. Create the Dam Safety Emergency Fund (see Recommendation 3) for the purposes of the DSP to mitigate any hazard present during a dam incident or emergency, should the owner fail to do so.[6]
5. Penalties and/or fines collected for dam safety violations should be directed to replenish the Dam Safety Emergency Fund. These funds should not be directed to EGLE staff but should be used to address emergency actions at dams.
6. Allocate $750,000 in annual grants for scoping and or design funding for dam rehabilitation or removal, similar to an impactful risk-reducing incentive program in Pennsylvania. The grants will be used as seed money and to match federal dollars.

Rationale

Task force members recommended the creation of an emergency fund to allow EGLE staff to address failing dams while also limiting EGLE's liabilities related to responding to imminent hazards when the owner is unwilling or unable to do so. The task force was intentional in designing an emergency fund that creates separate funding and financing mechanisms to promote responsible dam ownership and cannot revert to Michigan's General Fund, increasing and legitimizing DSP's emergency response measures. Finally, members recommended a grant program to enable dam owners to develop necessary preliminary engineering and cost estimates needed to obtain additional funding to implement dam removal and restoration projects. Being able to access grant dollars to scope and design a project is critically important to a majority of dam owners who must solicit qualified consultants to conduct the necessary preliminary engineering.

Implementation

- Recommendations 2 through 6 would require legislative action to create the fund. Recommendations 2 through 6 would require approximately 1.0 FTE in the DSP and funding for creation of the fund.[7]

7. Determine additional funding and financing amounts and mechanisms to substantially enhance dam removal. EGLE should solicit stakeholder input in establishing scoring criteria that consider both portfolio risk and benefits to the public trust and shall reevaluate the scoring criteria based on portfolio risk metrics, benefits to the public trust, and stakeholder input at intervals of no less than five years.

[6] Possible legislative framework was developed and approved within task force committees, but was not explicitly presented for full task force approval (see Appendix D).

[7] Although not officially approved by the task force, the FTE estimates in this report were provided to the task force members by EGLE during task force deliberations to provide approximate level of effort involved with the recommendations provided by the ASDSO and the task force.

Rationale

To address the lack of dedicated funding sources for dam removal in Michigan and at sufficient levels, task force members recommended that EGLE staff develop an efficient dam-removal process, complete with funding mechanisms. Selective dam removal can reduce public safety hazards, improve the natural flow of a river, alleviate ecological impairment caused by dams, and avert the continued decline of at-risk dams when dam owners cannot or will not make the necessary financial commitment or take prompt action to address languishing dams.

Implementation

- This recommendation would require legislative action to establish grant funding for dam removals. This recommendation would require additional EGLE staffing (approximately 0.25 FTE) in the DSP for involvement on grant committees, assisting grant applicants, etc.

Legislation and Authority

8. Revise or adopt laws and/or rules to:
    a. Provide a limited liability disclaimer statement for the state agencies' personnel
    b. Require owners to maintain dam operation, monitoring, and maintenance records
    c. Require construction inspection, at any point during construction, by DSP staff and the owner's design engineer
    d. Require the owner to submit a first-filling plan, including a monitoring schedule developed by the design engineer, for DSP review and approval
    e. Require periodic exercising of EAPs as discussed further in Recommendation 80
    f. Meet FEMA's Model Dam Safety Program (MDSP) recommendations for design floods
    g. Meet MDSP recommendations for inspection frequency as discussed further in Recommendation 22
9. Engage with FERC, the ASDSO, and other stakeholder groups to further explore the benefits and drawbacks of co-regulating hydropower dams compared with other options for information sharing related to hydropower dams.[8]
10. To provide for future inflation, the value of any fees, fines, and penalties related to dam safety should be established in the regulations with the concurrence of the proper EGLE oversight entity.
11. Refine current Michigan statute definition of high hazard dam classification to include "significant natural resource damage."
12. Provide the ability to initiate an emergency order to draw down dangerous dams (Part 307). Allow for an emergency order by the dam operator or EGLE to allow variance from a court-ordered lake level, in effect until the safety risk stated in the order is addressed (or remediated or ameliorated).
13. Provide the ability to initiate an emergency order to draw down an impoundment that has a court-ordered lake level as needed to preempt or otherwise mitigate flooding, heavy flows, or other causes of existing or anticipated high water. Allow for an emergency order by the dam operator to be declared and in effect for up to 14 days to allow variance from a court-ordered lake level.

[8] Co-regulation or requiring FERC dam owners to provide information to EGLE would require legislative change. The ASDSO is hearing the same concern from other states, is willing to take on the issue, and may even develop standards for states to adopt.

14. Propose three amendments related to zoning act and governing law for real estate transactions to address land-use issues:
    a. The local entity with zoning approval authority should be required to formally request comment from the dam owner related to hazard risk for all proposed development or redevelopment in the inundation zone.
    b. The local entity with zoning approval authority must receive a statement from the owner of all proposed development or redevelopment in the inundation zone. The statement must acknowledge that the owner has reviewed the EAP and inundation zone and understands the added risk to the subject parcel.
    c. All real estate transactions within an inundation zone must include the purchaser's written acknowledgement that they are aware the property is in an inundation zone and that they have reviewed a map showing the parcel's location in the inundation zone.
15. EGLE should work with the ASDSO on the FERC transfer issue to identify other states interested in formalizing an information transfer process, then work (as needed) with Michigan's executive and/or legislative branches and with other states to seek federal legislation to address:
    a. Any transfer of FERC's regulatory authority shall require written agreement from the receiving regulatory agency. Such agreement shall include full disclosure of any outstanding deficiencies or regulatory concerns that FERC has identified.
    b. For any and all pending transfers of regulatory authority for any dam, FERC shall furnish all requested and/or relevant information to the receiving agency before seeking written agreement for regulatory transfer.
16. Michigan law should be amended to require that an inventory of information provided to FERC be provided to the state's DSP by dam owners. In addition, any specific information that is provided to the federal government under a FERC license should also be provided to the state's DSP upon request. Finally, EGLE should work with the ASDSO and other states to develop a model MOU between states and the federal government. Establishing an MOU protects the integrity of sensitive information while providing state dam safety programs with the information necessary to carry out their responsibilities to protect public safety and welfare.
17. Modify the definition of "dam" in Part 315 to also include dams that are six feet or higher and that have, or are proposed to have, an impounding capacity at design flood elevation of 15 acre-feet or more.
18. Modify the definition of "abandonment" of a dam in Part 315 to clarify that the dam owner has to permanently eliminate all hazards or potential hazards associated with a dam before discontinuing maintenance or operation of a dam.
    a. Require dam owners to submit a decommissioning/abandonment plan, to be submitted for review and approval by EGLE

Rationale

Task force members agreed with Recommendations 8, 9, and 10, which were put forward originally by the ASDSO; the rest were added by the task force. Members advocated for EGLE/DSP to have clarified and strengthened authority, specifically related to the submission of required plans and documents and emergency actions such as draw-down orders. The task force also recommended new legislation to address common land-use issues and ensure accountability on the part of dam owners. Lastly, recommendations related to FERC support greater communication and transparency in sharing relevant dam structure information.

Implementation

- Recommendations 8 through 18 require legislative and rule changes.
- Recommendations 8 through 18 require additional funding in the form of approximately 0.75 FTE in the DSP to manage additional responsibilities.

Improving Dam Safety

19. Require licenses of finite term for dams to operate and maintain these dams in a safe condition and to report on maintenance, operation, and engineering investigations in the regular Inspection Report submitted at the interval specified per hazard potential classification (compared with the current requirements of Section 324.31518 of NREPA).[9] A dam must be removed, and the site restored, at the end of the license term unless the dam is issued a new license.
20. Require owners of all dams to provide proof of financial responsibility or security to ensure the continued safe operation and maintenance of their dam, and removal and site restoration at the end of the current license term unless the dam is issued a new license. This would also ensure that funding is available for the DSP to mitigate any hazard presented during a dam incident or emergency, should the owner fail to do so.[10]
21. Require all dam owners to maintain insurance sufficient to cover any and all liabilities that would result from catastrophic failure of the dam.

