Exhibit A

Duncan Weinberg Genzer & Pembroke, Washington, DC law firm

- Joshua Adrian & Donald Clarke
- Law Firm representing Crown Hydro with the Federal Energy Regulatory Commission.

The firm provides a wide range of counseling, regulatory, litigation and legislative services to clients in all regions of the country. The firm's practice includes energy and utility law, environmental and municipal law.
The firm provides Crown Hydro with extensive experience in administrative and regulatory law as it applies to hydroelectric permitting and licensing.

Wenck & Associates

- Joel Toso, Senior Water Resource Engineer
- Lead engineers in the development of large scale water projects.

Wenck is a team of engineers, scientists, consultants, hazardous materials specialists and construction professionals helping over 1,000 clients in 49 states. Joel Toso, the Crown Hydro lead, studied and received his PhD at the University of Minnesota's laboratory at St. Anthony Falls.

Streamline Associates

- Andrew Schmidt, President

25 years of experience in all phases of the NHPA 106 Process in a variety of large scale development projects. Streamline's expertise covers all aspects of the NHPA process including defining an APE, identifying historic resources and completing mitigation measures. Experience extends to across federal, state, and local jurisdictions throughout the country.

Martin & Squires, P.A.

- Richard Savelkoul, Business and Energy Attorney
- Minnesota counsel representing Crown Hydro on local issues.

Extensive experience in the Midwest representing projects and their owners in construction, contracts and in front of regulatory bodies.

Exhibit B

From: Gary Monson [mailto:glmonson@comcast.net]
Sent: Thursday, August 24, 2017 11:47 AM
To: jeddins@achp.org; jfowler@achp.org; melissa.m.jenny@usace.army.mil; nanette.m.bischoff@usace.army.mil; amy.spong@mnhs.org; sarah.beimers@mnhs.org; david.frank@minneapolismn.gov; nick_karasch@nps.gov; susan_overson@nps.gov; laura.salveson@mnhs.org; jmiller@minneapolisparks.org
Cc: 'William (Bil) & Karen Hawks' <wkhawks@aol.com>; Ken & Lori Welle <ken@welleauto.com>; Joel W. Toso <jtoso@wenck.com>; 'Dean Sather' <dsather@merjent.com>; Bucky & Linda Monson <glmonson@comcast.net>; 'Joshua Adrian' <JEA@dwgp.com>
Subject: Crown Hydro, LLC, Project #11175 @ St. Anthony Falls

Attached is the draft Programmatic Agreement for the above reference project as part of the Section 106 process.

Attached also is a cover letter asking for your participation in this process.

If this document should be shared with another party in your organization please feel free to do so.

A hard copy of this message is also being sent to each of your respective offices for your convenience.

Yours in service,

Gary "Bucky" Monson
Crown Hydro, LLC
glmonson@comcast.net
612-267-7688 (cell)

August 24, 2017

Project No. 11175 – Minnesota
Crown Mill Hydroelectric Project;
Crown Hydro, LLC

TO THE PARTIES ADDRESSED:

RE: Transmittal of the draft Programmatic Agreement for the Crown Mill Hydroelectric Project; Crown Hydro LLC, FERC Project No. 11175

Crown Hydro, LLC, acting as the non-government representative for section 106 of the NHPA for the Project, has enclosed a draft Programmatic Agreement (PA) for the Crown Mill Hydroelectric Project No. 11175.

You have been identified as a Consulting Party in connection with this project. You are asked for your review and comment on the attached draft proposal as part of the section 106 process, as noted in the document. Please respond to this request within the following 30 days.

Direct such comment to Crown Hydro, LLC by email at glmonson@comcast.net. If you have questions please contact Gary "Bucky" Monson at 612-267-7688 or at that same email address.

Sincerely,

Gary "Bucky" Monson - CFO
Crown Hydro, LLC

PROGRAMMATIC GREEMENT
BETWEEN
THE FEDERAL ENERGY REGULATORY COMMISSION, ST. PAUL DISTRICT UNITED STATES ARMY CORPS OF ENGINEERS, AND THE MINNESOTA STATE HISTORIC PRESERVATION OFFICE FOR MANAGING HISTORIC PROPERTIES THAT MAY BE AFFECTED BY ISSUING A LICENSE AMENDMENT TO CROWN HYDRO, LLC. FOR THE CONSTRUCTION AND OPERATION OF THE CROWN MILL HYDROELECTRIC PROJECT IN HENNEPIN COUNTY, MINNESOTA (FERC No. 11175)

