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AN ALLETE COMPANY

Minnesota Power
Owner's Dam Safety Program

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1. Introduction

This Owner's Dam Safety Program (ODSP) establishes and defines Minnesota Power's Dam Safety Program for its facilities licensed by the Federal Energy Regulatory Commission (FERC). Under the Federal Power Act [1], as amended, the FERC is responsible for ensuring that hydroelectric dams under its jurisdiction are properly constructed, operated and maintained. Dam safety requirements are delineated in 18 CFR Part 12—Safety of Water Power Projects and Project Works [2].

This ODSP provides a framework for continuous improvement in Minnesota Power's processes and activities as they relate to the operation and maintenance of our Hydro Facilities. It shall be reviewed and updated as needed to assure that it reflects the current organizational structure and incorporates lessons learned.

1.1 Purpose

The purpose for the ODSP is to **ensure dam safety and compliance with FERC requirements**. The ODSP affirms the company's commitment to dam safety and promotes the expectation and responsibility of all employees to recognize and place dam safety first and foremost, independent of other business objectives.

The following are specific goals of the ODSP:

- Foster and encourage a corporate culture of dam safety and maintain a strong company atmosphere of dam safety.
- Ensure that Minnesota Power's employees, agents, and consultants have an understanding, and constant awareness – of the serious and important role of dam safety, and the need to fully comply with all necessary dam safety measures and requirements.
- Ensure that all on-site personnel understand and are aware of potential failure modes and the associated risk reduction measures.
- Facilitate the prompt detection and remediation of developing structure deficiencies.
- Understand and communicate owner/employee responsibility for dam safety – regulatory oversight is not the company's dam safety program.
- Validate the need for allocating necessary funds and resources for dam safety.

1.2 Scope

This ODSP covers all Minnesota Power Hydro facilities, which consist of eleven (11) Hydroelectric Stations (HES) and six (6) Headwater Storage Reservoirs, and their associated dams and facilities. A general location map of Minnesota Power's Hydro facilities is included in Appendix A. The following is a listing of those facilities including the river on which the facility is located and its FERC Hazard Potential Classification:

Project/Facility	FERC Project	Function	River	FERC Hazard Classification
St. Louis River Project	2360			
Fond du Lac	2360 (01)	HES – 11.6 MW	St. Louis	High
Thomson	2360 (02)	HES – 72.0 MW	St. Louis	High
Scanlon	2360 (03)	HES – 1.6 MW	St. Louis	Significant (Low)
Knife Falls	2360 (04)	HES – 2.4 MW	St. Louis	Low
Fish Lake Reservoir	2360 (05)	Reservoir	Beaver	High
Rice Lake Reservoir	2360 (06)	Reservoir	Beaver	Low
Island Lake Reservoir	2360 (07)	Reservoir	Cloquet	High
Boulder Lake Reservoir	2360 (08)	Reservoir	Otter	Low
Whiteface Reservoir	2360 (09)	Reservoir	Whiteface	Low
Winton Project	469			
Winton	469 (01)	HES – 4.0 MW	Kawishiwi	Low
Birch Lake Reservoir	469 (02)	Reservoir	Kawishiwi	Low
Prairie River	2361	HES – 1.1 MW	Prairie	Low
Grand Rapids (Rapids EC)	2362	HES – 2.1 MW	Mississippi	Significant (High)
Blanchard	346	HES – 18.0 MW	Mississippi	Low
Little Falls	2532	HES – 4.7 MW	Mississippi	Significant (High)
Sylvan	2454	HES – 1.8 MW	Crow Wing	High
Pillager	2663	HES – 1.5 MW	Crow Wing	High

2. Terms and Definitions

Annual – For the purposes of all Compliance activities, the term annual is any action or event which must be completed at some point during each calendar year.

Assessment – A routine review conducted to evaluate the performance of an activity.

Audit – A documented objective examination and evaluation of dam safety and regulatory compliance or effectiveness in accordance with a defined set of standards and a formal Audit plan.

Chief Dam Safety Engineer – The Engineer with responsibility and authority to ensure the Dam Safety Program is fully implemented and to ensure high standards are maintained for dam safety and related regulatory compliance.

Condition affecting the safety of a project or project works (as defined in 18 CFR Part 12 [2]) – Any condition, event, or action at the project which might compromise the safety, stability, or integrity of any project work or the ability of any project work to function safely for its intended purposes, including navigation, water power development, or other beneficial public uses; or which might otherwise adversely affect life, health, or property. Conditions affecting the safety of a project or project works include, but are not limited to:

(i) Unscheduled rapid draw-down of impounded water;
(ii) Failure of any facility that controls the release or storage of impounded water, such as a gate or a valve;
(iii) Failure or unusual movement, subsidence, or settlement of any part of a project work;
(iv) Unusual concrete deterioration or cracking, including development of new cracks or the lengthening or widening of existing cracks;
(v) Piping, slides, or settlements of materials in any dam, abutment, dike, or embankment;
(vi) Significant slides or settlements of materials in areas adjacent to reservoirs;
(vii) Significant damage to slope protection;
(viii) Unusual instrumentation readings;
(ix) New seepage or leakage or significant gradual increase in pre-existing seepage or leakage;
(x) Sinkholes;
(xi) Significant instances of vandalism or sabotage;
(xii) Natural disasters, such as floods, earthquakes, or volcanic activity;
(xiii) Any other signs of instability of any project work.

