



Via Electronic Filing

November 23, 2020

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Subject: Grand Rapids Hydroelectric Project (FERC No. 2362)
Prairie River Hydroelectric Project (FERC No. 2361)
Initial Study Report Meeting Summary

Dear Secretary Bose:

ALLETE, Inc., doing business as Minnesota Power (MP or Applicant), is the Licensee, owner, and operator of the Grand Rapids Hydroelectric Project (FERC No. 2362) and the Prairie River Hydroelectric Project (FERC No. 2361), collectively, the “Projects.” The Grand Rapids Project is a 2.1 megawatt (MW), run-of-river (ROR) facility located on the Mississippi River in the City of Grand Rapids in Itasca County, Minnesota. The Prairie River Project is a 1.1 MW, ROR facility located on the Prairie River, near the City of Grand Rapids in Arbo Township, Itasca County, Minnesota.

The existing Federal Energy Regulatory Commission (FERC) licenses for the Projects expire on December 31, 2023. Accordingly, MP is pursuing a new license for the Grand Rapids Project and a subsequent license for the Prairie River Project pursuant to FERC’s Integrated Licensing Process (ILP), as described at 18 Code of Federal Regulations (CFR) Part 5. Although these are separate processes, due to the proximity of the Projects to each other, MP is conducting the processes concurrently with combined documents, meetings, and overall relicensing schedules.

Pursuant to 18 CFR §5.15(c), MP filed the Initial Study Report (ISR) with FERC on October 19, 2020. FERC’s regulations at 18 CFR §5.15(c) required MP to hold a meeting with participants and FERC staff within 15 days of filing the ISR¹. Accordingly, MP held an ISR Meeting via Webex from 2 PM to 4 PM (eastern time) on Thursday, October 29, 2020. FERC’s regulations at 18 CFR §5.15(c)(3) require MP to file this summary of the ISR Meeting, including any proposed modifications to ongoing studies or new studies proposed by the Licensee, within 15 days of the ISR Meeting.

¹ According to the process plan and schedule included in Scoping Document 2, the ISR is scheduled to be filed on or by October 23, 2020, with the ISR meeting to take place on or by November 7, 2020. Early filings or issuances will not result in changes to the deadlines.



MP is filing this ISR Meeting Summary in accordance with 18 CFR §5.15(c)(3) of FERC's regulations. Attached to this ISR Meeting Summary is a copy of the meeting PowerPoint. MP has also attached proposed Area of Potential Effects (APE) maps for both the Grand Rapids and Prairie River Projects as well as citations for spillway survival rates used in the Fish Entrainment and Impingement Studies. MP believes these attachments address the limited comments received during the October 19, 2020 ISR Meeting.

MP appreciates the input and participation of relicensing stakeholders in the ISR meeting and overall relicensing process. MP believes the limited degree of Project effects associated with these small, run-of-river Projects with limited operating bands, in concert with the diligent input of relicensing stakeholders, will allow MP to provide FERC with thorough License Applications to allow FERC to conduct its environmental analyses and issue new and subsequent licenses for the Projects.

After review of the ISR Meeting Summary, stakeholders may file disagreements with the meeting summary, request modifications to ongoing studies, or request new studies. Disagreements with the ISR Meeting Summary and any requests to amend the study plan to include new or modified studies must be filed with FERC no later than 30 days after the filing of the ISR Meeting Summary (on or before December 22, 2020). In requesting modifications to ongoing studies or new studies, stakeholders must take into account the following criteria:

- *Criteria for Modification of Approved Study (18 C.F.R. 5.15(d)).* Any proposal to modify an ongoing study must be accompanied by a showing of good cause why the proposal should be approved, and must include, as appropriate to the facts of the case, a demonstration that:
 - (1) Approved studies were not conducted as provided for in the approved study plan; or
 - (2) The study was conducted under anomalous environmental conditions or that environmental conditions have changed in a material way.
- *Criteria for New Study (18 C.F.R. 5.15(e)).* Any proposal for new information gathering or studies must be accompanied by a showing of good cause why the proposal should be approved, and must include, as appropriate to the facts of the case, a statement explaining:
 - (1) Any material changes in the law or regulations applicable to the information request;
 - (2) Why the goals and objectives of any approved study could not be met with the approved study methodology;
 - (3) Why the request was not made earlier;



- (4) Significant changes in the project proposal or that significant new information material to the study objectives has become available; and
- (5) Why the new study request satisfies the study criteria in 18 C.F.R. §5.9(b).

MP will have 30 days to respond to any disagreements or requests to amend the study plan (January 21, 2021). FERC's Director of the Office of Energy Projects will resolve any disagreement and amend the approved study plan, as appropriate, within 30 days of the due date for MP's response (no later than February 20, 2021).

Our relicensing team looks forward to working with FERC's staff, resource agencies, Indian Tribes, local governments, non-governmental organizations, and members of the public in developing license applications for these renewable energy facilities. If there are any questions regarding the ISR Meeting Summary or the overall relicensing process for the Projects, please do not hesitate to contact me at (218) 725-2101 or at nrosemore@mnpower.com.

Sincerely,

Nora Rosemore
Hydro Operations Superintendent
Minnesota Power

Enclosed: Meeting Summary and Attachments

Cc: Distribution List

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ISR Meeting Summary

Date: Thursday, October 29, 2020

Project: Grand Rapids Hydroelectric Project (FERC No. 2362)
Prairie River Hydroelectric Project (FERC No. 2361)

Subject: Initial Study Report Meeting Summary

Attendees:

Nora Rosemore – Minnesota Power (MP)
Greg Prom – MP
Todd Simmons – MP
Mike Chambers – MP
Devin Malkin – HDR, Inc. (HDR)
Kelly MacVane – HDR
Joe Cassone – HDR
Jeff Madejczyk – Wenck
Katie Kemmitt – Wenck
Daniel Salas – InSitu
Laura Washington – Federal Energy
Regulatory Commission (FERC)
Patrick Ely – FERC

Colleen Corballis – FERC
Shana Wiseman – FERC
Danielle Elefritz – FERC
Charlotte Cohn – Minnesota Department of
Natural Resources (MDNR)
Jesse Anderson – Minnesota Pollution
Control Agency (MPCA)
Bill Wilder – MPCA
Sarah Beimers – Minnesota State Historic
Preservation Office (SHPO)
David Mather – SHPO
Nick Utrup – U.S. Fish and Wildlife Service
(USFWS)

Below is a meeting summary of Minnesota Power's Initial Study Report (ISR) Meeting. The meeting PowerPoint is attached as Attachment A.

1. Welcome and Introductions

MP (N. Rosemore) welcomed everyone and lead introductions. Meeting attendees are listed above.

2. Overview of Project Operations and Study Scoping Process

MP (N. Rosemore) provided an overview of Project operations and HDR (D. Malkin) provided an overview of the study scoping process.