Rationale

To properly regulate the full portfolio of Michigan dams, including their safety and impacts on the public trust, and to address nonresponsive dam owners and manage at-risk dams before they necessitate emergency response, task force members crafted recommendations addressing dam licensing and ownership. Requiring finite-term licenses establishes de facto inspection schedules and ensures that dams will be accounted for and not fall through the cracks created by permanent licensure. Proof of financial responsibility similarly holds dam owners accountable and confirms that unlicensed, unfit dams will be removed following loss of licensure.

[9] Possible legislative framework was developed and approved within task force committees, but was not explicitly presented for task force approval (see Appendix D).

[10] Possible legislative framework was developed and approved within task force committees, but was not explicitly presented for task force approval (see Appendix D).

Task force members also discussed the possibility that implementation of 20 and 21 might benefit from consideration of an option to buy into a state-initiated or sponsored insurance pool. Pennsylvania was cited as a model and should be reviewed more closely as Recommendations 19 to 21 are implemented.

Implementation

- Recommendations 19, 20, and 21 would require legislative and rule changes.
- Recommendations 19 and 20 require additional funding in the form of approximately 0.5 FTE in the DSP.

22. Develop a more inclusive list of the analyses and documents to be provided by the dam owner (regardless of who the applicant is) or the dam owner's engineer to ensure the dam will be designed, operated, and maintained in a safe manner.
23. Develop requirements for the dam owner of significant or low hazard dams to evaluate changes in risk and address the potential change in hazard classification and the related changes to the dam that will be required as a result of the change in hazard classification (related to Recommendation 42).[11]
24. Provide statutory requirements for operation and maintenance manuals.[12]

Rationale

Task force members agreed with the ASDSO recommendations highlighting the need for greater consistency and clarity related to the dam permit application process. Recommendation 23 focuses on alerting dam owners to evaluate their dam in relation to changes in hazard classification.

Implementation

- Recommendation 22, 23, and 24 require legislative and rule changes.
- Recommendations 22, 23, and 24 require additional funding in the form of approximately 0.5 FTE during the first year of implementation only.

25. Consider periodically (e.g., every four years) awarding an engineering services contract to a qualified consulting firm to be readily available to augment DSP staff when needed. The engineering services contract could be used for:
    a. A sudden increase in staff workload due to an event or program need
    b. A complex design review in connection with a new dam or major rehabilitation project
    c. Assistance in accomplishing dam inspections in a timely and efficient manner
    d. Assistance in performing construction assurance reviews for complex projects or dam removal projects
    e. Assistance in performing detailed ten-year reviews of dam reevaluations

[11] Possible legislative framework was developed and approved within task force committees, but was not explicitly presented for task force approval (see Appendix E).

[12] Possible legislative framework was developed and approved within task force committees, but was not explicitly presented for task force approval (see Appendix E).

26. Require the owner of proposed complex projects to provide an independent, DSP-approved expert to affirm the owner's design.
27. Develop a standard-format DSP engineering report for the construction, modification, rehabilitation, operation, and maintenance of dams in Michigan to be completed by the reviewing dam safety engineer.

Rationale

Recommendations 25, 26, and 27 aim to provide greater quality, consistency, and clarity to dam engineering plan review(s). These types of practices are standard for agencies and critically important for success in recordkeeping related to design review.

Implementation

- With sufficient staff and contract funding, Recommendations 25 and 27 can be implemented by EGLE/DSP staff.
- Recommendation 26 requires a rule change.

28. Consider adopting a requirement that high and significant hazard dam owners be required to have periodic independent comprehensive reviews conducted by a qualified team of people with appropriate technical expertise, experience, and qualifications to cover all aspects of original design, construction, maintenance, repair, and probable failure modes of the assets under consideration for all features of their dam. These requirements should be developed in detail with relevant stakeholders and weigh the burden placed on the regulated community in tandem with public safety. Inspections should be done on a frequency that aligns with other reporting and inspection requirements. A maximum ten-year periodic cycle should be considered. The first round of these detailed reviews should be led by DSP staff with support from outside consultants. Reporting requirements for specific dams should be evenly distributed over the cycle to properly allocate the workload for the total portfolio of dams.
29. Amend inspection frequencies to "annual" for high hazard dams and "biennial" for significant hazard dams.
30. Establish a construction inspection requirement for the design engineer and for DSP staff.
31. Develop an inspection checklist and/or standard inspection report form to assist dam owners in providing consistent inspection documentation.
32. DSP staff should conduct frequent inspections during dam construction, alteration, repair, and the first filling.

Rationale

Task force members amended and strengthened Recommendation 28 from its original ASDSO iteration to acknowledge the burden now placed on regulated dams while recognizing the need to protect public safety. They also added that the State should take a leadership role in the first round of inspections to accelerate the understanding and prioritization of system risks, provide greater uniformity of reports, set the standard for future owner-funded reports, and provide better quality control (by using State-selected consultants). Recommendations 29–32 further clarify inspection schedules and related requirements.

Implementation

- Recommendation 28 and 29 require legislative and rule changes.
- Recommendations 30, 31, and 32 require implementation by EGLE/DSP staff.
- Recommendations 28 through 32 require additional funding or approximately 2.5 FTE in the DSP.

33. Section 324.31518 of NREPA should be amended to require surveillance and monitoring plans for all high and significant hazard dams. Amendments to the statute and rules should include the following:
    a. On a form or template approved by EGLE, an owner shall prepare, and keep current, a surveillance and monitoring plan for all high and significant hazard dams.
    b. A dam owner shall submit surveillance and monitoring plans to the department.
    c. Surveillance and monitoring plans shall be based on sound engineering judgement about information needed to evaluate probable failure modes of the dam, as determined by a qualified registered professional engineer hired by the owner, in collaboration with the department.
    d. Inspection reports should include an assessment of surveillance and monitoring data since the last inspection cycle. Every two inspection cycles, the surveillance and monitoring plans shall be reviewed and commented on.
    e. Inspection report requirements under Administrative Rule 281.1310 should be updated to require an evaluation of recent surveillance and monitoring data and an evaluation of the surveillance and monitoring plan, as applicable per statute.
    f. Consistent with Section 324.31520 of NREPA, EGLE should be notified within 24 hours of concerning findings.
34. As part of Operations and Maintenance and Emergency Action Plans, in river systems with multiple dams, owners should be required to coordinate to develop system-wide notifications when there are deviations from normal operations or emergency conditions that result in changes in flow.

Rationale

The task force discussed that DSP staff should have the authority, discretion, and resources to require these elements for state-regulated dams. These recommendations should be integrated into existing inspection and reporting requirements.

Implementation

- Recommendations 33 and 34 would require legislative and rule changes.
- Recommendations 33 and 34 would require additional funding of approximately 0.5 FTE in the DSP.

Compliance and Enforcement

35. Require senior management to prioritize portfolio-wide compliance and enforcement.
36. Develop a compliance and enforcement priority list that utilizes a risk-based approach that takes into consideration hazard potential and the conditions of dams to rank the most problematic dams initially identified for focused follow up.

37. Conduct a monthly compliance and enforcement triage meeting that focuses specifically on dams, including senior management, DSP staff, a dedicated dam safety enforcement officer (see Recommendation 49), and legal counsel, for the purpose of creating, following up on, and tracking dam-specific strategies for the above chosen most problematic structures. Include key performance metrics to benchmark, set goals, and measure performance toward compliance and enforcement goals.
38. Recognizing that EGLE is currently in the process of updating policies for violation management, including standardized pathways for progressive enforcement, EGLE should develop or adapt these policies to apply to dams. For dams, such policies should establish clear timelines for actions to alleviate significant risks posed for high and significant hazard dams.
39. Utilize water-level lowering orders as a compliance tool, as well as in dam hazard incidents, to reduce the safety risks posed by long unmaintained, deteriorating dams and unresponsive dam owners. Provide authority to EGLE to issue water-level lowering order under Part 307.
40. Create and implement Dam Safety 101 Enforcement Cross Training. This should include training new DSP staff within a reasonable time upon hiring and annual refresher courses.