D2SI – Division of Dam Safety & Inspections – FERC Division responsible for inspection of licensed project facilities. D2SI has the authority to require a

licensee to make repairs to project works and to take any related actions for the purpose of maintaining the safety and adequacy of such works.

Dam – Any structure for impounding or diverting water.

Dam Safety Engineer/Coordinator – Hydro Engineering personnel with responsibility and authority to assist the Chief Dam Safety Engineer in implementing the Dam Safety Program.

Dam Safety Steering Committee – The senior leadership group that provides the necessary policies, directives, and resources to assure safe and compliant operation of Minnesota Power's FERC-licensed facilities.

DSSMP – Dam Safety Surveillance and Monitoring Plan [3] – The DSSMP provides the details regarding the monitoring and evaluation of the performance of a dam or project structure.

DSSMR – Dam Safety Surveillance and Monitoring Report [3] – The DSSMR is an annual report that presents an evaluation and interpretation of dam safety surveillance and monitoring data, and provides findings on the overall performance of the dam.

EAP – Emergency Action Plan[4] – The EAP identifies potential emergency conditions at a specific dam and specifies preplanned actions to be followed to minimize property damage and loss of life. The EAP contains procedures and information to assist in issuing early warning and notification messages to responsible emergency management agencies. Each Hydro facility has its own EAP.

FERC – Federal Energy Regulatory Commission.

FERC Dam Safety (Operational) Inspection – An annual formal inspection conducted by a FERC D2SI inspector. The FERC inspector will be accompanied by the Dam Safety Engineer, and Hydro Engineering, Operations and Management personnel as necessary.

FERC Hazard Potential Classification - The categorization of a dam according to the degree of adverse incremental consequences that would result from failure or mis-operation. The Hazard Potential Classification does not reflect in any way on the current condition of the dam (i.e., safety, structural integrity, flood routing capacity). The Hazard Potential Classification of a project determines the level of engineering review and the criteria that are applicable.

> LOW HAZARD POTENTIAL - Failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses. FERC inspects Low Hazard facilities every 3 years, and FERC Part 12 Inspections are not required.
>
> SIGNIFICANT HAZARD POTENTIAL - Failure or mis-operation results in no probable loss of human life but can cause economic loss,

environmental damage, disruption of lifeline facilities, or can impact other concerns. FERC inspects Significant Hazard facilities annually.

Significant (Low) – a FERC Part 12 Inspection is not required.

Significant (High) – a FERC Part 12 Inspection is required every 5 years.

HIGH HAZARD POTENTIAL - Failure or mis-operation likely will cause loss of human life. FERC inspects High Hazard facilities annually and a FERC Part 12 Inspection is required every 5 years.

FERC Part 12 Inspection [5] – A formal inspection at five-year intervals to be conducted by a FERC-approved Independent Consultant in conjunction with the Dam Safety Engineer.

Independent Consultant – A third-party consultant contracted and approved by FERC to perform the FERC Part 12 Inspection.

Modification(s) – Any activity, including repair or reconstruction that in any way changes the physical features of the project from the state reflected in the plans or drawings or other documents filed with the FERC.

Manager – Renewable Business Operations – MP management with responsibility for the operations of MP Hydro facilities.

Manager – Rapids Energy Center Business Operations – MP management with responsibility for the Grand Rapids Hydro facility.

Part 12 – 18 CFR Part 12—Safety of Water Power Projects and Project Works [2]. Title 18--Conservation of Power and Water Resources, Chapter I – Federal Energy Regulatory Commission, Department Of Energy; Subchapter B – Regulations Under The Federal Power Act; Part 12 – Safety Of Water Power Projects And Project Works.

Regional Engineer – Person in charge of the FERC regional office for the region (Atlanta, Chicago, Portland, New York, or San Francisco) where a particular project is located. All Minnesota Power facilities are in the Chicago region.

3. Dam Safety Policy, Objectives and Expectations

3.1 Dam Safety Policy

Minnesota Power takes great pride in its culture of safety and compliance. Employees, consultants and contractors shall adhere to this policy in the conduct of their work assignments.

3.1.1 Employees, consultants and contractors operating, maintaining and performing work on Minnesota Power's FERC-licensed facilities shall do so consistent with the commitment of Minnesota Power to good stewardship and responsible behavior. This shall include awareness by employees, who are entrusted with the responsibility and privilege to operate Minnesota Power's hydro facilities in a safe, reliable and efficient manner.

Further, this shall include awareness by employees that daily operating practices must always place public safety, personnel safety and environmental and operational compliance above all other performance goals. Production or other business objectives shall not be allowed to compromise dam safety or compliance with dam safety regulations.

This policy has been summarized in a written senior management policy statement (included in Appendix B). Minnesota Power will incorporate this policy into the daily operations of its FERC-licensed facilities through regular discussions and training sessions.