WHEREAS, the Federal Energy Regulatory Commission or its staff (hereinafter, "Commission") proposes to issue a license amendment to Crown Hydro, LLC. (hereinafter, "Licensee") to construct, operate, and maintain the Crown Mill Hydroelectric Project No. 11175 (hereinafter, "Project") as authorized by Part I of the Federal Power Act, 16 U.S.C. sections 791(a) through 825(r), *as amended;* and

WHEREAS, the Commission has determined that issuing such a license may adversely affect properties included in or eligible for inclusion in the National Register of Historic Places (hereinafter, "historic properties"), including the Saint Anthony Falls Historic District (hereinafter, "Historic District") and the determined eligible the U.S. Army Corps of Engineers (USACE) Upper Lock and Dam Facility, making the Project an undertaking subject to review by the Commission under section 106 (54 U.S.C. § 306108) of the National Historic Preservation Act (NHPA) (54 U.S.C. § 300101 et seq.) and its implementing regulations, "Protection of Historic Properties" (36 C.F.R. Par 800)"; and

WHEREAS, the area of potential effects (APE) for the Project is entirely within the Historic District, a historic property listed in the National Register of Historic Places, and includes: (1) all lands necessary for or potentially affected by construction, operation, and maintenance of Project; and (2) all areas which may have potential effects to the viewshed, as delineated in Figure(s) in Appendix ; and

WHEREAS, the Licensee has consulted with the Minnesota State Historic Preservation Officer (Minnesota SHPO) regarding the determination and documentation of the area of potential effects for the Project and the development of this programmatic agreement (hereinafter, "PA"), pursuant to 36 CFR 800.4(a); and

WHEREAS, the Commission has determined that the development of the Project will adversely affect portions of the USACE Upper Lock and Dam Facility, which is an National Register of Historic Places eligible property and a potential contributing element of the Historic District. In addition, the construction and operation of the Project, including repairs and modifications that, while necessary for continued safe and efficient operation, may not be in keeping with the Project's historic character, may result in adverse effects to structures that comprise the Historic District and USACE Upper Lock and Dam Facility and other unknown historic properties; and

WHEREAS, the Project is located within the St. Anthony Falls Historic District, and the Commission has notified the Minnesota State Historic Preservation Office (SHPO"), acting as representative of the Secretary of the Interior, of the adverse effect to the Historic Properties included in the St. Anthony Falls Historic District, and has invited participation by the appropriate component of the SHPO in the consultation, pursuant to 36 C.F.R. §800.lO(c) of the section 106 regulations; and

WHEREAS, the Project is in the Mississippi National River and Recreation Area, and the Commission has notified the National Park Service (hereinafter, "Park Service"), acting as representative of the Secretary of the Interior, of the adverse effect to the USACE Upper Lock and Dam Facility, and has invited participation by the appropriate component of the Park Service in the consultation, pursuant to 36 C.F.R. §800.lO(c) of the section 106 regulations; and

WHEREAS, the U.S. Army Corps of Engineers, St. Paul District (USACE), pursuant to 36 C.F.R. 800.2(a)(2), has maintained, with the Commission, lead federal agency status for compliance with section 106 pursuant to 36 C.F.R. 800.2(a)(2); and

WHEREAS, the Commission has designated the Licensee as the non-federal representative for section 106 of the NHPA for the Project, and authorized the Licensee to initiate consultation with the Minnesota SHPO, and other consulting parties, and to conduct day-to-day section 106 consultation responsibilities pursuant to 36 CFR § 800.2(c)(4) of the NHPA; and

WHEREAS, the Commission has developed this Programmatic Agreement in consultation with the consulting parties to resolve the adverse effects that may result from the construction and operation of this undertaking; and

WHEREAS, Appendix A of this Programmatic Agreement provides a description of the Project, identification and evaluation of historic properties, and anticipated effects identified as of the date of this Programmatic Agreement; and

WHEREAS, the Commission has consulted with the Advisory Council on Historic Preservation (hereinafter, "ACHP"), pursuant to 36 C.F.R. section 800.14(b) of the section 106 regulations (36 C.F.R. Part 800); and

WHEREAS, the Commission invited the Leech Lake Band of Ojibwe, Shakopee Mdewakanton Sioux Community of Minnesota, the Flandreau Santee Sioux Tribe, the Lower Sioux Indian Community of Minnesota, the Prairie Island Indian Community of Minnesota, the Santee Sioux Nation of Nebraska, the Sisseton-Wahpeton Oyate of the Lake Traverse Reservation, the Spirit Lake Tribe of North Dakota, and the Upper Sioux Community of Minnesota to participate in consultation for the Project on month day, year: and

WHEREAS, the USACE, the Park Service, the City of Minneapolis, the Minneapolis Park and Recreation Board, the Minneapolis Heritage Preservation Commission, the St. Anthony Falls Heritage Board, and the Mill City Museum, have been invited to participate in the consultation and to concur in this Programmatic Agreement; and

WHEREAS, the Licensee has participated in the consultation and has been invited to concur in this Programmatic Agreement; and

WHEREAS, the Commission will require the Licensee to implement the provisions of this Programmatic Agreement as a license condition if a license is issued.