Rationale

Task force members amended half of the ASDSO's recommendations presented and ultimately supported them in favor of the ASDSO's progressive enforcement approach. Task force members agreed that risk-based criteria should identify the most problematic dams to focus DSP resources. Additionally, task force members acknowledged that EGLE is already pursuing Recommendation 38 in a larger context and allowed that it should be adjusted accordingly to address clear timelines. Lastly, Recommendation 40 should be further revised by the DSP to clarify focus and timing.

Implementation

- Recommendations 35 to 40 require implementation by EGLE/DSP staff.
- Recommendations 35 to 40 require additional funding in the form of approximately 2.5 FTE.

Emergency Response

41. A general statewide dam EAP should be developed that is designed specifically for dam hazard emergencies, coordinated with the EGLE emergency response manager; the DSP; and representatives of state, county, and local emergency response offices. This plan should clearly identify the responsibilities of each entity should a dam emergency occur. The plan should clarify roles and responsibilities, and the legal authorities of all parties, especially in instances when there is an absentee dam owner, when dam owners lack the resources to act, or when there are immediate risks. These elements should be clarified in consultation with relevant stakeholders.
42. EAPs should be annually checked for accurate information in the notification chart and the chart should be updated as necessary. The dam owner should provide updated information to the DSP and the local emergency management agency in a timely manner or should notify these agencies that no changes have been made.

43. EAPs should be substantively reviewed as part of every dam safety inspection and updated as required. Recent EAP updates and new recommendations should be identified in the Safety Inspection Report, and the updated EAP should be provided to the DSP and to the local emergency management agency in a timely manner following submission of the Report.
44. The State should develop a standardized EAP format that includes, but is not limited to:

    a. Description of circumstances that would require activation of the EAP
    b. Significant changes to the condition of a dam, particularly modification that could change hazard potential
    c. Threshold readings of monitoring equipment requiring EAP activation
    d. Population and facilities at risk
    e. Inundation maps

As an alternative, the State of Michigan could require the use of an existing widely accepted standardized EAP format to ensure consistency from one EAP to another.

45. Require testing (e.g., orientation seminar, drill, tabletop exercise, functional exercise, or full-scale exercise) as agreed upon by the county or local emergency management office on a frequency concurrent with every other required dam safety inspection.
46. The DSP should implement all recommendations from the Dam Safety Task Force in consultation and partnership with stakeholders.
47. Consider having available emergency response kits, owned and managed by EGLE, to draw down impoundments without a bottom drain by siphoning water over the dam.

Rationale

The task force amended most of the recommendations presented by the ASDSO in this category and added new recommendations. Task force members aimed to prevent local emergency managers from shouldering too much of the burden of developing EAPs; they noted the State should provide guidelines and resources to support the development of EAPs on the local level.

Implementation

- Recommendations 42, 43, and 44 require legislative and rule changes.
- Recommendations41, 45, 46, and 47 require implementation by EGLE/DSP staff.
- Recommendations 41 to 47 require additional funding in the form of approximately 0.75 FTE.

Program Management, Funding, and Budgeting

48. Adopt a risk-based approach to manage the DSP using a portfolio risk assessment program (e.g., one available from the ASDSO) of the inventory of regulated dams, beginning with high hazard dams, to allocate human and financial resources for the greatest dam safety return.
49. Encourage Michigan dam-owner agencies to lead by example regarding responsible dam ownership. For example:

    a. Conduct an inventory-wide assessment of state-owned dams

b. Set financial and project goals to providing adequate yearly routine budget resources and yearly lifecycle budget resources
c. Use budget resources to perform deferred maintenance and rehabilitate any safety deficiencies

50. Develop a state dams database and inventory framework that links to the Michigan Inventory of Dams (MID); allows all Michigan dams to be identified and entered; and is capable of housing additional data needed to evaluate, assess, prioritize, and facilitate actions for all dams in the state.

Rationale

Task force members agreed with the recommendations presented by the ASDSO, supporting a proactive, risk-based approach to managing and inventorying the DSP in Recommendations 48 and 49. Recommendation 50 addresses a need to promote a centralized, accessible database for information on all Michigan dams.

Implementation

- Recommendations 48, 49, and 50 require implementation by EGLE/DSP staff.
- Recommendations 48, 49, and 50 require additional funding in the form of approximately 2.0 FTE and funding for development and maintenance of the database.

The task force also supported and recommended the below list of actions, to be adopted and/or revised as necessary.

51. EGLE adds "public safety" to its mission statement.
52. The DSP manager position description should be revised to include:

a. Technical experience in the design, construction, operation, and maintenance of dams
b. Overall program management
c. Mentoring subordinate staff
d. Developing a portfolio risk assessment of regulated dams to determine the DSP's priorities
e. Prepare a DSP Annual Report for executive management
f. Conduct staff performance reviews
g. Administer a Dam Safety Awareness Program within the department and for outside stakeholders (see Recommendations 84 and 85)
h. Develop an annual budget request for the DSP
i. Track required inspections
j. Plan and track training for staff
k. Ensure enforcement actions are performed for DSP compliance
l. Perform quality assurance (QA) and assure quality control (QC) is practiced
m. Develop relationships with dam safety champions within EGLE and with outside stakeholders such as owners, consultants, emergency management officials, county drain commissions, floodplain managers, legislators, or legislative committees (see Recommendation 84)
n. Develop Dam Safety Policies and Procedures Manual
o. Lead Dam Safety Initiatives to enhance the protection of the public, the environment, and property

p. Participate in professional societies such as the ASDSO to remain current and maintain professional development credits
q. Develop a recommendation for a revolving loan program to provide funding for rehabilitation of high hazard, publicly owned dams

53. Schedule routine, periodic DSP meetings to discuss program issues.
54. Provide a DSP Annual Report to convey the importance and benefits of the program to executive management.
55. Develop a formal QA/QC program to document QA/QC practice for all work products prepared by the DSP such as inspection reports; design reviews; and engineering studies, calculations, and reports. For permit application reviews, a checklist should be developed to assure consistency in the reviews conducted by various staff.
56. Develop a DSP policy and procedures manual to provide for consistent quality of performance. This recommendation should include creation of an objective, clear-cut process for prioritizing dam safety/infrastructure risks, as well as a consistent, acceptable timeline for addressing potential issues, including progressive compliance and enforcement procedures for noncompliant dam owners.
57. Obtain proprietary software in specific engineering fields such as hydraulics, geotechnical, structural, and computer-aided design (CAD) as the dam engineering staff identify the specific need.
58. Establish the DSP in a standalone unit under the Field Operations Support Section.
59. Based on ASDSO findings regarding comparable DSPs, the Michigan DSP staffing should consist of a dedicated DSP unit manager, three senior dam safety engineers, three junior dam safety engineers, one engineering technician (alternatively an additional junior dam safety engineer), and one clerical support person. A proposed organization chart reflecting this recommendation is contained in Appendix K of the ASDSO's Michigan DSP Peer Review Report.
60. Dedicate two qualified Dam Safety Enforcement Officers for the DSP.
61. Restrict the use of FEMA Dam Safety Grant funds solely for DSP enhancements, not DSP salaries.
62. Consider detailed input from DSP when establishing the budget.
63. The DSP should consider developing its own typical permit review documents and procedures, which can reference federal documents. The dam owner's engineer can then determine the design method for the dam and will know the project review process so they can coordinate with the DSP prior to application submission to achieve the most expeditious review.
64. The DSP should consider developing its own set of safety policies for work in the field and establish the minimum number of people and the equipment associated with various tasks. Walking on riprap and some portions of spillways can easily lead to falls that may be in remote locations. Confined space locations and poorly maintained steps in drop spillways may require additional equipment and personnel for access.
65. Executive management should develop a DSP succession plan to provide for continuity of practice.
66. Develop an annual training plan and budget to ensure technical and professional growth of staff.
67. Develop a technical engineering career path for several technical/engineering positions.
68. Revise the qualifications of the DSP manager to include significant experience in design, construction, operation, and maintenance of dams.
69. Develop a practice to plan and track professional development training and continuing education of staff. The plan should provide for education to fill gaps in expertise and enhance the overall capabilities of the DSP.
70. Follow reorganization as recommended in Recommendations 47, 48, and 49 to develop work plans to assign staff to the most appropriate projects and provide varied opportunities for staff.