FERC (S. Wiseman) stated MP should check in with FERC in the first quarter of 2021 regarding COVID-19 and any impacts to the planned 2021 Recreation Study.

FERC (L. Washington) reiterated schedule and stated any early filings will not change subsequent filing dates and that all filing dates will be made in accordance to Scoping Document 2.

3. Grand Rapids Water Quality Study Overview

MP (G. Prom) presented the Grand Rapids Water Quality Study overview. FERC (P. Ely) questioned if MP had any idea of what may have caused dissolved oxygen (DO) excursions. MP (G. Prom) stated that they were not speculating on the matter.

4. Grand Rapids Entrainment and Impingement Study Overview

MP (G. Prom) presented the Grand Rapids Entrainment and Impingement Study overview. The MDNR (C. Cohn) stated MDNR does not support desktop entrainment and impingement studies.

FERC (P. Ely) requested MP provide citations for Table 14 of the study report. *MP agreed to this request and has attached citations as Attachment B.*

5. Grand Rapids Cultural Study Overview

MP (G. Prom) presented the Grand Rapids Cultural Study overview. FERC (C. Corballis) stated the report map was confusing as to whether sites were inside or outside the Project Boundary. SHPO (S. Beimers) requested a new map with the Area of Potential Effects (APE) clearly labeled for SHPO review. SHPO (S. Beimers) stated that the current APE has not been agreed to. HDR (D. Malkin) stated that a revised APE map and listing of sites inside and outside of the APE would be provided. *A revised APE map is attached as Attachment C. A listing of sites inside and outside of the APE will be provided at a later date to FERC and SHPO under separate cover and e-filed as privileged.*

FERC (C. Corballis) asked if Pokegama Dam was inside or outside of the APE and if MP had checked with the U.S. Army Corps of Engineers (USACE). MP will clarify the maps. FERC stated that any correspondence with the SHPO should be sent to FERC for files. SHPO (S. Beimers) questioned if any tribal outreach had been conducted. MP (N. Rosemore) stated that tribal contacts are included on the distribution list for the major FERC filings. HDR (D. Malkin) questioned if FERC had contacted any of the tribes.

6. Prairie River Water Quality Study Overview

MP (G. Prom) presented the Prairie River Water Quality Study overview. No comments were received after the presentation.

7. Prairie River Entrainment and Impingement Study Overview

MP (G. Prom) presented the Prairie River Entrainment and Impingement Study overview.

The MDNR (C. Cohn) stated that MDNR does not support desktop entrainment and impingement studies. The MDNR (C. Cohn) further stated that desktop entrainment and impingement studies do not take into account Minnesota-specific projects.

8. Prairie River Cultural Study Overview

MP (G. Prom) presented the Prairie River Cultural Study overview. FERC (C. Corballis) stated that the report map was confusing as to whether sites were inside or outside the Project Boundary. SHPO (S. Beimers) requested a new map with the APE clearly labeled for SHPO review. SHPO (S. Beimers) stated that the current APE has not been agreed to. HDR (D. Malkin) stated that a revised APE map and listing of sites inside and outside of APE would be provided. *A revised APE map is attached as Attachment D. A listing of sites inside and outside of the APE will be provided at a later date to FERC and SHPO under separate cover and e-filed as privileged.*

SHPO (S. Beimers) questioned when potential effects would be addressed. HDR (D. Malkin) stated analyses of Project effects on all resource areas will be addressed in the License Application.

SHPO (S. Beimers) has concerns with unevaluated sites since they are not listed as eligible or non-eligible. FERC (C. Corballis) stated that unevaluated sites can be considered potentially eligible.

SHPO (S. Beimers) asked if the cabin was newly assessed. InSitu (D. Salas) stated affirmatively.

SHPO (D. Mathers) stated he did not have any comments at the time but supports SHPO's comments (S. Beimers) and FERC's comments (C. Corballis).

9. Next Steps and Meeting Wrap Up

MPCA (B. Wilder) asked if there were hard deadlines for the comments. HDR (D. Malkin) responded that stakeholder comments are due December 22, 2020. MPCA (B. Wilder) asked if the USACE had provided comments or if USACE permitting was being conducted. FERC (L. Washington) stated she would check to see if USACE had filed any comments.



Attachment A

Initial Study Report
Meeting PowerPoint
Presentation



FERC No. 2362 - Grand Rapids Project

FERC No. 2361 - Prairie River Project

Initial Study Report Meeting
October 29, 2020



MEETING AGENDA

1. Welcome and Introductions
2. Overview of Projects and Study Scoping Process
3. Grand Rapids Hydroelectric Project Studies Overview
 - Water Quality Study
 - Desktop Entrainment and Impingement Study
 - Cultural Resources Study
4. Prairie River Hydroelectric Project Studies Overview
 - Water Quality Study
 - Desktop Entrainment and Impingement Study
 - Cultural Resources Study
5. Next Steps
6. Questions and Comments



INITIAL STUDY REPORT

- ALLETE Inc., doing business as Minnesota Power (MP), is pursuing a new license for the Grand Rapids Project and subsequent license for the Prairie River Project in accordance with FERC's Integrated Licensing Process (ILP) at 18 CFR Part 5.
- Pursuant to the ILP, MP developed an Initial Study Report (ISR) that was filed with the Commission on October 19, 2020.
- The ISR describes MP's overall progress in implementing the study plan and schedule approved in FERC's October 16, 2019 Study Plan Determination (SPD), the data collected, and any variances from the study plan and schedule.
- The Commission's regulations at 18 C.F.R. § 5.15(c) requires MP to hold an ISR Meeting within 15 days of filing the ISR.
- The purpose of the ISR Meeting is to discuss available study results and any proposals to modify the study plans in light of the data collected.