3.2 Dam Safety Objectives

The following are program objectives:

- Communicate policies and expectations regarding dam safety and regulatory compliance.
- Maintain organizational structure and succession plans to assure compliance with FERC requirements for dam safety.
- Prescribe authority and responsibilities of the Chief Dam Safety Engineer and other organization personnel.
- Provide regular training focused on dam safety.
- Define protocols for communications and for reporting dam safety issues.
- Define Assessments and Audits to ensure compliance and to achieve an ongoing focus on dam safety and regulatory compliance.
- Define record keeping practices.
- Maintain and implement DSSMPs and EAPs.

3.3 Dam Safety Expectations

Minnesota Power expects that its employees, consultants and contractors performing services for a FERC licensed facility will fully comply with all of FERC's dam safety related requirements, including:

3.3.1 The requirement to use sound and prudent engineering practices in any action relating to the design, construction, operation, maintenance, use, repair, or modification of such projects (18 CFR 12.5 - Responsibilities of Licensee or Applicant [2]).

3.3.2 The requirement to notify FERC about the following, in the manner specified in the cited regulations:

1) Any condition affecting the safety of a project or project works (18 CFR 12.10 - Reporting Safety-Related Incidents [2]); and
2) Any modification to the project or project works (18 CFR 12.11 - Reporting Modifications of the Project or Project Works [2]).

3.3.3 The requirement to comply with all additional items specified in the license applicable to each FERC approved project.

Minnesota Power will communicate these requirements to the applicable employees, consultants and contractors in training sessions by providing a copy of this ODSP and discussing it in training sessions and otherwise as needed. The Chief Dam Safety Engineer or his designee is authorized to determine the proper level of training required of such employees, consultants and contractors based on their judgment as to the relevant factors, including but not limited to the following: prior experience, background, expected services to be performed for Minnesota Power, and the impact of such services on dam safety and compliance with FERC regulations.

4. Organization and Responsibilities

The following personnel shall provide the necessary policies, directives, and resources to assure safe and compliant operation of Minnesota Power's FERC-licensed facilities:

- President and Chief Executive Officer
- Chief Operating Officer
- Vice President – Generation Operations
- Vice President – Transmission and Distribution
- General Manager – Generation Operations
- Manager – Engineering and Project Delivery
- Manager – Renewable Business Operations

The Chief Dam Safety Engineer reports to the Manager – Engineering and Project Delivery. ALLETE/Minnesota Power's Organizational Structure, as it relates to dam safety, is included in Appendix C. Development of the organizational structure and assigned duties shall consider growth and development of Hydro Engineering and Operations personnel, as well as succession planning for the Chief Dam Safety Engineer.

Minnesota Power's Chief Dam Safety Engineer is Matthew Ryan (Supervising Engineer). His primary backup as the Dam Safety Coordinator is Kyle Maher (Senior Designer). The Civil Group within Engineering and Project Delivery provides their support and backup and is referred to in this document as Hydro Engineering. The leadership of the Hydro Engineering group is Tim Melby (Manager - Engineering and Project Delivery), Dan Nordling (Supervising Engineer - Structural), and Linnea Weyandt (Supervising Engineer - Electrical). David Aspie (Principal Engineer, formerly the Chief Dam Safety Engineer) and Lance Yoki (Senior Designer) are part of the Hydro Engineering group. Resumes for the dam safety team are included in Appendix D.

4.1 Authority of the Chief Dam Safety Engineer

The Chief Dam Safety Engineer shall be empowered with the following authority:

- Order necessary corrective action if dam safety is in question. This authority includes the issuance of an oral or written stop work order for operational activities or an order for a plant shutdown, if necessary to place an affected dam in a safe condition.
    - **The Chief Dam Safety Engineer shall have the authority to direct any employee, agent or consultant to take any action which in his/her judgment is necessary to ensure dam safety.**
- Conduct unannounced facility inspections.
- Review and approve proposed modifications or changes to a dam structure, operating system, control system, or critical maintenance or operations procedures before implementation. This review and approval may be

delegated to a qualified person or persons; however, the Chief Dam Safety Engineer maintains overall accountability for the review process.
- Approve dam safety instrumentation design for each applicable installation.
- Issue contracts for external resources from consultants to assist with internal Assessments, as necessary.

4.2 Responsibilities

4.2.1 The Chief Dam Safety Engineer is responsible for the following duties:

- As necessary, promptly notify the Manager – Renewable Business Operations and Manager – Engineering and Project Delivery regarding issues that could affect public safety or safe dam operations. In the event that either of those Managers is unavailable, the Chief Dam Safety Engineer shall continue up the reporting structure to notify the General Manager, Director or Vice President, as necessary. The Chief Dam Safety Engineer and his/her designees shall be provided full protection from any reprisal for making these notifications or reports.
- Act as the single point of contact for correspondence related to dam safety between MP and FERC-D2SI.
- Provide oversight of engineering and operational activities related to dam safety, independent of the normal operating organization.
- Work collaboratively with the hydroelectric plant management and staff to ensure dam safety and regulatory compliance.
- Provide updates of dam safety and compliance matters to the Manager - Engineering and Project Delivery and appropriate operational management.
- Act as the EAP Coordinator to maintain each facility EAP and perform required drills.
- Ensure EAP drills for each facility are evaluated for effectiveness, and implement improvements to EAPs if needed.
- Ensure regular dam safety training is provided to staff.
- Take necessary corrective action when dam safety is in question. Issue a stop work order for operational activities or a plant shutdown order, if necessary to place an affected dam in a safe condition.
- Conduct unannounced facility inspections, as deemed appropriate.
- Ensure the DSSMPs are developed and implemented, as required by the FERC.
- Designate a qualified alternate to act in his/her absence, with the concurrence of the Manager – Engineering and Project Delivery.
- Conduct Internal Assessments and provide assistance in Internal Audits as described in Section 7.1.