71. Develop a professional development structure for the DSP that provides a defined career path and opportunity for advancement without leaving the DSP for professional advancement (Recommendation 48). A defined career path would also reduce staff turnover.
72. Develop a mentoring program for all staff within the DSP.
73. Encourage employees to volunteer for technical committees and organizations and participate in professional organizations and technical conferences. Such participation should be considered when developing staff workload planning.
74. Add missing parameters from the National Inventory of Dams (NID) to the MID.
75. Add tracking capability to the MID for such things as due dates for inspection reports, responses to notices of violation/orders to comply and EAP updates, and to generate reminders of these due dates for staff.
76. The DSP should determine the most efficient method of storing electronic files (cloud-based versus department server) and provide funds to scan pre-2014 documents for each dam.
77. The DSP should consider storing all paper copies of EAPs in one area to avoid confusion during emergency events.
78. The DSP is encouraged to continue their efforts towards moving their inventory to a geographic information system–(GIS) based data system.
79. Maintain competitive compensation and benefits to sustain the quality of staff in the DSP.
80. Require qualification-based selection of design engineering services for permit applications for construction of a new dam, enlargement or impoundment of a dam, major repair or rehabilitation of an existing dam, removal of a dam, or reconstruction of a failed dam.

Rationale

These Program Management recommendations from the ASDSO were identified as tasks that were within EGLE's purview and supported by task force members.

Implementation

- Recommendations 51–78 and 80 require implementation by EGLE/DSP staff.
- Recommendation 79 requires action by the State of Michigan Civil Service Commission.
- After initial implementation, these recommendations would require additional funding in the form of approximately 0.2 FTE in the DSP for additional duties.
- Recommendation 66 also requires additional funding to replace grant funds and Recommendations 57, 74, 75, 76, and 78 require IT funding.

Safety and Security at Dams

81. Develop and implement programs related to security, public safety, and public awareness at dams, in accordance with industry standards and available resources. These efforts should be implemented in collaboration with local, state, and federal agencies; tribes; and national organizations. Programs should include provisions for evaluation, identification, prioritization, exercising of plans, and any necessary corrective actions. Requirements for development, implementation, and exercising of security and/or safety plans will require legislative and rule changes, as there are currently no provisions for these activities in the Natural Resources and Environmental Protection Act, Public Act 451 of 1994—Part 315 or its administrative rules.

82. A dam safety culture can only grow if there is an educated and informed public; therefore, it is recommended that a voluntary Safety at Dams Initiative Team (could be part of a Silver Jackets initiative, a collaborative team comprised of experts from state, federal, tribal, and local agencies focused on solutions to a common problem) be formed with:

    a. Multidisciplined members who have strong leadership and collaborative talents, public education skills (both youth and adult), graphic design skills, and database skills
    b. Multiple stakeholder state agencies and divisions, tribal governments, law enforcement, emergency managers, safety incident first responders, watershed and river associations, recreation interest groups, and academia
    c. The team should first focus on:

        - Developing and providing outreach and education initiatives
        - Developing recommended uniform and standardized voluntary signage templates
        - Conducting field-verified inventory and ownership research and risk prioritization in partnership with conservation officers and county surveyors
        - Enhancing the online interactive geographic information system (GIS) map with dam locations and resources, such as public access points
        - Finding local champions for safety at dams to advance education and voluntary removal initiatives

Rationale

Recommendations 81 and 82 address a national movement to ensure safety at dams for recreation and security purposes, specifically in relation to the risk of dam failure. Task force members discussed creating uniform language across the state to highlight dam-safety protocol for the public; only federally regulated signage is required at this time.

Implementation

- Recommendation 81 requires legislative and rule changes.
- Recommendation 82 requires EGLE/DSP to form a Safety at Dams Initiative Team.
- Recommendations 81 and 82 would require additional funding of approximately 0.5 FTE in the DSP.

Outreach and Awareness

83. Add a clear icon link to the DSP (from the EGLE's main website page).
84. Provide Dam Safety 101 Awareness Seminars every two years and as needed to other appropriate EGLE support staff, public information officers, attorneys, or specific units and include sections outlining the DSP's mission to protect the environment and public safety. Such groups may include Water Resources Division (WRD) District Office resource staff; other WRD resource programs; and Remediation and Development Division, Materials Management Division, and Oil, Gas and Minerals Division programs that may be involved with dam related projects as well as any EGLE staff looking for cross-training opportunities.

85. Develop a proactive written outreach and awareness plan to provide periodic external dam safety awareness seminars and outreach for a broad range of stakeholders to develop advocates and grow a dam safety culture in Michigan, possibly including:

    a. County drain commissioners
    b. County emergency management officials
    c. Dam owners
    d. Floodplain managers and residents
    e. Legislators or legislative committees
    f. Consulting firms
    g. Michigan Department of Natural Resources (and other state agencies, as appropriate)
    h. Tribal leaders

86. Engage consulting firms with voluntary professional development opportunities, such as serving on event planning teams and as speakers for locally delivered dam safety awareness seminars.

Rationale

Task force members agreed with the ASDSO's original recommendations but found it necessary to make some small amendments. Task force members added clarifying language for seminar frequency. Regarding written outreach and awareness plans, task force members focused on inclusion of diverse stakeholder groups.

Implementation

- All recommendations require implementation by EGLE/DSP staff.
- Recommendations 83 through 86 would require additional funding in the form of approximately 0.2 FTE.

Conclusion

Michigan's aging dam inventory grew over several generations and embedded in them are the science and engineering of their times. Over 80 percent of the system is more than 50 years old. Spillway capacity is often below projected storm flows, which can lead to dam failure. The lack of funding puts a freeze on moving forward to address serious problems with many dams.

The Dam Safety Task Force urges Governor Whitmer, her administration, and the Michigan Legislature to accept these recommendations, which provide an array of policy objectives along with a variety of implementation strategies. The recommendations make important improvements to advance the following goals:

- Reduce risk of dam failure
- Provide a mechanism for the removal of unneeded, unnecessary, and abandoned dams
- Provide financing for dam repair and maintenance
- Place clear responsibility for dam maintenance on the dam owners
- Provide adequate authority and resources for the state dam safety program
- Address emergency preparedness in case of failure
- Increase public awareness of dams leading to greater safety and security

Resources required to implement the suggested reforms have been quantified with a focus on staffing needs and major expenses. Although outside the charge and expertise of the task force, the staffing estimates in this report were provided by EGLE as requested during task force deliberations to provide approximate level of effort involved with the recommendations provided. EGLE also intends to develop a plan for moving forward with the legislative changes and budget needs and engage stakeholders in that process.