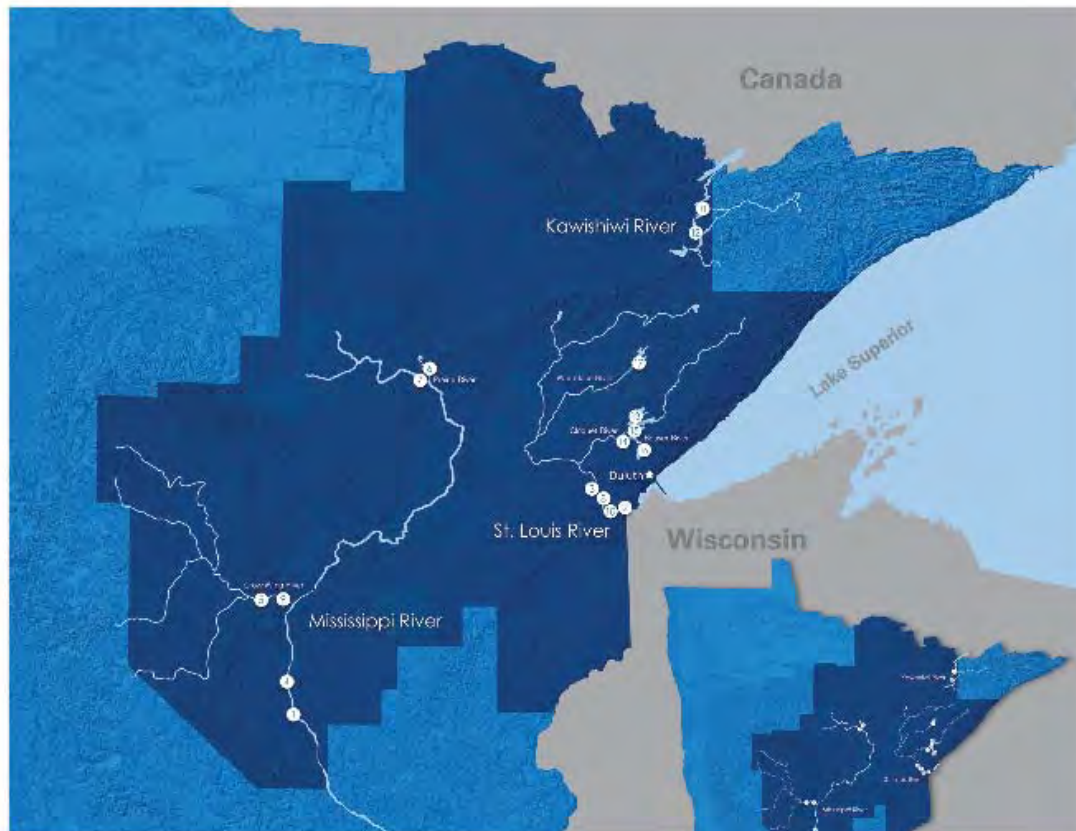
PROCESS PLAN AND SCHEDULE

Major Milestones	Responsible Party	Dates
File PAD and NOI (18 CFR §5.5(d))	MP	December 13, 2018
Issue Notice of PAD/NOI and SD1 (18 CFR §5.8(a))	FERC	December 13, 2018
File Proposed Study Plan (PSP) (18 CFR §5.11)	MP	May 27, 2019
Study Plan Meeting(s) (18 CFR §5.11(e))	MP	June 26, 2019
Comments on PSP (18 CFR §5.12)	Stakeholders	August 25, 2019
File Revised Study Plan (RSP) (18 CFR §5.13(a))	MP	September 24, 2019
Comments on RSP Due (18 CFR §5.13(b))	Stakeholders	October 9, 2019
Issuance of Study Plan Determination (18 CFR §5.13(c))	FERC Director	October 16, 2019
Initial Study Report (ISR) (18 CFR §5.15(c))	MP	October 19, 2020
File Draft License Application (18 CFR §5.16(a))	MP	August 3, 2021
File Updated Study Report (USR) (18 CFR §5.15(f)) (if necessary)	MP	October 23, 2021
File Final License Application (18 CFR §5.17)	MP	December 31, 2021



OVERVIEW OF PROJECTS AND STUDY SCOPING PROCESS





Minnesota Power's Hydroelectric Facilities

Hydroelectric Generation Facilities

- | | |
|-----------------|----------------|
| 1 Blanchard | 7 Grand Rapids |
| 2 Fond du Lac | 8 Scanlon |
| 3 Knife Falls | 9 Sylvan |
| 4 Little Falls | 10 Thomson |
| 5 Pillager | 11 Winton |
| 6 Prairie River | |

Hydroelectric Reservoir Dams

- | |
|-----------------|
| 12 Birch Lake |
| 13 Boulder Lake |
| 14 Fish Lake |
| 15 Island Lake |
| 16 Rice Lake |
| 17 Whiteface |



Minnesota Power's Hydro System

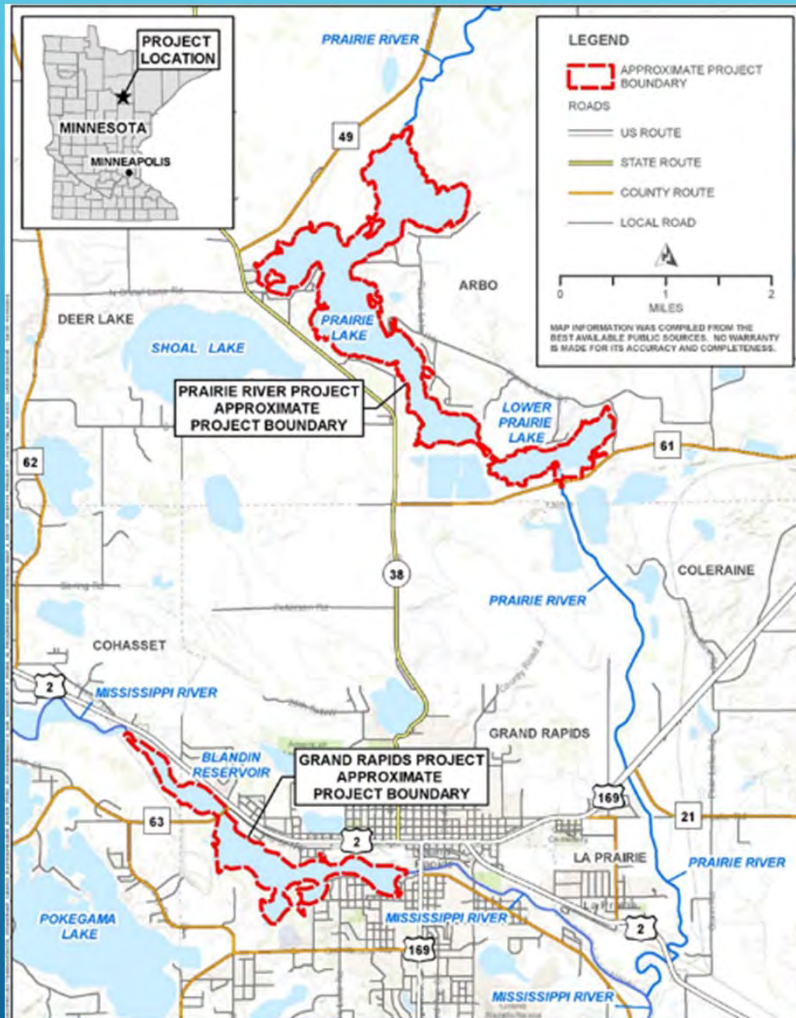
- 7 FERC Projects
- 11 Hydro Generating Stations
- 6 Headwater Reservoirs

FERC No. 2362 - Grand Rapids Project

FERC No. 2361 - Prairie River Project

- Current licenses expire December 31, 2023
- NOIs & joint PAD filed December 13, 2018
- Using Integrated Licensing Process (ILP)





PRAIRIE RIVER PROJECT

- Prairie River - River Mile 6.3
- Itasca County, Arbo Township
- 1.1 MW Run-of-river
- Reservoir = 1,305 acres
 - Upper and Lower connected through a gorge