- Contract with an independent consultant to conduct periodic External Audits and review and prepare a summary of the external audit report as described in Section 7.2.
- Maintain all records related to dam safety as described in Section 8.

4.2.2 Hydro Operations personnel shall be responsible for the following duties:

- Work as a team with the Chief Dam Safety Engineer and Hydro Engineering personnel to ensure dam safety and regulatory compliance.
- Direct correspondence related to dam safety through the single point of contact, the Chief Dam Safety Engineer.
- Perform dam operations, maintenance, and inspection duties assigned by management.
- Notify the Chief Dam Safety Engineer before a plant Modification is made.
- Notify the Chief Dam Safety Engineer if a condition is identified which potentially affects dam safety.
- If shutdown of equipment or facilities is warranted due to safety or asset preservation issues, make that decision in a prompt manner, independent of any business objectives.
- Immediately implement any stop work order for operational activities or plant shutdown order that is issued by the Chief Dam Safety Engineer.

5. Dam Safety Training

Personnel involved in the operation or modification of hydroelectric facilities shall be provided training on a level appropriate to the assigned responsibilities. The training shall include management, operations, maintenance, engineering, consultants, and contractors, as appropriate. Training is provided to Hydro personnel at least once annually, and typically twice per year.

The training shall include the following topics:

- Minnesota Power corporate policies regarding dam safety and compliance with dam safety regulations.
- General and site-specific training focused on dam safety awareness and regulatory compliance.
- Inspection and monitoring procedures and techniques.
- Qualification standards for personnel conducting inspections, consistent with the nature and complexity of assigned duties.
- Design control process requirements.
- Recognition of potential dam safety deficiencies, including, but not limited to, design basis events for each facility.
- Discussion of potential failure modes and the associated risk reduction measures.
- Discussion of DSSMPs.
- Review of EAPs.

In establishing and conducting training, the Chief Dam Safety Engineer shall consider, and make use of, all appropriate materials, such as FERC's Part 12 regulations [2] and its Engineering Guidelines for the Evaluation of Hydropower Projects [6], as well as opportunities to attend seminars, conferences and FERC training programs.

Minnesota Power maintains memberships with the National Hydropower Association (NHA), NHA Hydraulic Power Committee (HPC), Midwest Hydro Users Group (HUG), and the Centre for Energy Advancement through Technological Innovation (CEATI) – Dam Safety Interest Group (DSIG). Hydro management, engineering, and operations leadership regularly participate in workshops and conferences offered by these industry organizations as well as those offered by the FERC.

6. Communications and Reporting

6.1 Internal Communications and Reporting

6.1.1 Modifications

Personnel in Hydro Operations, Maintenance, Engineering or others who propose a Modification affecting dam safety shall obtain independent review and approval by the Chief Dam Safety Engineer before implementation.

6.1.2 Condition Affecting the Safety of a Project or Project Works

Operations personnel shall immediately notify the Chief Dam Safety Engineer or his backup if an issue is identified which potentially affects dam safety. A "Condition affecting the safety of a project or project works" is defined in 18 CFR Part 12 [2] and that definition is included in Section 2.

The following communication requirements shall be implemented:

- In addition to any notifications made directly to the Chief Dam Safety Engineer, employees engaged in hydroelectric operations or supporting activities shall report issues related to dam safety and regulatory compliance to their immediate supervisor or the Manager – Renewable Business Operations. Consultants or contractors shall report any related issue to their Minnesota Power contact, who will contact their immediate supervisor. If an employee is unable to contact immediate supervision or the Manager – Renewable Business Operations, the Chief Dam Safety Engineer or his backup shall be contacted directly.
- Supervisors and or the Manager – Renewable Business Operations shall take immediate action, if necessary, to address issues related to dam safety and regulatory compliance. Additionally, they shall promptly notify the Chief Dam Safety Engineer or his backup.
- Reported dam safety or regulatory compliance issues that are not immediately addressed by operations will be evaluated and resolved by the Chief Dam Safety Engineer or his backup.
- Dam safety or regulatory compliance issues that are required to be reported to the FERC shall be documented through FERC correspondence and permanent records retained to document the reporting and resolution.
- Any employee or consultant may document or orally convey concerns to the Chief Dam Safety Engineer and shall be provided full protection from any reprisal for communicating such concerns.

6.1.3 Senior Management Communications

The Chief Dam Safety Engineer shall regularly report dam safety and regulatory compliance issues to the Manager – Renewable Business Operations and Manager – Engineering and Project Delivery, who in turn shall report them to their senior leadership.

The Chief Dam Safety Engineer shall promptly notify the Manager – Renewable Business Operations and the Manager – Engineering and Project Delivery regarding issues that could affect public safety or safe dam operations. In the event that either of those Managers is unavailable, the Chief Dam Safety Engineer shall continue up the reporting structure to notify the General Manager, Director or Vice President, as necessary. The Chief Dam Safety Engineer and his/her designee shall be provided full protection from any reprisal for making these notifications or reports.