NOW THEREFORE, the Commission and the Minnesota SHPO agree that the Project will be administered in accordance with the following stipulations in order to satisfy the Commission's section 106 responsibilities during the term of the Project's license.

STIPULATIONS

The Commission will ensure that, upon issuing a license amendment for this Project, the Licensee implements the following stipulations. All stipulations that apply to the Licensee will similarly apply to any and all of the Licensee's successors. Compliance with any of the following stipulations does not relieve the Licensee of any other obligations it has under the Federal Power Act, the Commission's regulations, or its license.

I. MITIGATION FOR ADVERSE EFFECTS

A. HISTORIC AMERICAN ENGINEERING RECORD

(1) Within twelve months of license amendment issuance for the Project and, the Licensee will prepare a Level 1 Historic American Engineering Record (HAER) of the historic hydropower infrastructure of the USACE Upper Lock and Dam Facility. Properties within the river include the locations of the headrace canal, intake structures, intake tunnel, turbine shafts, tailrace tunnel and tailrace canal.

(2) The Licensee will provide a copy of the HAER document to the Minnesota SHPO for review and approval, which will have 30 days to provide any comments. The HAER will mitigate for the adverse effects caused by Project construction and operation. Prior to the development of the HAER, the Licensee will consult, in writing, with the Minnesota SHPO and the USACE. Within thirty (30) days after the final draft has been approved by the Minnesota SHPO, two copies of the original documentation set would be prepared; one will be submitted to the Library of Congress and the other would be provided to the Minnesota SHPO to be added to the Minnesota Historical Society collections. In addition, a digital copy will be provided to the Minnesota SHPO. Photocopies of the documentation set will be provided to the Park Service, Mill City Museum, Minneapolis Heritage Preservation Commission, and Minneapolis Collection at the Hennepin County Central Library. The Licensee will provide documentation to the Commission that the HAER document has been accepted by the Minnesota SHPO.

B. HISTORIC PROPERTIES MANAGEMENT PLAN

Within one year of license issuance, the Licensee will file with the Commission for approval a Historic Properties Management Plan (HPMP) specifying how historic properties will be managed in the Project's APE, as defined in 36 C.F.R. section 800 .16(d), during the term of the license. During the development of the HPMP, the Licensee will consult with the Minnesota SHPO, the USACE, the City of Minneapolis, and the Mill City Museum, as defined in 36 C.F.R. section 800.2(c). The Licensee will seek the Minnesota SHPO's concurrence on the HPMP.

While developing the HPMP, the Licensee will take into account "Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines" (Federal Register, September 29, 1983, Vol. 48, No. 190, Part IV, pp. 44716-44740; hereinafter, "Secretary's Standards") and the "Guidelines for the Development of Historic Properties Management Plans for FERC Hydroelectric Projects." The HPMP

will be developed by, or developed under the direct supervision of, a person or persons who meet(s), at a minimum, the professional qualifications standards for architectural history and historic archaeology in the Secretary's Standards (48 FR 44738-39).

The HPMP will include, at a minimum, provisions for:

1. documentation and description of the APE for the Project and inclusion of a map or maps that clearly show the APE in relation to the Project boundary;

2. completion, if necessary, of identification and evaluation of historic properties within the Project's APE;

3. address the effects of maintenance and operation activities associated with the Project, which includes the Saint Anthony's Falls Historic District, which is listed in the National Register of Historic Places, according to the Secretary of the Interior's, "Standards for the Treatment of Historic Properties" (36 C.F.R. Part 68), and applicable National Park Service Preservation Briefs;

4. continued use and maintenance of historic properties;

5. treatment of historic properties threatened by Project-induced shoreline erosion that is resultant of Project related activities, other Project-related ground-disturbing activities, and vandalism;

6. consideration and implementation of appropriate treatment that would minimize or mitigate unavoidable adverse effects on historic properties;