GRAND RAPIDS PROJECT

- Mississippi River - River Mile 1,182
- Itasca County, City of Grand Rapids
- 2.1 MW Run-of-river
- Reservoir = 465 acres

GRAND RAPIDS PROJECT

Originally constructed in 1901

Concrete dam - 21 feet high

Supplements power supply for Blandin Paper Mill

Two generating units – 2.1 MW capacity

Average annual generation = 6,000 MWh



GRAND RAPIDS PROJECT



Run-of-river

- Target Elevation 1268.2 feet
- Operating Band ± 0.1 feet

Discharge Capabilities

- Generating Units – 600 cfs and 1000 cfs
- Spillway Gates – 5,000 cfs

Inflow controlled by USACE Pokegama Dam

PRAIRIE RIVER PROJECT

Originally constructed in 1902

Concrete dam - 17 feet high

450-foot-long, 10-foot-diameter penstock

Two generating units – 1.1 MW capacity

Average annual generation = 3,000 MWh



PRAIRIE RIVER PROJECT



Run-of-river

- Target Elevation 1289.4 feet
- Operating Band
 - ± 0.1 feet, normal conditions
 - ± 0.5 feet, high-flow conditions

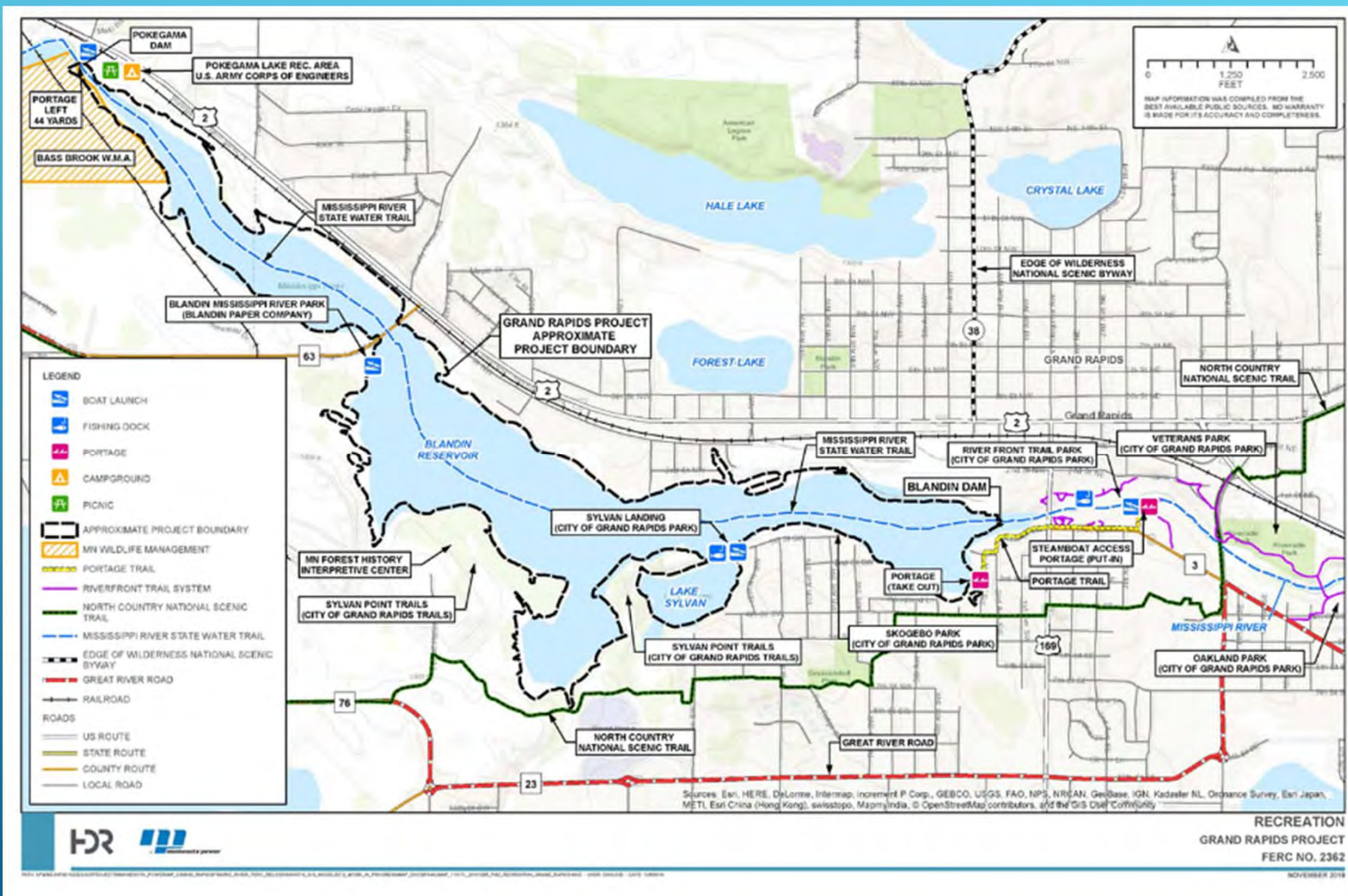
Discharge Capabilities

- Generating Units – 168 cfs and 302 cfs
- Spillway Gates – 3,688 cfs

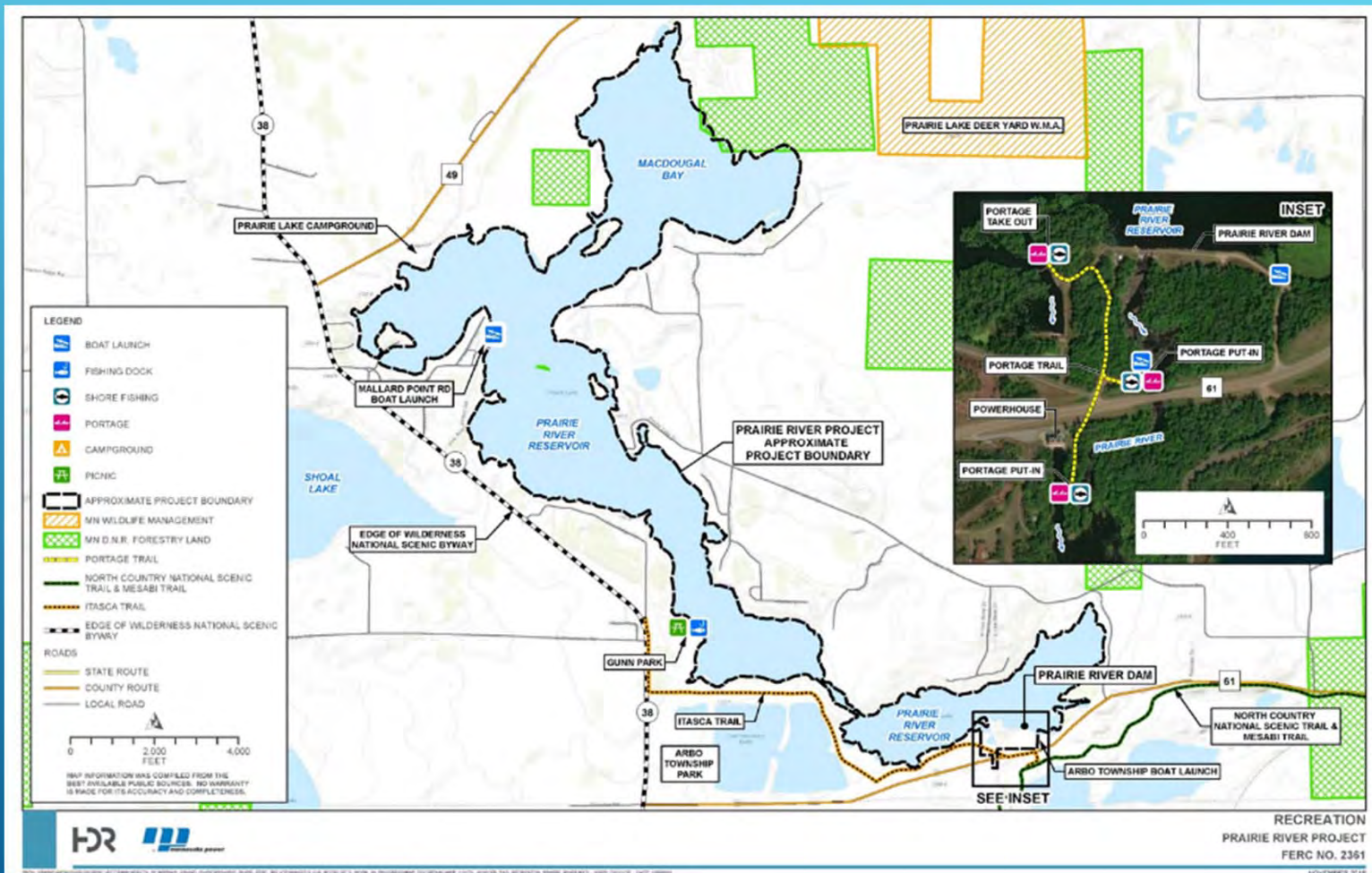
Minimum flow requirement in bypass reach in April, May, & June

Powerhouse rebuilt after fire in 2008

GRAND RAPIDS PROJECT



PRAIRIE RIVER PROJECT



STUDIES APPROVED IN THE STUDY PLAN DETERMINATION

- Grand Rapids Water Quality Study
- Grand Rapids Fish Entrainment and Impingement Study
- Grand Rapids Recreation Resources Study (*postponed to 2021*)
- Grand Rapids Cultural Resources Study
- Prairie River Water Quality Study
- Prairie River Fish Entrainment and Impingement Study
- Prairie River Recreation Resources Study (*postponed to 2021*)
- Prairie River Cultural Resources Study



PROPOSALS TO MODIFY STUDIES OR FOR NEW STUDIES

- MP will file an ISR Meeting Summary with the Commission on or before November 22, 2020.
- Stakeholders and FERC may file comments on the meeting summary, request modifications to studies, or request new studies on or before December 22, 2020.
- If requesting modifications to studies, stakeholders must take into account FERC's Criteria for Modification of Approved Studies (18 C.F.R. § 5.15(d)).
- If requesting new studies, stakeholders must take into account FERC's 7 Criteria for New Study (18 C.F.R. § 5.15(e)).



CRITERIA FOR MODIFICATION OF APPROVED STUDY

Must address (§5.15(d)):

- (1) Approved studies were not conducted as provided for in the approved study plan; or
- (2) The study was conducted under anomalous environmental conditions or that environmental conditions have changed in a material way.



CRITERIA FOR NEW STUDY

Must address (§5.15(e)):

- (1) Any material changes in the law or regulations applicable to the request;
- (2) Why the goals and objectives of any approved study could not be met with the approved study methodology;
- (3) Why the request was not made earlier;