EXHIBIT 6. Major Funding Needs

Funding Areas	Annual Investment	20-year Investment
Revolving loan program	$20M	$400M
Grants for scoping/design funding for dam rehabilitation and removal	$750K	$15M
Dam safety emergency fund	$5M (initial five-year investment)	
Staffing costs estimate	12.65 FTE	
DSP training plan and budget development	$20K	$400K
IT funding	$50K	$1M

These recommendations encourage responsible dam ownership, lead to a better-informed public, and give the DSP the tools to regulate dams more effectively. The changes move the State of Michigan into the league of best practices, which includes a number of states and also agencies like FERC. However, these recommendations take an important step beyond the practices of FERC by including funding for revolving loans and grants for dam upkeep and removal. Also, better public awareness helps foster the partnering needed for long-term solutions, and the proposed time-limited licensing structure mitigates against viewing dams as an unchanging fixture that can be ignored.

The consensus of task force members is that there is a pressing need for action. The Michigan Dam Safety Task Force therefore urges Governor Whitmer, her administration, and the Michigan Legislature take meaningful action to advance the recommendations of this task force. The potential human and economic costs of business as usual are too great to ignore. Continuing the current path of underinvestment is a violation of the public trust, a path that leads to tragic losses of property and life and is ultimately more expensive to Michiganders.

Michigan's deteriorating dams can no longer be ignored, or investments put off to another day or legislative session or administration. While it is never possible to stop all disasters, the good news is that there is a way forward to bring Michigan's dams up to best practices for the benefit of the whole state.

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Appendices

Appendix A: Definitions/Terms

Unless otherwise noted, all definitions have been taken from the Natural Resources and Environmental Protection Act 451 of 1994 and are provided along with the defining section.

- **Abandonment:** "An affirmative act on the part of an owner to discontinue maintenance or operation of a dam." (Sec. 31502, Part 315)
- **Dam:** "An artificial barrier, including dikes, embankments, and appurtenant works, that impounds, diverts, or is designed to impound or divert water or a combination of water and any other liquid or material in the water; that is or will be when completed 6 feet or more in height; and that has or will have an impounding capacity at design flood elevation of 5 surface acres or more." (Sec. 31502, Part 315)
- **Emergency action plan (EAP):** "A plan developed by the owner that establishes procedures for notification of the department, public off-site authorities, and other agencies of the emergency actions to be taken prior to and following an impending or actual failure of a dam." (Sec. 31503, Part 315)
- **Fair:** "No existing dam safety deficiencies are recognized for normal loading conditions. Rare or extreme hydrologic and/or seismic events may result in a dam safety deficiency." (FEMA 2004)
- **Failure:** "An incident resulting in an unplanned or uncontrolled release of water from a dam." (Sec. 31503, Part 315)
- **Hazard potential classification:** "A reference to the potential for loss of life, property damage, and environmental damage in the area downstream of a dam in the event of failure of the dam or appurtenant works." (Sec. 31503, Part 315)
- **High hazard potential dam:** "A dam located in an area where a failure may cause serious damage to inhabited homes, agricultural buildings, campgrounds, recreational facilities, industrial or commercial buildings, public utilities, main highways, or class I carrier railroads, or where environmental degradation would be significant, or where danger to individuals exists with the potential for loss of life." (Sec. 31503, Part 315)
- **Impoundment:** "The water held back by a dam." (Sec. 31504, Part 315)
- **Low hazard potential dam:** "A dam located in an area where failure may cause damage limited to agriculture, uninhabited buildings, structures, or township or county roads, where environmental degradation would be minimal, and where danger to individuals is slight or nonexistent." (Sec. 31504, Part 315)
- **Maintenance:** "The upkeep of a dam and its appurtenant works but does not include alterations or repairs." (Sec. 31504, Part 315)
- **Not rated:** "The dam has not been inspected, is not under State jurisdiction, or has been inspected but, for whatever reason, has not been rated." (FEMA 2004)
- **Owner:** "A person who owns, leases, controls, operates, maintains, manages, or proposes to construct a dam." (Sec. 31504, Part 315)
- **Poor:** "A dam safety deficiency is recognized for loading conditions that may realistically occur. Remedial action or further investigations and studies are necessary to determine risk." (FEMA 2004)

- **Satisfactory:** "No existing or potential dam safety deficiencies are recognized. Acceptable performance is expected under all loading conditions." (FEMA 2004)
- **Significant hazard potential dam:** "A dam located in an area where its failure may cause damage limited to isolated inhabited homes, agricultural buildings, structures, secondary highways, short line railroads, or public utilities, where environmental degradation may be significant, or where danger to individuals exists." (Sec. 31505, Part 315)
- **Spillway:** "A waterway in or about a dam designed for the discharge of water." (Sec. 31505, Part 315)
- **Spillway capacity:** "The maximum rate of discharge that will pass through a spillway at design flood elevation." (Sec. 31505, Part 315)
- **Unsatisfactory:** "A dam safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution." (FEMA 2004)

Appendix B: Public Comment

The Dam Safety Task Force convened seven public meetings and heard public comments at each meeting. Members of the public provided comments on multiple topics, including hazard classification amendments, beaver dam impoundments, dam removal, lakes' ecosystems surrounding dams, dam infrastructure monitoring, financial liability, high hazard dam ownership, and tailings dams.

Two public comments were received at the September 8, 2020, meeting thanking the task force for their work.

No comments were received at the October 1, 2020, meeting.

During the October 21, 2020, meeting, a member of the public suggested adding complexity classifications to the list of high hazard dams to identify what element designates their high hazard status. Another member of the public stated that dam safety regulators should ensure public safety is protected regardless of ownership. Someone else requested that the task force consider the existence and threat of large beaver dam impoundments in rural areas of Michigan. Another contributor supported task force recommendations to streamline the dam removal process. Someone else highlighted the substantial financial liability that could befall some dam owners, given the recommended change in design flood for high and intermediate hazard dams, and questioned task force members' plans to implement a solution.

At the November 30, 2020, meeting, one member of the public inquired about the sustainability of private ownership over critically important high hazard dams.

Much of the public comments during the December 17, 2020, meeting revolved around tailings dams. Several meeting participants implored the task force to recommend banning tailings dams in Michigan due to their high risk of environmental damage and loss of life. Other commenters urged the task force to recommend pausing current tailings-dam projects' permit application reviews and further refining the application evaluation process.

January 27 Public Comment Meeting

The task force held a dedicated public comment session on January 27, 2020 to allow an opportunity for members of the public to comment on the task force's draft recommendations. Written comments were also received. The major themes for those comments included:

Tailings Dams

Many verbal comments referenced the dangers of tailings dams as well as calls to ban upstream construction of tailings dams in Michigan.

Currently, construction plans and safety inspection reports for tailings dams are thoroughly reviewed by DSP staff in accordance with current engineering standards and for compliance with Part 315, Dam Safety, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Several recommendations by the task force seek to strengthen safety regulations for high and significant hazard potential dams, including tailings facilities; expand EGLE's workforce, expertise, resources, and capabilities when administering the dam safety statute for tailings dams; and provide emergency funding should the state be required to take action to ensure the safety of Michigan's dams. DSP staff will continue

to participate in the ASDSO's Tailings Dam Regulatory Committee, along with other dam safety agencies, to ensure that Michigan continues to employ the most updated standards for tailings dam regulation.

Compliance and Enforcement

Compliance and Enforcement was another popular comment topic. One commenter advocated for greater safety and awareness outreach to residents living near dam inundation zones, including regular updates on the dam's hazard classification. Another commenter suggested implementing a regulatory framework mandating periodic emergency exercises as a precautionary measure in case of a catastrophic dam event. A member of the hydropower industry encouraged the task force to address compliance issues by incorporating private sector hydropower entity sanctions on nonresponsive dam owners. Another person disagreed with relieving EGLE/DSP staff of responsibility following a catastrophic dam event, stating that state officials should be held equally accountable alongside dam owners. One commenter complained that damage to humans was set aside for the sake of mussels. One commenter expressed opposition to rebuilding the dam (Edenville/Sanford) after the failure.