7. treatment and disposition of human remains that may be discovered, considering any applicable State laws and the ACHP's "Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects," February 23, 2007;

8. procedure for addressing discovery of previously unidentified historic properties or previously unanticipated effects to historic properties during Project operation and maintenance;

9. public interpretation of the historic and archeological properties at the Project, in accordance with the Secretary of the Interior's "Standards for the Treatment of Historic Properties";

10. a list of activities (i.e., routine repair, maintenance, and replacement in kind at the Project) not requiring consultation with the Minnesota SHPO because these activities would have little or no potential effect on historic properties;

11. a procedure to address effects on historic properties in the event of a Project emergency; and

12. a review of the HPMP by the Licensee, the Minnesota SHPO, the USACE, the City of Minneapolis, and the Mill City Museum to ensure that the information continues to assist the Licensee in managing historic properties and updating the HPMP based on agency and tribal consultations.

II. HPMP REVIEW AND IMPLEMENTATION

A. The Licensee will submit the HPMP, along with documentation of the views of the Minnesota SHPO, the USACE, the Park Service, the City of Minneapolis, and the Mill City Museum, to the Commission for review and approval.

B. If the Minnesota SHPO has concurred with the HPMP and the Commission determines that the HPMP is adequate, the Commission will forward a copy of the HPMP, along with the views of the Licensee, the Minnesota SHPO, the USACE, the Park Service, the City of Minneapolis, and the Mill City Museum, to the ACHP for filing.

1. If the ACHP does not object to the HPMP, then the Commission will proceed to ensure that the Licensee implements the HPMP.

2. If the ACHP objects to the HPMP, then the Commission will consult with the ACHP in an effort to reach agreement on the HPMP. If agreement cannot be reached, then the Commission will request that the ACHP comment pursuant to Stipulation IV.B of this Programmatic Agreement.

C. If the Minnesota SHPO has not concurred with the HPMP, or the Commission finds the HPMP inadequate, the Commission will consult with the Licensee and the Minnesota SHPO to seek agreement on the HPMP. If concurrence is not reached within 45 days, the Commission will request that the ACHP enter into consultation to seek agreement on the HPMP.

1. If agreement is reached on the HPMP, the Commission will forward a copy of the revised HPMP to the ACHP for filing.

2. If agreement on the HPMP cannot be reached among the Commission, the Minnesota SHPO, and the Licensee, then the Commission will

request that the ACHP comment pursuant to Stipulation IV.B of this Programmatic Agreement.

D. The Licensee will file an annual report with the Minnesota SHPO, the USACE, the Park Service, the City of Minneapolis, and the Mill City Museum on activities conducted under the implemented HPMP. The report will contain a detailed summary of any cultural resources work conducted during the preceding year; if no work was completed, a letter from the Licensee will be prepared to that effect, and will satisfy the intent of this stipulation.

III. INTERIM TREATMENT OF HISTORIC PROPERTIES

A. After a license for the Project has been issued, but before the HPMP has been approved by the Commission (hereinafter, "the Interim"), the Licensee will consult with the Minnesota SHPO, the USACE, the Park Service, the City of Minneapolis, and the Mill City Museum regarding the effects of the following actions may have on historic properties or previously unidentified historic properties within the APE that may be implemented in the Interim:

1. All Project-related activities, including recreational developments, that require ground-disturbance;
2. Non-routine maintenance, new construction, demolition, or rehabilitation of Project-related National Register-listed or National Register-eligible structures; and
3. Project-induced shoreline erosion of archeological sites not attributable to flood flows or phenomena, such as wind-driven wave action, erodible soils, and loss of vegetation due to natural causes.

B. Consultation will be in accordance with 36 C.F.R. sections 800.4 and 800.5, with the Licensee acting as the Agency Official. If the Licensee and the Minnesota SHPO agree that the activity will not adversely affect historic properties, the Licensee may proceed in accordance with any agreed-upon treatment measures or conditions.

C. If either the Licensee or the Minnesota SHPO determines that the activity will have an adverse effect on a historic property, and the affected property is a National Historic Landmark, the Licensee will submit the matter to the Commission, which will initiate the process set forth at 36 C.F.R. section 800.6. Otherwise, the Licensee and the Minnesota SHPO will consult to develop a strategy for avoiding or mitigating such adverse effects. If the Licensee and the Minnesota SHPO can

D. reach agreement, the Licensee will implement the agreed- upon strategy. If they disagree, the Licensee will submit the matter to the Commission, which will initiate the process set forth at 36 C.F.R. sections 800.6 and 800.7(a) through (c)(3).