- (4) Significant changes in the project proposal or that significant new information material to the study objectives has become available;
- (5) Why the new study request satisfies the study criteria in §5.9(b)[7 criteria under the ILP].



UPCOMING ILP MILESTONES

Milestone	Responsible Party	Date
File Initial Study Report Meeting Summary (18 CFR §5.15(c)(3))	MP	November 22, 2020
File Meeting Summary Disagreements (18 CFR §5.15(c)(4))	Stakeholders	December 22, 2020
File Responses to Meeting Summary Disagreements (18 CFR §5.15(c)(5))	MP	January 21, 2021
Resolution of Disagreements (18 CFR §5.15(c)(6))	FERC	February 20, 2021

STUDY SUMMARIES



GRAND RAPIDS WATER QUALITY STUDY

Goals and Objectives

The Water Quality Study will collect information and establish recent baseline information on water quality in the vicinity of the Project to further expand on the extensive water quality data that has been collected historically. The study will employ standard methodologies that are consistent with the scope and level of effort of water quality monitoring conducted at hydropower projects in the region. The information collected by this study will be used to determine the Project's potential effects on water quality and provide water quality data sufficient to determine compliance with applicable water quality standards (Minnesota Statute Chapter 7050) and designated uses.



GRAND RAPIDS WATER QUALITY STUDY

- Water temperature and dissolved oxygen (DO) were measured bi-weekly in the Project reservoir and immediately downstream at the following locations:
 - Blandin Reservoir – log boom corner;
 - Blandin Reservoir – turbine intake area;
 - Tailrace near retaining wall; and
 - Upstream of Highway 169 Bridge (adjusted for safety reasons to downstream of bridge).
- 11 water quality sampling dates from May 12, 2020 through September 22, 2020.



GRAND RAPIDS WATER QUALITY STUDY

Summary of Mean Water Temperature and DO

Sampling Location	DO (mg/L)	Water Temperature (°C)	Number of Observations
Log Boom Corner	7.38	19.7	71
Turbine Intake Area	7.58	19.8	72
Tailrace Near Retaining Wall	7.55	19.9	32
Downstream of Hwy 169 Bridge	7.71	19.8	33

- Water temperature generally increased May through Mid-July and then decreased.
- One sampling event (August 25, 2020), DO readings were slightly below the state standard at approximately 4.5 mg/L.
- One variance from study plan – first sampling event delayed until May 12th therefore, first and second sampling events were one week apart and not two.



GRAND RAPIDS DESKTOP ENTRAINMENT AND IMPINGEMENT STUDY

Goals and Objectives

Describe the physical characteristics of the powerhouse and intake structures including location, dimensions, turbine specifications, trashrack spacing, and field collection of intake velocities that could influence entrainment.

Describe the local fish community and compile a target species list for entrainment analysis.