Several task force recommendations seek to improve information sharing between FERC, hydropower dam owners/operators, and the DSP. Additionally, task force recommendations include provisions for developing communications frameworks for the DSP, State Emergency Management, and local Emergency Management personnel to improve outreach and understanding of risk to downstream communities who may be impacted by a dam failure.

Liability Insurance

Several members of the public provided comments related to liability insurance. One commenter suggested EGLE/DSP help create a "shared statewide pool" for dam owners, like small dam owner communities obtaining property and liability insurance to better manage dam maintenance costs. Another commenter argued for establishing economic drivers to incentivize dam owners to correct issues, explaining that dam liability insurance rates and coverage should be tiered according to hazard risk ratings.

Task force recommendations direct the dam safety community to explore several options for dam owner/operator insurance programs, funding opportunities, and a licensing program. Under the proposed licensing program, dam owners are required to periodically demonstrate their ability to safely operate and maintain their dam to continue successful licensure.

Dam Financing

Regarding dam financing, one person promoted full reimbursement of EGLE/DSP-funded emergency actions by private dam owners, proposing giving DSP the authority to garnish their revenue/profits, if necessary. Along the same vein, someone else inquired about the repercussions for dam owners if EGLE/DSP are forced to fund emergency actions to avoid a catastrophic dam event. Another commenter advocated for amending Part 307 (NREPA) to add dam removal costs to the existing taxation assessment districts. Two commenters opposed Special Assessment Districts as unfair. Four Lakes Task Force (FLTF) submitted a 12-page written response to the first draft of the task force's recommendations regarding the importance of Part 307 related to dam safety. FLTF structured their response according to the following principles:

- Part 307 is the exclusive statutory basis for lake-level governance and provides a model for ensuring the financial sustainability and safety of dams.
- Property owners around an inland lake supported by lake-level structures (i.e., dams) are active stakeholders in the DSP.
- Manage the lake ecosystem and dam infrastructure on a service life basis.

Task force recommendations include provisions for ensuring that EGLE has the proper authority and funding mechanisms in place to respond to dam safety emergencies if the owner is unable or unwilling to do so. These recommendations also include provisions for recouping costs from dam owners should EGLE undertake emergency actions at their dam.

Appendix C: Governance Procedures

Article I – Public Meetings

Section 1: Regular Meetings

Regular meetings of the Michigan Dam Safety Task Force (Task Force) may be held quarterly, or as needed, for the transaction of business as may be brought before the Task Force. Business that the Task Force may perform shall be conducted at a public meeting of the committee held in compliance with the Open Meetings Act, 1976 PA 267, MCL 15.261 to 15.275.

Section 2: Special Meetings

Special meetings of the Task Force may be called at any time by the Chairperson. A special meeting is any meeting held outside of the regularly scheduled quarterly meetings. All members of the Task Force shall be notified of special meetings at least five (5) days before the date of the meeting. The reason for the meeting shall be stated and the Task Force shall discuss only the business stated.

Section 3: Public Meetings and Records

All meetings and records of the Task Force shall be open to the public. The official records of the Task Force shall be kept by and at the offices of the Department of Environment, Great Lakes, and Energy (EGLE) and posted to the EGLE website. A writing prepared, owned, used in the possession of or retained by the Task Force in the performance of an official function is subject to the Freedom of Information Act, 1976 PA 442, MCL 15.231 to 15.246.

Section 4: Public Appearance

All persons wishing to address the Task Force must declare their intent. For in-person meetings this will happen by completing a **Public Appearance Card** prior to, or during the Public Appearance portion of the meeting. For virtual meetings this will happen by sending an email to the Task Force email address (to be created) or by virtually raising your hand.

Persons addressing the Task Force will be requested to identify their name, address, and the organization they belong to, if any. In those instances, in which a person is representing an organization, the presenter should indicate whether their comments represent the official views of the organization. Persons contacting the staff assistant on or before the Friday preceding the meeting will be allowed five (5) minutes for their presentation. Persons signing up after the Friday preceding the meeting will be allowed up to three (3) minutes at the discretion of the Chairperson. The Public Appearance segment of the meeting will last until closed by the Chairperson or by vote of the Task Force.

Section 5: Public Notices of Meetings

The Task Force, at its last regularly scheduled meeting of the calendar year, shall adopt a meeting schedule for the following calendar year. Public notice of the annual meeting schedule of regular meetings shall show the regular dates and times for the meetings and the place at which the meetings will be held. Public notice for all regular and special meetings shall be given by posting a copy of the notice on the Department of Environment, Great Lakes, and Energy calendar and website.

Section 6: Quorum

Fifty-one percent (51%) or more members of the Task Force shall constitute a quorum at any regular or special meeting for the purpose of transacting business of the Task Force.

Section 7: Voting

The Chairperson may call for a vote of the Task Force. All voting shall be by a voice vote. A majority vote of the remaining members will bind. All votes shall be recorded and reflected in the minutes.

Section 8: Delegation of Appointment

Members of the Executive branch may assign a designee to attend and vote at the meeting on their behalf. The designee must be noted by email to EGLE.

Section 9: Parliamentary Authority

All meetings shall be governed by any statute pertinent to this Task Force and using simplified **Robert's Rules of Order** in all cases where they are applicable, and in which they are not inconsistent with these **Rules of Procedure** and any special rules of order the Task Force may adopt. Those being: **Motion, Amendment, Amending the Amendment, Substitute Motion, Speaking on Motions or Amendments, End Debate, Table, Point of Information, Point of Order or Appeal from Chair.**

Section 10: Agenda

The agenda for each regular meeting shall be prepared by the Task Force, in consultation with the Chairperson, on the basis of all materials received, either written or oral, and published prior to. An agenda for special meetings shall be prepared and sent to Task Force Members with the notification of the meeting.

Section 11: Recording the Proceedings

The Task Force's meetings shall be recorded, and the minutes of each regular and special Task Force meeting shall be prepared for the members of the Task Force and public. The minutes shall be in the form of summary, except motions and resolutions of the Task Force.

ARTICLE II – OFFICERS

Section 1: Chairperson

The officers of the Task Force shall consist of a Chairperson, a Vice-Chairperson, and a Secretary. The Task Force shall nominate and elect all offices.

Section 2: Chairperson Duties

The Chairperson shall normally represent the Task Force at such official functions as the Task Force shall specify. The Chairperson shall be charged with the responsibility of calling for such regular and special meetings of the Task Force, as are necessary, to enable the Task Force to carry out its assigned duties and responsibilities. The Chairperson may preside and shall be entitled to vote on any matter the same as any other Task Force member.

Section 3: Vice-Chairperson Duties

The Vice-Chairperson shall be vested with all the powers and shall perform all the duties of the Chairperson during the absence of the latter. The Vice-Chairperson shall:

a. Perform the duties of the Chairperson in the absence or inability of that officer to serve and represent the Chairperson when requested.

Section 2: Secretary Duties

The Secretary shall attend all meetings of the Task Force and, with staff assistance, will act as a clerk thereof.

The Secretary shall, with assistance from staff:

a. Record all votes in accordance with Article I, Section 7.
b. Review meeting minutes for accuracy and perform any necessary edits.
c. Send approved minutes and other meeting materials to members of the Task Force.
d. Perform all official correspondence from the Task Force as may be prescribed by the Task Force or the Chairperson.

ARTICLE III – DUTIES OF THE MEMBERS OF THE TASK FORCE

Section 1: Task Force Duties

The Task Force shall evaluate the statutory structure, budget, and program design of the Water Resources Division Dam Safety Program, the adequacy of Michigan's dam safety standards, and the level of investment needed in Michigan's dam infrastructure. Its work will culminate in a report to Governor Whitmer and the Legislature summarizing its findings and recommending regulatory, financial, and programmatic improvements to help ensure Michigan dams are appropriately maintained, operated, and overseen to protect Michigan residents and aquatic resources.