IV. DISPUTE RESOLUTION

If at any time during implementation of this Programmatic Agreement and the resulting HPMP, the Licensee, the Minnesota SHPO, the USACE, the Park Service, the City of Minneapolis, or the Mill City Museum objects to any action or any failure to act pursuant to this Programmatic Agreement or the HPMP, they may file written objections with the Commission. In the event a written objection is filed with the Commission, the Commission will follow the steps listed below.

1. The Commission will consult with the objecting party, and with other parties as appropriate, to resolve the objection.

2. The Commission may initiate, on its own, such consultation to remove any of its objections.

B. If the Commission determines that the objection cannot be resolved, the Commission will forward all documentation relevant to the dispute to the ACHP and request that the ACHP comment. Within 30 days after receiving all pertinent documentation, the ACHP will either:

1. provide the Commission with recommendations, which the Commission will consider in reaching a final decision regarding the dispute; or

2. notify the Commission that it will comment pursuant to 36 C.F.R. sections 800.7(c)(1) through (c)(3) of section 106, and proceed to comment.

C. The Commission will consider any ACHP comment, provided in response to such a request, with reference to the subject of the dispute, and will issue a decision on the matter. The Commission's responsibility to carry out all actions under this Programmatic Agreement that are not the subject of dispute will remain unchanged.

V. AMENDMENT AND TERMINATION OF THIS PROGRAMMATIC AGREEMENT

A. The Commission, the Licensee, the Minnesota SHPO, the USACE, the Park Service, the City of Minneapolis, or the Mill City Museum may request that this Programmatic Agreement be amended, whereupon these parties will consult in accordance with 36 C.F.R. section 800.14(b) to consider such amendment. This PA may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy signed by all the signatories is filed with the ACHP.

B. The Commission or the Minnesota SHPO may terminate this Programmatic Agreement by providing 30 days written notice to the other parties, provided that the Commission, the Licensee, the Minnesota SHPO, the USACE, the Park Service, the City of Minneapolis, and the Mill City Museum consult during the 30-day notice period to seek agreement on amendments or other actions that would avoid termination. In the event of termination, the Commission will comply with 36 C.F.R. sections 800.3 through 800.7(c)(3), about individual actions covered by this Programmatic Agreement.

Execution of this Programmatic Agreement, and its subsequent implementation, is evidence that the Commission has satisfied its responsibilities pursuant to section 106 of the National Historic Preservation Act, *as amended,* for all individual actions carried out under the license. Provided, however, that unless and until the Commission issues a license amendment for the Project and this Programmatic Agreement is incorporated by reference therein, this Programmatic Agreement has no independent legal effect for any specific license applicant or Project.

FEDERAL ENERGY REGULATORY COMMISSION

By: _____ Date: _____
Jennifer Hill, Director
Division of Hydropower Administration and Compliance

MINNESOTA STATE HISTORIC PRESERVATION OFFICER

By: _____ Date: _____
Amy H. Spong, Director
Minnesota Deputy State Historic Preservation Officer

U.S. ARMY CORPS OF ENGINEERS

By: _____ Date: _____
Chad Konickson
Chief, Regulatory Branch

ADVISORY COUNCIL ON HISTORIC PRESERVATION

By: _____ Date: _____
John M. Fowler
Executive Director

CONCUR: CROWN HYDRO, LLC

By: _____ Date: _____
Gary Monson, CFO

CONCUR: MISSISSIPPI NATIONAL RIVER AND RECREATION AREA, NATIONAL PARK SERVICE

By: _____ Date: _____
John O. Anfinson
Superintendent

CONCUR: CITY OF MINNEAPOLIS

By: _____ Date: _____
D. Craig Taylor
Executive Director

CONCUR: MINNEAPOLIS PARK AND RECREATION BOARD

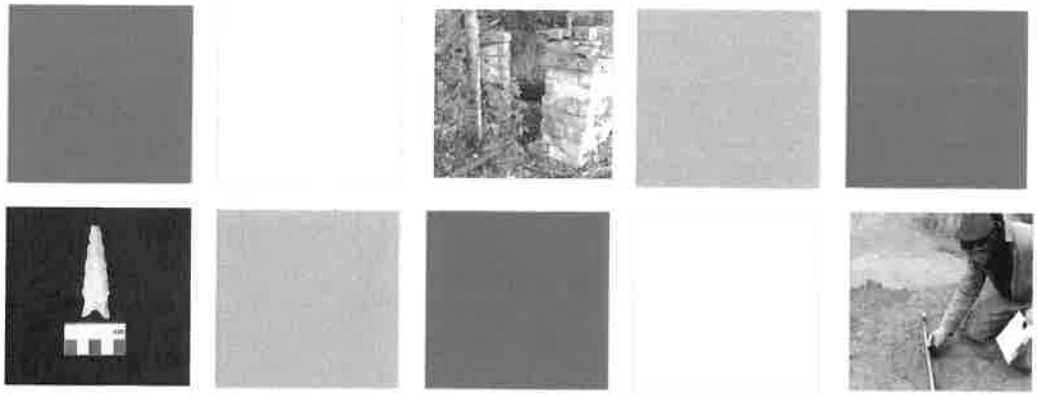
By: _____ Date: _____
Jayne Miller
Superintendent