Use intake velocities, trashrack spacing, target fish swim speeds, and other Project specifications to conduct a desktop impingement assessment.

Conduct a desktop analysis that incorporates the impingement assessment, Project specifications, and hydrology to quantify turbine entrainment and mortality at the Project.



GRAND RAPIDS DESKTOP ENTRAINMENT AND IMPINGEMENT STUDY

- Summary of the existing fisheries information used to describe the fish communities that may be susceptible to turbine entrainment.
- Monthly quantitative entrainment estimates derived for a list of recreational and ecologically important target species using a literature review including an analysis of empirical entrainment rate data collected at various hydroelectric projects, species periodicities, and their average Relative Composition (RC%) in the Project's pools.
- Potential for trashrack exclusion and vulnerability to impingement/entrainment assessed by incorporating the trashrack clear spacing, intake velocities, swimming speeds, and body scaling factors.
- Literature review of turbine mortality field studies conducted at other hydroelectric projects was performed to compile fish survival rates applicable to the Project.
- Blade strike analysis was performed to calculate turbine mortality rates at the Project.



GRAND RAPIDS DESKTOP ENTRAINMENT AND IMPINGEMENT STUDY

- Average annual estimate of target species expected to become entrained at the Project is 14,661 fish (rounded to nearest fish) based on normal water year.
 - Number could range from approximately 4,133 fish (dry year) to 20,285 fish (wet year).
 - Majority of the entrainment estimates are small fish in the 0- to 4-inch length groups.
- Average number of target species expected to suffer immediate turbine-related mortality at the Project is estimated to be 3,568 fish (rounded to nearest fish).
 - Number could range from approximately 1,004 fish (dry year) to 4,896 fish (wet year).
- No variances from study plan.



GRAND RAPIDS CULTURAL RESOURCES STUDY

Goals and Objectives

- Consult with the Minnesota State Historic Preservation Office (SHPO) and potentially affected federally-recognized Indian Tribes to determine if the APE is appropriate for the Project;
- Conduct background research and an archival review;
- Conduct a Phase 1 Reconnaissance Survey (Reconnaissance Survey) of the Project's APE;
- Consult with federally-recognized Indian Tribes to develop and conduct an inventory of properties of traditional religious and cultural importance (often referred to as "traditional cultural properties") within the APE;
- Assess the condition of the area where any historic and archaeological sites are located for shoreline stability and evidence of erosion; and
- If determined necessary, update the Project's Cultural Resources Management Plan (CRMP) in consultation with the Minnesota SHPO and federally-recognized Indian Tribes to include appropriate measures for the management of historic properties within the Project's APE, including specific protection, mitigation and enhancement measures.



GRAND RAPIDS CULTURAL RESOURCES STUDY

- Conducted background research and archival review to inform the specific research design and historic environmental contexts.
- Phase I cultural resource investigation conducted between June 15 and July 10, 2020.
 - Visual inspection along shoreline of the reservoir via boat.
 - Pedestrian survey for landforms with slopes less than 20 degrees and surface visibility of 25 percent or greater.
- Assessed National Register of Historic Places (NRHP)-eligibility of Project facilities.



GRAND RAPIDS CULTURAL RESOURCES STUDY

- Of the five previously identified archaeological resources within the Area of Potential Effects (APE), three were previously determined to be ineligible for the NRHP and two were unevaluated.
 - Locations inspected; no Project-related impacts.
 - No further work recommended.
- No new archaeological resources were identified during the Phase I cultural resource investigation.
- No historic properties affected within the Project APE and no further work recommended.
- No variances from study plan.



PRAIRIE RIVER WATER QUALITY STUDY

Goals and Objectives

The Water Quality Study will collect information and establish recent baseline information on water quality in the vicinity of the Project to further expand on the extensive water quality data that has been collected historically. The study will employ standard methodologies that are consistent with the scope and level of effort of water quality monitoring conducted at hydropower projects in the region. The information collected by this study will be used to determine the Project's potential effects on water quality and provide water quality data sufficient to determine compliance with applicable water quality standards (Minnesota Statute Chapter 7050) and designated uses.



PRAIRIE RIVER WATER QUALITY STUDY

- Water temperature and dissolved oxygen (DO) were measured bi-weekly in the Project reservoir and immediately downstream at the following locations:
 - Upstream of the coarse trashrack;
 - Tailrace area; and
 - Bypass reach.
- 11 water quality sampling dates from May 12, 2020 through September 22, 2020.



PRAIRIE RIVER WATER QUALITY STUDY

Summary of Mean Water Temperature and DO

Sampling Location	DO (mg/L)	Water Temperature (°C)	Number of Observations
Upstream of Coarse Trash Rack	8.43	20.4	37
Bypass Reach	8.77	20.5	32
Tailrace Area	8.18	20.0	33

- Water temperature generally increased at all sites until August and then decreased.
- All DO readings were above the state standard.
- One variance from study plan – first sampling event delayed until May 12th therefore, first and second sampling events were one week apart and not two.

PRAIRIE RIVER DESKTOP ENTRAINMENT AND IMPINGEMENT STUDY

Goals and Objectives

- Describe the physical characteristics of the powerhouse and intake structures including location, dimensions, turbine specifications, trashrack spacing, and field collection of intake velocities that could influence entrainment.
- Describe the local fish community and compile a target species list for entrainment analysis.
- Use intake velocities, trashrack spacing, target fish swim speeds, and other Project specifications to conduct a desktop impingement assessment.
- Conduct a desktop analysis that incorporates the impingement assessment, Project specifications, and hydrology to quantify turbine entrainment and mortality at the Project.



PRAIRIE RIVER DESKTOP ENTRAINMENT AND IMPINGEMENT STUDY

- Summary of the existing fisheries information used to describe the fish communities that may be susceptible to turbine entrainment.
- Monthly quantitative entrainment estimates derived for a list of recreational and ecologically important target species using a literature review including an analysis of empirical entrainment rate data collected at various hydroelectric projects, species periodicities, and their average Relative Composition (RC%) in the Project's pools.
- Potential for trashrack exclusion and vulnerability to impingement/entrainment assessed by incorporating the trashrack clear spacing, intake velocities, swimming speeds, and body scaling factors.
- Literature review of turbine mortality field studies conducted at other hydroelectric projects was performed to compile fish survival rates applicable to the Project.
- Blade strike analysis was performed to calculate turbine mortality rates at the Project.



PRAIRIE RIVER DESKTOP ENTRAINMENT AND IMPINGEMENT STUDY

- Average annual estimate of target species expected to become entrained at the Project is 3,320 fish (rounded to nearest fish) based on normal water year.
 - Number could range from approximately 1,086 fish (dry year) to 5,994 fish (wet year).
 - Majority of the entrainment estimates are small fish in the 0- to 4-inch length groups.
- Average number of target species expected to suffer immediate turbine-related mortality at the Project is estimated to range from 237 to 593 fish.
 - Number could range from approximately 79-197 fish (dry year) to 445-1,113 fish (wet year).
- No variances from study plan.