The Task Force may establish Task Force workgroups as considered necessary to assist in performing the duties and responsibilities of the Task Force. The Task Force may hire or retain contractors, subcontractors, Task Force, consultants, and agents and may make and enter into contracts necessary or incidental to the exercise of the powers of the Task Force and the performance of its duties as the Director of EGLE considers advisable and necessary, in accordance with state statute, and the rules and procedures of the Civil Service Commission and the Department of Technology, Management, and Budget (DTMB), subject to available funding. The Task Force may accept donations of labor, services, or other things of value from any public or private agency or person.

Members of the Task Force shall refer all legal, legislative, and media contacts to EGLE.

Section 2: Staff Support and Budget

The Task Force shall be staffed and assisted by personnel from EGLE, subject to available funding. Any budgeting, procurement, or related management functions of the Task Force shall be performed under the direction and supervision of the Director of EGLE.

Section 3: Compensation

Members of the Task Force shall serve without compensation.

ARTICLE IV – AMENDMENTS

This **Rules of Procedure,** in all or in part, may be amended by a concurring vote of two-thirds of the Task Force membership made at any regular or special meeting, provided that the proposed amendment is provided in writing with the agenda for that meeting.

ARTICLE V – DISSOLVEMENT OF THE TASK FORCE

The Task Force shall dissolve ninety days after issuance of its final report.

Appendix D: Proposed Legislation

State of Michigan Dam Safety Task Force

Dam Licensing Framework

The following provides concepts for a licensing structure for dams located in Michigan. This construct provides for continuing oversight of a dam by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) and for reasonable assurance of financial responsibility for a dam throughout its life cycle.

1. Licensing of Dams

   a. Licensing New Dams

      i. A navigable stream, or tributary thereto, shall not be dammed after January 1, 2021, unless it has been first licensed by the director.
      ii. The term of an initial license for a structure that dams a navigable stream, or tributary thereto, shall be the lesser of the term requested by the licensee, 50 years, or the period that the director determines to be the expected life of the proposed structure without replacement of major components of the structure, or the period that the director determines that the proposed structure can be sustained in the event of projected potential maximum flow.

   b. Licensing Existing Dams

      i. The owner of any structure that dams a navigable stream, or tributary thereto, as of January 1, 2021, shall submit a complete application for a license for said dam not later than December 31, 2025. [This could be phased this into a levelized workload.]
      ii. The term of an initial license for a structure that dams a navigable stream, or tributary thereto, as of January 1, 2021, and that is not licensed by the Federal Energy Regulatory Commission (FERC) shall be the lesser of the term requested by the licensee, 15 years, the period that the director determines to be the expected life of the proposed structure without replacement of major components of the structure, or the period that the director determines that the proposed structure can be sustained in the event of projected potential maximum flow.
      iii. The license for a structure that dams a navigable stream, or tributary thereto, and which is not licensed by the FERC may be renewed by the director upon submission of a complete application for a license renewal not later than three years before the expiration of the current license.
      iv. The term of a license renewal for a structure that dams a navigable stream, or tributary thereto, and that is not licensed by the FERC at the time of application for renewal shall be the lesser of the term requested by the licensee, 15 years, the period that the director determines to be the expected life of the proposed structure without replacement of major components of the structure, or the period that the director determines that the proposed structure can be sustained in the event of projected potential maximum flow.

c. Licensing FERC-licensed Dams

i. The term of an initial license for a structure that dams a navigable stream, or tributary thereto, as of January 1, 2021, and which is licensed by the Federal Energy Regulatory Commission shall coincide with the term of the FERC license as of the time the owner submits a complete application to the director or the termination of that license.
ii. The license for a structure that dams a navigable stream, or tributary thereto, and which is licensed by the FERC may be renewed or extended upon the renewal or extension of the FERC license and for the term established by FERC.

d. License Application Completeness

The director shall determine whether an application is complete within 60 days of receipt of an application. If the director deems an application to be incomplete, the director shall notify the applicant of the particular deficiencies of the application and the application shall be considered complete when all such deficiencies are corrected. The director shall determine whether a submission to correct a deficiency in an application has been corrected within 45 days of receipt of that submission.

e. License Issuance

The director shall issue a license for a structure that dams a navigable stream, or tributary thereto, only if the director determines:

i. That the applicant for the license has clear title to the structure
ii. That the construction and/or continued maintenance of the structure is in the public interest
iii. That the structure has been properly constructed and maintained as of the date that a complete application for a license was submitted, or upon the completion of construction, whichever is later
iv. That the owner has made an initial demonstration of financial responsibility for the structure
v. That the owner has demonstrated proper coordination with the local emergency preparedness organization
vi. That the governing board of the county in which the structure is located has adopted a resolution pursuant to Michigan Constitution Article VII, Section 12, approving the license after receipt of a report and recommendation from the director

f. License Conditions

A license for a structure that dams a navigable stream, or tributary thereto, shall be conditioned on:

i. Continued compliance with all applicable laws and regulations
ii. Proper maintenance and operation of the structure throughout the term of the license
iii. Continuing financial responsibility for the structure
iv. Continuing proper coordination with the local emergency preparedness organization
v. Prompt payment of any and all license and inspection fees invoiced to the licensee by the State of Michigan or the County in which the structure is located
vi. If a license condition is violated, the director may allow a reasonable cure period and if a cure is not timely provided, the license shall be withdrawn and the dam shall be deemed unlicensed (see Enforcement of Licensing section below).

g. Dams Must Be in the Public Interest

The director shall determine that the construction and/or continued maintenance of a structure that dams a navigable stream, or tributary thereto, is in the public interest only if one of the following apply:

i. The structure existed as of January 1, 2021, and:
   1. The structure is licensed by the FERC or
   2. The structure is owned by the United States, the State of Michigan, or an agency of the State of Michigan

ii. The structure is a lake-level control structure established and maintained pursuant to Part 307 of Act 451.

iii. The structure existed as of January 1, 2021, is being considered for an initial license under this Act, and meets all of the following criteria:
   1. Does not pose significant public safety risk exposure related to the design, construction, or maintenance of the structure
   2. Does not pose clear and significant violations of state environmental quality standards
   3. Additional criteria to basically eliminate "bad actors" or "bad dams"

iv. The structure being considered for licensing under this act:
   1. Provides insignificant public benefits (regardless of private benefits) but also does not significantly impact public trust interests (public trust uses and environmental quality)
   2. Provides public benefits (regardless of private benefits) while also not significantly impacting public trust interests (public trust uses and environmental quality)
   3. Provides significant and imperative public benefits that significantly outweigh impacts to public trust interests (public trust uses and environmental quality)
   4. Provide public benefits and where impacts to public trust interests (public trust uses and environmental quality) can be significantly addressed or offset by mitigation measures required under license conditions

h. Dam Owner Financial Responsibility

The director shall determine that the owner has initially demonstrated financial responsibility and shall determine upon each inspection of the structure that the owner demonstrates continuing financial responsibility for the structure if and only if:

i. The owner is insured for liability for damage to persons, property, and natural resources in an amount determined by the director to be the maximum. probable damages in the event of catastrophic failure of the structure and one of the following apply:
   1. The structure is owned by the United States or the State of Michigan.
   2. The structure is owned by an agency of the State of Michigan and the director determines that the owner has the financial capacity to operate, maintain, and remove the structure at the termination of the license.
   3. The structure is owned by an electric utility regulated by the Michigan Public Service Commission, is licensed by the FERC, and the Commission has determined in the utility's last rate case that the utility has the financial capacity to operate, maintain, and remove the structure at the termination of the license.