CONCUR: MILL CITY MUSEUM

By: _____ Date: _____
John Crippen
Director of Historic Sites and Museums

APPENDIX A

Phase 1a Cultural Resources Background Literature Review and Recommendation



Phase Ia Cultural Resources Background Literature Review and Recommendations

for the

Proposed Crown Hydroelectric Project
FERC Project No. 11175

Hennepin County, Minnesota

October, 2016

Report Prepared by: Merjent, Inc.
800 Washington Ave North
Suite 315
Minneapolis, Minnesota 55401
612-746-3660

Report Author: Dean T. Sather, M.S., R.P.A.

Report Date: October, 2016

Table of Contents

Tables

Figures

Appendices

INTRODUCTION

Project Description

The Crown Hydro LLC (Crown Hydro) is proposing to construct and operate a hydropower facility located entirely on U.S. Army Corps of Engineers (USACE) property along the western banks of the Mississippi River in Minneapolis, Minnesota (**Figure 1**). The Crown Hydro Project (Project) is a 3.4 megawatt (MW) hydropower facility located at the Upper St. Anthony Falls Lock and Dam. The proposed Project will generate and distribute an estimated 21,200 megawatt-hours (MWh) of renewable electric energy per year. Crown Hydro intends to sell the electricity produced by the proposed Project to Xcel Energy (Xcel).

To facilitate the electric generation, Crown Hydro is proposing to use a portion of the Mississippi River flow to generate power by natural elevation drop while maintaining run-of-river conditions without need of upstream storage. The proposed Project will install two 1.7 megawatt turbines, for a total of 3.4 megawatts of capacity. The principal features for the proposed Project, shown in **Figure** 2 and **Appendix A**, include the following:

- A headrace canal – the existing intake canal of the lock and dam.
- A new intake structure – extending approximately 25 feet-upstream of the powerhouse, containing two 14-feet tall by 16-feet wide trash racks with 3-inch clear spacing to limit fish entrainment and impingement.
- Two new 8.5-foot diameter turbine penstocks (pipes), 50 feet in length, conveying water to the turbines.
- Two new vertical axial flow turbine units with a total hydraulic capacity of 1,000 cubic feet per second (cfs). Each unit has four blades, 5.56-foot in diameter, designed for a 45-foot hydraulic head.
- Two new generators connected to the turbines by a 20-foot long direct vertical shaft.
- Two new discharge draft tubes to convey water from the turbines to the new tailrace tunnel.
- A new 14-foot wide by 10-foot tall tailrace tunnel. The tunnel expands to 16-foot wide and 14-foot tall on the downstream side beyond the Stone Arch Bridge to limit flow velocities entering the river. The total length of the new tailrace tunnel is 930 feet.
- A new underground transmission line, approximately 700 feet in length, which will connect the Project to the Xcel grid at Portland Avenue.

The powerhouse structure footprint will be approximately 88-feet by 42-feet. The roof of the powerhouse structure will approximately match the West River Road parking lot level to the south at an elevation of 807 feet, and extend approximately 17-feet above the USACE parking lot to the east. A profile of the project is provided in **Figure 2.**

Construction of the Project will occur on USACE owned property. Approximately 2 acres of the property will be utilized for staging and excavation, as shown on **Figure 2**. The majority of the Project will be underground. The above ground footprint of the proposed Project is approximately 4,200 square-feet (approximately 0.1 acres). Construction of the proposed Project will begin after environmental clearance

and permitting has been secured. Construction of the Project's main components is estimated to take approximately four months.

Project construction will involve the removal of accumulated debris, and excavation of the headrace canal, if necessary. The proposed 930-foot tailrace tunnel will be constructed using both boring and open-cut methods. The portion of the tunnel 400 feet upstream will be bored, starting from the powerhouse and extending under the existing USACE parking lot, ending on the upstream side of the Stone Arch Bridge (see **Figure 2**). The boring will be accomplished through jetting (or another method) to remove sandstone, but will not require blasting. The remaining 530 feet of tunnel will be constructed using an open-cut trench that will be backfilled and restored.