PRAIRIE RIVER CULTURAL RESOURCES STUDY

Goals and Objectives

- Consult with the Minnesota State Historic Preservation Office (SHPO) and potentially affected federally-recognized Indian Tribes to determine if the APE is appropriate for the Project;
- Conduct background research and an archival review;
- Conduct a Phase 1 Reconnaissance Survey (Reconnaissance Survey) of the Project's APE;
- Consult with federally-recognized Indian Tribes to develop and conduct an inventory of properties of traditional religious and cultural importance (often referred to as "traditional cultural properties") within the APE;
- Assess the condition of the area where any historic and archaeological sites are located for shoreline stability and evidence of erosion; and
- If determined necessary, update the Project's Cultural Resources Management Plan (CRMP) in consultation with the Minnesota SHPO and federally-recognized Indian Tribes to include appropriate measures for the management of historic properties within the Project's APE, including specific protection, mitigation and enhancement measures.



PRAIRIE RIVER CULTURAL RESOURCES STUDY

- Conducted background research and archival review to inform the specific research design and historic environmental contexts.
- Phase I cultural resource investigation conducted between June 15 and July 10, 2020.
 - Visual inspection along shoreline of the reservoir via boat.
 - Pedestrian survey for landforms with slopes less than 20 degrees and surface visibility of 25 percent or greater.
- Assessed NRHP-eligibility of Project facilities.



PRAIRIE RIVER CULTURAL RESOURCES STUDY

- Of the 19 previously identified archaeological resources within the APE, eight were previously determined to be eligible for the NRHP, six were determined to be ineligible for the NRHP and five were unevaluated.
 - Locations inspected; no Project-related impacts and no further work recommended.
- Four new archaeological resources were identified during the Phase I cultural resource investigation. All determined ineligible.
- No historic properties affected within the Project APE and no further work recommended.
- No variances from study plan.



UPCOMING ILP MILESTONES

Milestone	Responsible Party	Date
File Initial Study Report Meeting Summary (18 CFR §5.15(c)(3))	MP	November 22, 2020
File Meeting Summary Disagreements (18 CFR §5.15(c)(4))	Stakeholders	December 22, 2020
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CONTACT INFORMATION

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(218) 725-2101

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Project relicensing website:

www.mnpower.com/Environment/Hydro





Attachment B

Entrainment and
Impingement Citations

Entrainment and Impingement Table 14 Citations

Crescent, NY:

Mathur, D., Heisey, P.G., McGrath, K.J., and T.R. Tatham. 1996. Juvenile Blueback Herring (*Alosa Aestivalis*) Survival Via Turbine and Spillway. Journal of the American Water Resources Association. Volume 32. February 1996. Pp 155-161.

RMC Environmental Services, Inc. 1992. Juvenile blueback herring (*Alosa aestivalis*) survival in powerhouse/turbine passage and spillage over the dam at the Crescent Hydroelectric Project, New York. Filed on July 28, 1992; Accession No. 19920729-0355. Accessed at: <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1752-1688.1996.tb03443.x>

Garvin Falls, NH:

PSNH (Public Service Company of New Hampshire) 2006. 2005 Annual Report on Anadromous Fish Passage Activities and Facilities. Filed on February 22, 2006.

Amaral, S. Fay, C., and G. Hecker. Estimating Total Passage Survival for Fish Migrating Downstream at Hydropower Projects. Alden Research Laboratory. Website: Accessed at: <https://www.aldenlab.com/hubfs/assets/docs/Estimating-total-downstream-passage-survival-Alden.pdf?hsLang=en>

Little Falls Hydro, NY:

NAI (Normandeau Associates, Inc) 1997. Final Report To Evaluate Effectiveness with Respect to Survival and Injury Rates of Blueback Herring After Passage Through the Little Falls Hydro Bypass Pipe. Prepared for the Little Falls Hydroelectric Company. NAI Project No. 16235. February 1997.

Rock Island WA:

Amaral, S. Fay, C., and G. Hecker. Estimating Total Passage Survival for Fish Migrating Downstream at Hydropower Projects. Alden Research Laboratory. Website: Accessed at: <https://www.aldenlab.com/hubfs/assets/docs/Estimating-total-downstream-passage-survival-Alden.pdf?hsLang=en>

Vernon, VT/NH:

NAI (Normandeau Associates, Inc). 1996. The Vernon Bypass Fishtube: Evaluation of survival and injuries of Atlantic salmon smolts. Prepared for the New England Power Company. NAI Project No. 15030.003, May 1996.

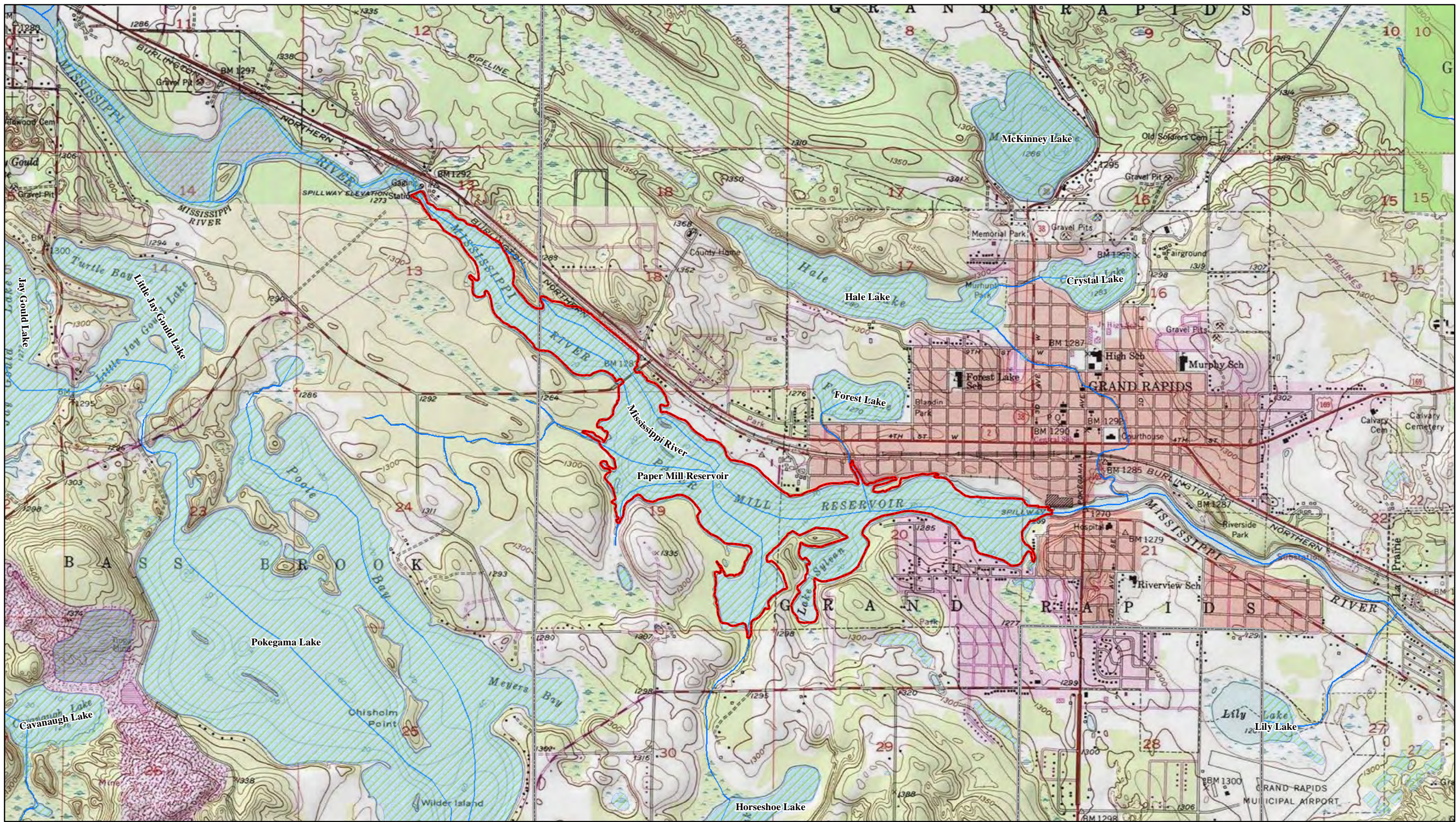
Wilder, VT:

RMC. 1992. Survival of Atlantic Salmon Smolts Passing through the Log-ice Sluice at the Wilder Hydroelectric Station, Vermont/New Hampshire. Prepared for New England Electric Power Company



Attachment C

Grand Rapids Area of Potential Effect Map



Legend

Proposed Area of Potential Effect (Elevation 1268.5)

Township Boundary

Township/Range/Section

NHD Waterbody

NHD Stream/River

N

W

E

S

PROJECT LOCATION

Grand Rapids Hydroelectric Project

Area of Potential Effect

Itasca County, Minnesota

2,00002,000

Feet

1:24,000

1 inch equals 2,000 feet

Note: Imagery courtesy of ESRI

Figure 1. Project location on the

USGS 1953 Grand Rapids, MN 7.5

minute series topographic map.

N

W

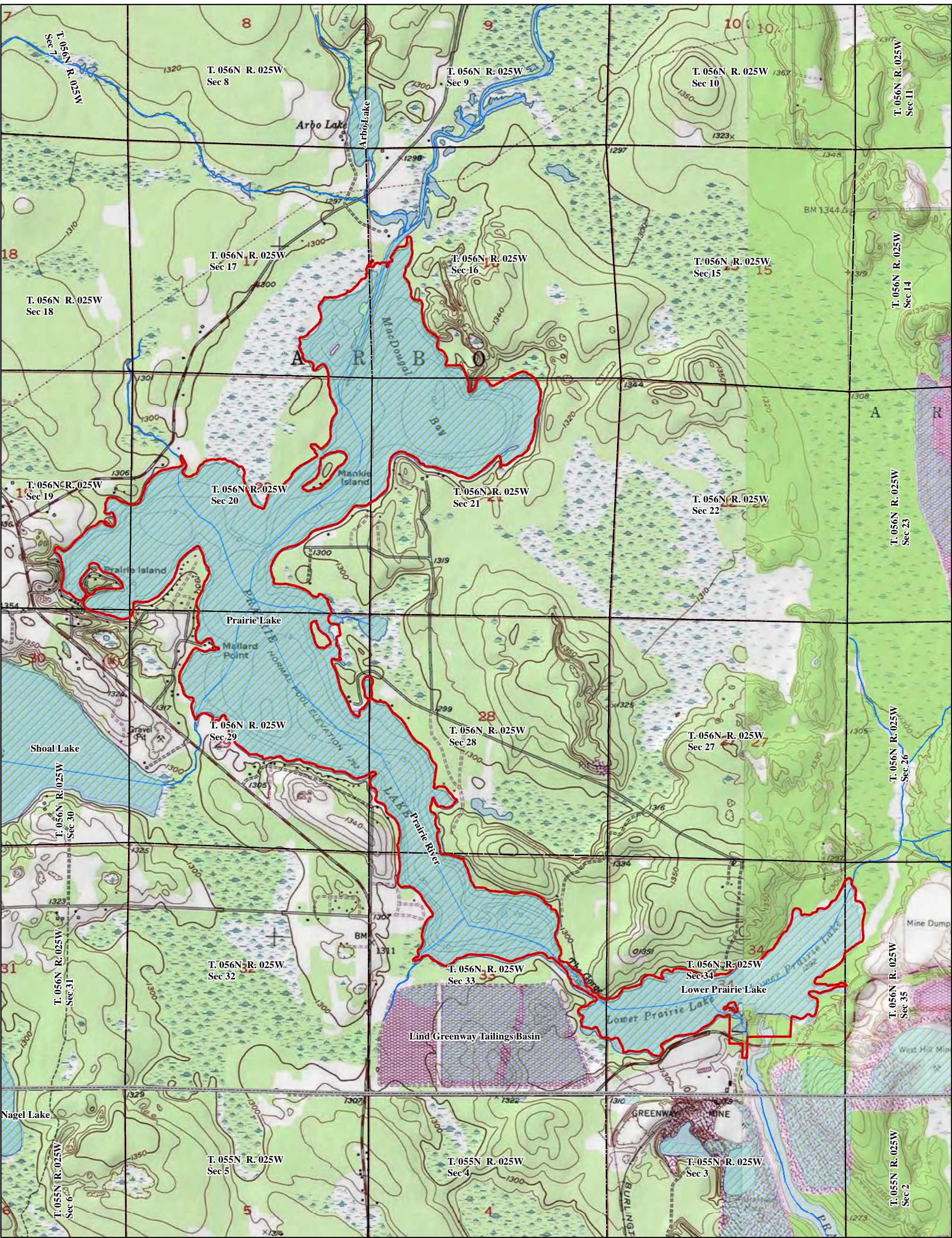
E

S



Attachment D

Prairie River Area of Potential Effect Map



Legend

Proposed Area of Potential Effect (Elevation 1290)

Township Boundary

Township/Range/Section

NHD Waterbody

NHD Stream/River

N

W

E

S

2,000

0

2,000

1:24,000

1 inch equals 2,000 feet

PROJECT LOCATION

Prairie River Hydroelectric Project

Area of Potential Effect

Itasca County, Minnesota

Note: Aerial Imagery courtesy of ESRI

Figure 1. Project location on the

USGS 1953 Cohasset East, MN 7.5

minute series topographic map.

N

W

E

S