4. The structure is owned by any other party and is subject to a special property tax assessment by the County in which the structure is located on the structure and associated property or is funded by special property tax assessment to beneficiaries of the structure (pursuant to Part 307 of Act 451 or another special assessment district) that deposits revenue into an escrow account held by the County in which the structure is located such that the funds available in escrow and the expected revenue from the special assessment are sufficient to pay for all of the following:
    a. Removal of the structure, returning the stream to free-flowing conditions, and restoration of the site at the end of the current license period
    b. Any expected major maintenance of the structure during the term of the current license
    c. Any costs incurred by the County for emergency preparedness or emergency response as a result of the operation of or problems with the dam
    d. Bond breaching or otherwise removing the hazard (could reference dam removal, capping, site closure, etc.)

i. License Transfer

A license for a structure that dams a navigable stream, or tributary thereto, may be transferred to another person when a complete application for such transfer has been submitted to the director by the proposed new licensee at least 180 days before the proposed date of such transfer. The current licensee shall be responsible for the maintenance and operations of the dam and financially responsible for the dam until a license has been transferred pursuant to an application for such transfer. The director shall transfer a license if and only if:

i. The applicant for transfer of the license has clear title to the structure.
ii. The structure has been properly constructed and maintained as of the date that a complete application for transfer of a license was submitted, or that the proposed licensee has submitted satisfactory plans and demonstrated financial capacity to restore the structure to proper condition by date certain.
iii. The owner has made an initial demonstration of financial responsibility for the structure.
iv. The governing board of the county in which the structure is located has adopted a resolution approving the transfer of the license after receipt of a report and recommendation from the director.

j. Enforcement of Licensing[13]

If a structure that dams a navigable stream, or a tributary thereto, is constructed after January 1, 2021, without first being licensed by the director or if a structure that dams a navigable stream, or tributary thereto, as of January 1, 2021, has not submitted a complete application for said dam to the director on or before December 31, 2025, the director shall:

i. Fine the owner
ii. Order an immediate drawdown of the reservoir behind such a dam according to the schedule and to the levels determined by the director as most consistent with the public health, safety, and welfare and protection of the public trust in natural resources

[13] This section needs further development but is included here for key concepts.

iii. Order such dam to be removed, the stream returned to free-flowing conditions, and the site restored by date certain after causing the appropriate studies and plans to be prepared,
iv. Cause the ordered action to be taken using funds available from the Dam Safety Emergency Action Fund [which will need to be funded] if the owner of such a dam fails to draw down the reservoir when and in the manner prescribed by the director or fails to remove the dam when and in the manner prescribed by the director
v. Initiate civil action to recover from the dam owner the costs of these actions, proceeds from which shall be deposited into the Dam Safety Emergency Action Fund
vi. Initiate a tax lien on the dam and related property for the balance, up to the value of said property in instances where the director is unable to otherwise recover all costs from the dam owner
vii. [Additional actions as necessary to ensure enforcement]

Emergency Dam Safety Action Fund Framework

The following outlines a basic structure for an emergency action fund. This fund will provide a safety net to prevent the failure of dams that have been allowed to languish while still holding dam owners accountable for incurred expenses.

1. Fund Structure

a. Establishing the fund

Create a fund referred to as the Emergency Dam Safety Action Fund (EDSAF) to be overseen and managed by the Dam Safety Program within the department.

b. Purpose

The EDSAF's purpose is to provide readily available funds for the department to take remedial actions to remove or reduce significant safety risks posed by dams in instances where the dam owners are unable or unwilling to do so.

c. Liability

Use of the fund and actions taken by the department under it are in no manner accepting liability for the dam's safety, which shall remain the sole responsibility of the dam owner.

d. Reimbursement

The department shall seek full reimbursement of these fund expenditures from affected dam owners.

e. Use

This fund is intended to be used for actions that urgently reduce safety risks associated with dams and is not intended to fund major dam improvements that may be beneficial to the long-term disposition of dams.

2. EDSAF Funding

a. Allocation

The EDSAF shall receive an initial allocation of $5 million from the General Fund, representing an initial estimated fund use for a five-year period.

b. Balance

i. The fund's balance shall not revert to the General Fund unless this enacting part is materially amended or modified to decommission the fund.

ii. The legislature shall strive to maintain an EDSAF fund balance that represents no less than two years of predicted fund use.

3. Report

a. The department shall provide an annual report regarding the activities of the fund. This annual report shall be posted online on the department's website and copies provided to the relevant standing committees of the legislature and its relevant appropriations committees, and a copy shall also be provided to the budget director.

b. contains:

i. The fund's starting and ending balances

ii. A list of dams that required emergency action through the fund, including:

1. Location of the dams
2. Owners of the dams
3. Description of actions taken
4. Expenditures made per dam
5. Summary of enforcement actions taken and status of fund recovery through enforcement action
6. Summary of expenditures from the fund made in previous years, along with the status of fund recovery for each through enforcement actions

c. The department may include recommendations for appropriations to the fund that reflect anticipated fund needs based on the overall Dam Safety Risk Portfolio management.

Appendix E: Proposed Legislation Amendments

State of Michigan Dam Safety Task Force

Amendments to the Natural Resources and Environmental Protection Act 451 of 1994, as amended.

The following provides proposed amendments to particular sections of NREPA. Changes requiring the omission of language are struck through and additions are shown in bold text.

In relation to Recommendation 19, the task force seeks to amend Section 324.31518 of NREPA regarding hazard classification:

> (2) The department shall determine the hazard potential classification of all dams and shall establish an inspection schedule. **The department shall notify the owner of the classification, effective date of the current classification, and classification history. Within 30 days after notice from the department of dam classification or reclassification, the owner shall communicate to the department the owner's plans for meeting the requirements of the classification, including but not limited to: spillway capacity, EAP and inundation mapping requirements, inspection schedule, etc.** The inspection schedule shall require annual submission of inspection reports for approximately 1/3 of all high hazard potential dams, ¼ of all significant hazard potential dams, and 1/5 of all low hazard potential dams. The department shall notify owner in writing when inspection reports are due. The department may order additional inspection reports following an event or change in condition that could threaten a dam.
>
> (3) **(d) Assessment of the appropriateness of the current department hazard potential classification in view of current conditions downstream of the dam. The assessment shall consider conditions related to damage as identified in the "significant potential hazard dam" definition (324.31505) and serious damage as identified in the "high potential hazard dam" definition (324.31503) that might have changed since the date of the current classification.**

In relation to Recommendation 19, the task force seeks to amend Administrative Rule 10, Section 281.1310 regarding hazard classification:

> Rule 10 (2) (a) (v) The hazard potential classification**, date of current classification, and classification history.**
>
> Rule 10 (2) (b) (iv) Recommendations for further detailed studies or investigations, including an assessment of the adequacy of the current hazard potential classification ~~if appropriate~~ **in view of current conditions related to damage potentially cause by the dam.**

In relation to Recommendation 20, the task force proposes adding language requiring owners to have on-hand operations and maintenance manuals for each dam, as well as setting specifications for these manuals.

Section 324.315*XY*: Operations and Maintenance Manual

(1) An owner shall prepare and keep current an operations and maintenance manual for all dams owned by that entity.

(2) Operations and maintenance manual shall include, at a minimum:

(a) Brief description of major elements of the dam

(b) Operation procedure during normal and high flows

(c) Emergency operation procedures

(d) Frequency and documenting of routine maintenance and inspections

(e) Maintenance work order procedure

(f) Sample maintenance and inspection forms

(g) Key contact information

In relation to Recommendation 20, the task force seeks to amend Section 324.31518 of NREPA regarding operations and maintenance manuals.

(3) (c) Recommendations for ~~maintenance,~~ repair~~,~~ and alterations of a dam as are necessary to eliminate any deficiencies.

(3) **(e) Assessment of operations and maintenance based on the requirements of the current operations and maintenance manual and per the requirements of continued safe operation. The operations and maintenance manual shall itself be assessed for relevance and effectiveness during every second safety inspection at a minimum, or as appropriate, as determined by the department.**

230 N. Washington Square
Suite 300
Lansing, MI 48933