A portion of the roadway that crosses under the Stone Arch Bridge, providing access to a dead end area of the Mill Ruins Park, will be temporarily removed and replaced with new roadway after installation of the tailrace tunnel is complete. The bottom of the tunnel will be located above the foundations of the Stone Arch Bridge; no disturbance to the Stone Arch Bridge structure or foundations will occur from construction of the proposed Project. Temporary access to USACE facilities for employees during construction will be provided from Portland Avenue until Project completion. The access road along the river between the USACE upper and lower locks will not be available for use during construction of the outlet.

The powerhouse will be constructed on the upstream side of the existing lock and dam and USACE parking lot, on the right bank of the Mississippi River. The housing for the generator is above grade, but the majority of the powerhouse components will be located underground, including the electrical cable to transport the power generated by the proposed Project. The outlet of the tailrace tunnel will be submerged and scarcely visible. The preliminary stylistic design of the above grade portion of the powerhouse structure has been drafted to fit in with the existing design of the lock structures (Appendix A, page 3). A rendering of the proposed powerhouse structure is depicted on **Figure 3a and 3b**. The ultimate exterior design of the structure will be finalized through discussion with the appropriate regulatory agencies, to create a design best suited to conform to the aesthetic of the existing lock and dam structure.

Project Boundary

The proposed Project boundary is presented in **Figure 4.** In the direction of flow, the Project boundary includes (1) the existing intake canal for the lock and dam; (2) the USACE parking lot area directly on the west bank side of the lock and dam; (3) a segment bordered by the USACE fence line near the lock and dam control building and the fence line near the access road; and (4) an area bordered by the north side of the Stone Arch Bridge, the northern boundary of the old milling tailrace canal, and the banks of the river near the proposed tailrace outlet. The Project boundary includes only that property required to construct, operate and maintain the Project. The proposed Project boundary lies entirely within property owned by the federal government; however, the Minneapolis Park and Recreation Board (MPRB) has a recreational easement that encumbers the property.

Jurisdiction

The Federal Energy Regulatory Commission (FERC) issued a license to Crown Hydro Company on March 19, 1999 to construct and operate a hydroelectric facility (FERC Project No. 11175). The FERC license was transferred from Crown Hydro Company to Crown Hydro LLC on March 13, 2001. Crown Hydro, LLC received a letter from FERC on April 15, 2013 stating that the proposed Project would require technical, engineering, and environmental analysis. As part of the FERC license amendment process, Crown Hydro must comply with 18 CFR 4.51 and 16.8 for identification, evaluation, and treatment of historic properties potentially affected by the proposed Project. Crown Hydro also must comply with applicable federal and state regulations pertaining to historic properties, including Section 106 of the National Historic Preservation Act of 1966, as amended, 16 USC 470-470f, (NHPA). Compliance with NHPA will require completion of Section 106 Consultation, which includes consultation with the Minnesota State Historic Preservation Office (MN SHPO) and potentially affected tribes.

The Minnesota Historic Sites Act (M.S. 138-661-138.669) establishes a consultation process for projects that are anticipated to affect historic sites. This state regulatory action applies to any project receiving funding or licensing by the State (M. S. 138.666). The Minnesota Historic District Act (M.S. 138.71-763) includes the St. Anthony Falls Historic District and mandates a St. Anthony Falls Heritage Board to develop a comprehensive plan for the area.

Crown Hydro has undertaken initial Section 106 compliance actions by identifying appropriate agency contacts at the MN SHPO and potentially affected tribal entities, and by identifying potential historic properties which may be impacted by the Project. Crown Hydro understands a Construction Cultural Resource Management Plan (CONCMP) will be developed to outline measures to avoid, minimize, or mitigate potential adverse effects to historic properties during construction and operation of the Project. Crown Hydro intends to provide this historic properties management plan as part of its license amendment once further understanding of the needs and content of that plan are gained through coordination with FERC and the Section 106 consultation process. This may include additional consultation with SHPO, potentially affected tribal entities, other local, state, and federal agencies, as well as the public.

As part of the environmental review for the proposed Project, Merjent, Inc. (Merjent) is assessing the Project's potential impacts on cultural resources; this report presents the methods and findings of a cultural resources literature and records review for the Project area. The primary goal of this review is to identify all previously documented archaeological sites and inventoried standing structures in the vicinity of the Project area, as well as the previously completed site inventory surveys. Dean Sather, MA, RPA of Merjent, conducted the research and compiled this cultural resources literature and records review report.