Dam Safety Steering Committee

Minnesota Power's Dam Safety Steering Committee shall consist of:

- Chief Dam Safety Engineer
- Dam Safety Coordinator
- Manager – Renewable Business Operations
- Manager – Rapids Energy Center Renewable Operations
- Manager – Engineering and Project Delivery
- General Manager – Generation Operations
- Chief Risk Officer
- Vice President – Generation Operations
- Vice President – Transmission and Distribution
- Chief Operating Officer
- President and Chief Executive Officer

ALLETE's Chief Audit Officer (or designee) will also participate in Dam Safety Steering Committee meetings. The Dam Safety Steering Committee shall meet at least annually to discuss dam safety and regulatory compliance issues.

6.2 External Communications and Reporting

The Chief Dam Safety Engineer shall be the single point of contact for non-emergency regulatory reporting of dam safety issues. Except for those immediate communications required by emergency plans, communications related to dam safety between Minnesota Power and the FERC-D2SI shall be routed through the Chief Dam Safety Engineer.

7. Assessments and Audits

7.1 Internal Assessments and Audits

7.1.1 Internal Assessments

Internal Assessments will be routinely conducted by the Chief Dam Safety Engineer and Hydro Engineering personnel. These Assessments will focus on dam safety and operational compliance and improvement of the Dam Safety Program for FERC-licensed facilities.

7.1.1 Internal Audits

ALLETE's Internal Audit department will participate on the Dam Safety Steering Committee and annually review Dam Safety compliance related activities with the committee. Internal Audit will periodically audit the implementation and effectiveness of the ODSP based on their determination of risk.

7.2 External Audits

An independent third-party consultant with expertise in hydro project safety will be contracted by the Chief Dam Safety Engineer to conduct each External Audit. This Audit will be scheduled beginning in 2017 and subsequently at 5-year intervals.

The Chief Dam Safety Engineer shall review the audit report and prepare a summary report for presentation to Minnesota Power's Dam Safety Steering Committee. A copy of the summary and audit reports shall be submitted to the FERC Regional Engineer within 60 days of completion of the external Audit.

8. Record Keeping

To assure the retention of critical documents, all records related to dam safety shall be retained for the life of the facility plus 10 years, with the exception of training documentation, which shall be retained by the responsible department for a period of 5 years. Records to be retained include studies, design reports, construction drawings and specifications, surveillance and monitoring data, correspondence with the FERC, and other records documenting dam safety issues. Records shall be retained electronically and/or by hard copy with the Chief Dam Safety Engineer. Electronic storage includes repositories such as ImageSite and SharePoint.

9. References

[1] Federal Power Act: US Code, Title 16 – Conservation, Chapter 12—Federal Regulation and Development of Power

[2] 18 CFR Part 12 - Safety of Water Power Projects and Project Works
- SUBPART A — General Provisions (§§ 12.1 - 12.5)
- SUBPART B — Reports and Records (§§ 12.10 - 12.13)
- SUBPART C — Emergency Action Plans (§§ 12.20 - 12.25)
- SUBPART D — Inspection by Independent Consultant (§§ 12.30 - 12.39)
- SUBPART E — Other Responsibilities of Applicant or Licensee (§§ 12.40 - 12.44)

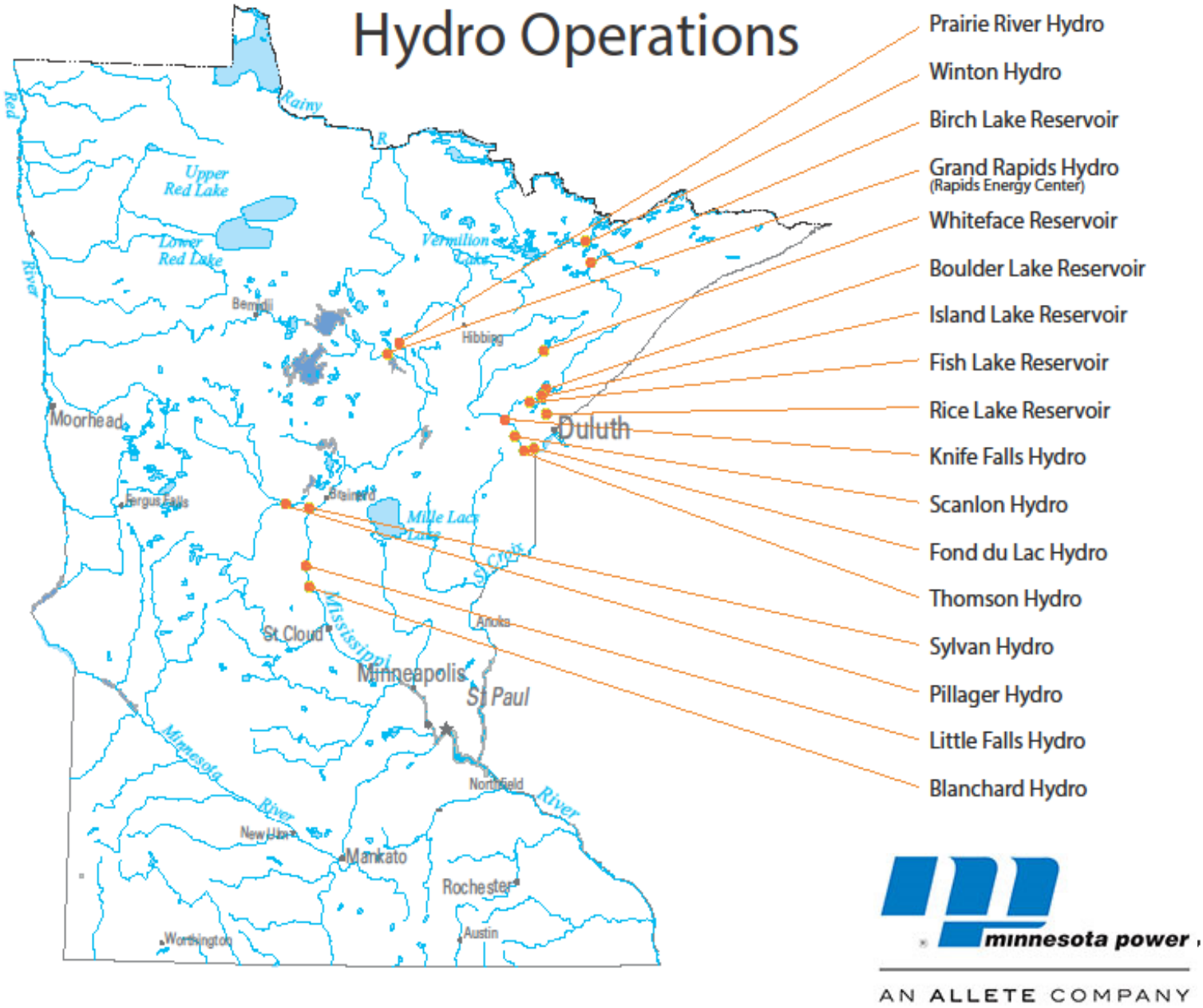
[3] Dam Safety Surveillance and Monitoring Plan and Report – Each facility has a DSSMP and subsequent DSSMRs that provide details regarding the monitoring at the facility.

[4] Emergency Action Plan – Each facility has an EAP that identifies potential emergency conditions and specifies preplanned actions to be followed to minimize property damage and loss of life.

[5] FERC Part 12 Inspection – FERC Part 12 Inspections and subsequent reports are done for all facilities that have a High or Significant (High) Hazard Potential.

[6] Engineering Guidelines for the Evaluation of Hydropower Projects
Chapters:
1. General Requirements
2. Selecting and Accommodating Inflow Design Floods for Dams
3. Gravity Dams
4. Embankment Dams
5. Geotechnical Investigations and Studies
6. Emergency Action Plans
7. Construction Quality Control Inspection Program
8. Determination of the Probable Maximum Flood
9. Instrumentation and Monitoring
10. Other Dams
11. Arch Dams
12. Water Conveyance
13. Evaluation of Earthquake Ground Motions
14. Dam Safety Performance Monitoring Program

Appendix A – Hydro Operations Location Map



Appendix B – Dam Safety Policy Statement

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AN ALLETE COMPANY

ALLETE/Minnesota Power
Dam Safety Policy Statement

ALLETE/Minnesota Power takes great pride that it is entrusted with the responsibility and privilege to operate hydro facilities in a safe, reliable and efficient manner.

Employees, consultants and contractors operating, maintaining and performing work on Minnesota Power's FERC-licensed facilities shall do so consistent with the commitment that daily operating practices must always place public safety, personnel safety, and environmental and operational compliance above all other performance goals. Production or other business objectives shall not be allowed to compromise dam safety or regulatory compliance.

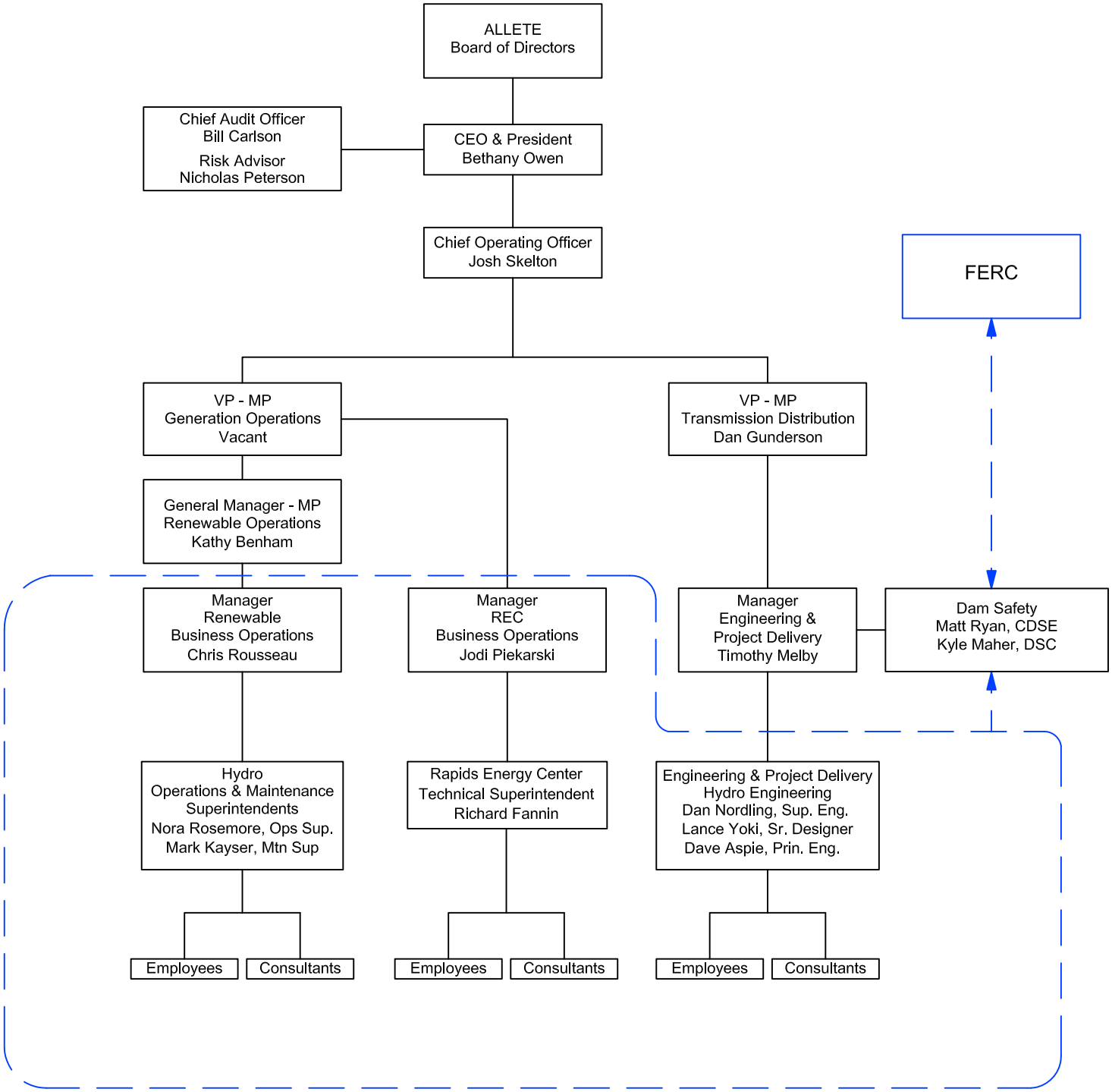
Josh Skelton
Chief Operating Officer

April 29, 2021

Appendix C – Dam Safety Organization Chart

Appendix C - Dam Safety Organization Chart

Minnesota Power Reporting & Communication Relationships For Dam Safety & Hydro Operations



Appendix D – Dam Safety Engineering Resumes

Matthew Ryan, Supervising Engineer – Chief Dam Safety Engineer
Kyle Maher, Senior Designer – Dam Safety Coordinator
David Aspie, Principal Engineer
Dan Nordling, Supervising Engineer
Lance Yoki, Senior Designer

MATTHEW J. RYAN, PE (MN, WI)
SUPERVISING ENGINEER & CHIEF DAM SAFETY ENGINEER

Skills In

Civil Engineering

- Civil Engineer with over 20 years of experience in the planning, design and construction various civil engineering projects.
- Hydroelectric Projects: Project manager/engineer for Minnesota Power hydro projects including the Thomson Forebay Remediation, Island Lake North Dike Auxiliary Spillway and Island Lake Sluice Gate Replacement. Responsibilities include design review, analysis, specification writing, cost estimating, scheduling, bid evaluations, QCIP writing, construction management, quality control, final construction report preparation and post construction monitoring.
- Dam Safety: participation in several PFMAs, Part 12D inspections, tabletop and functional EAP exercises, MP in-house dam safety training, CEATI Dam Safety Interest Group, Midwest Hydro Users Group.
- Civil Road and Site Design Projects: Design, project management, and coordination of numerous roadway projects and residential, commercial and industrial land development projects, including permit preparation and agency coordination.
- Environmental Projects: Project management on various environmental projects; including storm water management and conveyance facilities, wetland delineation / mitigation projects, and environmental site assessments.
- Oversight of quality assurance and control for various, storm water treatment and conveyance projects, road construction projects, building construction projects, wetland mitigation, and site developments.
- Provide technical expertise, training, and work direction to staff members regarding proper technical, safety and regulatory procedures.
- Review new and proposed legislation/regulations to assess impact on company and clients, and communicate with appropriate personnel.
- Establish and maintain professional working relationships with consultants, fabricators, vendors, and clients.

KYLE MAHER

SENIOR DESIGNER & DAM SAFETY COORDINATOR

Skills In

Construction Management, Construction, and Surveying

- Designer / Construction Manager with over 20 years of experience in the Mining, Transportation and Energy markets, providing design and construction support for various Civil, Mechanical, and Structural construction projects. Current Certified Weld Inspector (CWI). Actively working to complete Bachelors of Civil Engineering degree, expected May 2022.

- Hydroelectric Projects: Project manager/Construction Manager for Minnesota Power hydro projects including the Pillager Dam Stabilization, Fish Lake Gate Replacement, Sylvan Dam Stabilization, Birch Lake Dam Rebuild, Fish Lake Embankment Stabilization, Island Lake North Dike Auxiliary Spillway, Island Lake Sluice Gate Replacement. Responsibilities include design review, analysis, specification writing, cost estimating, scheduling, bid evaluations, QCIP writing, construction management, quality control, final construction report preparation and post construction monitoring.

- Dam Safety: participation in several PFMAs, Part 12D inspections, tabletop and functional EAP exercises, FERC EAP Exercise Design Course (Coeur d'Alene, ID 2010), MP in-house dam safety training, CEATI Dam Safety Interest Group, Midwest Hydro Users Group.

- Construction Management/Inspection/Survey: Construction Manager for multiple Minnesota Power Hydroelectric and Thermal generation projects, Inspector for Hydroelectric concrete rehabilitation projects, and Surveyor for dam deformation monitoring and construction layout. Material testing for concrete and aggregate production.

- Oversight of quality assurance and control for structural steel and concrete construction to verify work is according to specifications on various projects.

- Establish and maintain professional working relationships with consultants, fabricators, vendors, and clients.

- Administration and project management of projects within budgets and schedules.

DAVID L. ASPIE, PE, PG (MN, WI), MSCE
PRINCIPAL ENGINEER & DAM SAFETY ENGINEER

Skills In

Civil Engineering

- Civil engineer with over 30 years of experience working on geotechnical, environmental and hydroelectric projects.
- Geotechnical Projects: Shallow and deep foundations, soil improvement, embankments, ponds, slopes, roads, underground utilities, soil borings, monitoring wells, laboratory testing, construction monitoring.
- Environmental Projects: Remedial investigations and feasibility studies, design and implementation of corrective actions, operation and maintenance of active remediation systems, coordination with regulatory agencies.
- Hydroelectric Projects: Concrete restoration, post-tensioned anchors, dike stability analyses, gate rebuilds, turbine replacement, licensing, Emergency Action Plans, Potential Failure Mode Analyses, risk analyses, coordination with regulatory agencies.
- Dam Safety: participation in many PFMAs, Part 12D inspections, tabletop and functional EAP exercises, FERC EAP Exercise Design Course (Coeur d'Alene, ID 2010), MP in-house dam safety training, CEATI Dam Safety Interest Group, National Hydropower Association, Midwest Hydro Users Group.
- Administration and management of projects within budgets and schedules.
- Provide technical expertise, training, and work direction to staff members regarding proper technical, safety and regulatory procedures.
- Review new and proposed legislation/regulations to assess impact on company and clients, and communicate with appropriate personnel.
- Establish and maintain professional working relationships with regulatory representatives, vendors, and clients.

DANIEL W. NORDLING, PE (WI, MN), M.S.
SUPERVISING ENGINEER & STRUCTURAL ENGINEER

Skills In

Structural Engineering

- Structural engineer since 2005 with experience working on structural design for new and existing heavy industrial facilities, crane buildings, and commercial buildings up to 20 stories.
- Steam and Hydroelectric Projects: Project management, construction management/coordination, design and analysis of steel, concrete, and masonry structures including full structural stability and component design, design review, writing specifications, cost estimating, bid evaluations, and review of vendor drawings.
- Heavy Industrial Projects: Design engineer for a consulting firm responsible for stability analysis, component design and retrofit details for existing steel mill buildings. Structural failure investigation and design of replacement structures for a manufacturing facility. Duties included building code review and compliance, structural modeling, design and analysis of new and existing facilities, coordination of contract documents to be used for construction, and review of as-built conditions for compliance to contract documents.
- Provide technical expertise for building code compliance, structural design, constructability, and contract document administration.
- Oversight of quality assurance and control for structural steel and concrete construction to verify work is according to specifications on various projects.
- Establish and maintain professional working relationships with consultants, fabricators, vendors, and clients.
- Administration and project management of projects within budgets and schedules.

LANCE YOKI
SENIOR DESIGNER

Skills In

Design/Drafting, Construction, and Surveying

- Designer / Drafter with over 30 years of experience in the Mining, Material Handling, Pulp & Paper and Energy markets, providing design support for various Civil, Mechanical, and Structural design and construction projects.
- Heavy Industrial Projects: Designer for a consulting firm and offered design support for a wide variety of Industrial Design Projects, which included Flow Diagrams, General Arrangements, Civil/Structural, and Mechanical drawings.
- Hydroelectric & Thermoelectric Projects: Project management, construction management/coordination, design and detailing of structural steel, survey support, construction staking, design review, writing specifications, cost estimating, bid evaluations, review of vendor drawings, and review of as-built conditions for compliance to contract documents. Work primarily related to modifications and retrofits to existing facilities.
- Construction Management/Inspection: Whiteface Reservoir sluice gate replacement project, on-site construction inspector responsible for quality control and project documentation.
- Oversight of quality assurance and control for structural steel and concrete construction to verify work is according to specifications on various projects.
- Establish and maintain professional working relationships with consultants, fabricators, vendors, and clients.
- Administration and project management of projects within budgets and schedules.

Appendix E – Document History

Version	Date Issued	Brief Description
1.0	10/29/2012	Original Document
2.0	09/06/2013	Address comments in FERC 7/17/13 letter
3.0	4/26/2016	Staff revisions update
4.0	9/7/2017	Staff revisions update
5.0	8/16/2021	Staff revisions update, address comments in External Audit, and other minor clarifications