Phase Ia Cultural Resources Area of Potential Effect (APE)

The proposed Project is located entirely within the St. Anthony Falls Historic District (SAFHD). The district was originally nominated and listed on the National Register of Historic Places (NRHP) in 1971 (Coddington, 1971). A subsequent review of the district was completed in 1992 which delineated four (4) individual components within the SAFHD. Two of the components represent thematic regions within the district; the St. Anthony Falls Waterpower Area (SAFWA) and the Nicollet Island Residential Area. These two components are geographically defined and contain buildings or structures that are representative of a specific historical feature of the district. The remaining two components are representative of the individual buildings or archaeological properties, "...that are currently deemed to be the most important," scattered throughout the SAFHD.

In a letter to the Minnesota SHPO office dated July 18, 2016, Crown Hydro proposed defining the Area of Potential Effect (APE) for both direct and indirect effects (**Appendix B**). The APE for the *direct effects* encompasses all portions of the Project area where ground disturbing activities will be executed (the Project footprint). This is anticipated to encompass an estimated area of less than 2.0 acres and includes all areas designated for Project staging and temporary construction, contained within the larger, defined FERC Project Boundary (**Figure 4**).

In that same letter it was proposed that to assess the Project's *indirect effects* contributing buildings/structures in the NHRP-listed district, located within a 1-mile radius of the Project area, should be identified. This process would be accomplished by determining 1) which structures in the surrounding one-half-mile radius have an unobstructed view of the Project area (as currently designed) and 2) how much of a barrier do existing standing structures immediately adjacent to the proposed Project (within one to two blocks along the north and south shores of the river) serve as a shield to other listed/contributing structures on banks of the river.

It was suggested that the indirect effects APE be limited to "...a half mile from the upstream side and the immediate environs (e.g., from the river shore to a block or two out) along the north and south shores of the river..." (Perkl, 2016). The boundaries suggested are roughly coterminous with the defined boundaries of the St. Anthony Falls Waterpower Area (SAFWA). The SAFWA encompasses the rectangular portion of the St. Anthony Falls Historic District in the district's southeastern corner (**Figure 5**). It reflects the historic development of waterpower at the Falls of St. Anthony. The upstream boundary is the Falls of St. Anthony Dam. The west side (a.k.a. West Side Milling District) extends downstream approximately six blocks while the east side (a.k.a. East Side Milling District) extends approximately four blocks downstream. Both extend away from the river banks two blocks into the surrounding neighborhoods.

As this suggested boundary roughly parallels the defined boundary of the SAFWA of the St. Anthony Falls Historic District, the SAFWA boundaries were adopted to serve as the delineation for the Indirect Effect APE. The proposed Project is completely contained within this segment of the larger SAFHD and all of the proximal resources have been identified as sharing a common historic theme relating to waterpower development. The portions of the SAFHD areas external to the SAFWA are not to impacted

physically by the project and the indirect, visual impact is limited by both urban development and the elevation rise immediately adjacent to the river front.

METHODS

The main objective in reviewing the cultural resources literature and archival records is to identify previously documented cultural sites and assess the potential for unrecorded sites within the APE. The standard for considering a cultural property as significant is whether it meets the criteria for listing on the NRHP. The initial criterion for listing historic cultural sites is an age of 50 or more years. Beyond age, a property must retain integrity and be associated with significant historic trends, historic persons, building styles and craftsmanship, or the property must have the potential to provide significant information about the past (National Park Service 1995).

Merjent reviewed and followed the published guidelines for conducting cultural resources literature reviews in Minnesota (Kolb 1997). The MN SHPO, located in the Minnesota Historical Society building in St. Paul, is the record keeper for the state's prehistoric and historic archaeological site files, historic standing structure inventory files, and field survey reports.

In addition to the MN SHPO files, Merjent also examined current topographic and aerial photo-based maps to understand the modern land use of the Project area and to provide a baseline for examining historic maps and documents. Further, several online resources were used to gather information; general online information about Hennepin County and the City of Minneapolis was gathered, as well as original land survey maps, original land patent records, and historic aerial photographs.

LITERATURE REVIEW RESULTS

Minnesota State Site Files

Previously Conducted Cultural Resources Surveys

A preliminary review of the archival collections indicated a minimum of 34 previously executed cultural resource/regional planning projects that may include portions of the current Project area **(Table 1)**. Thirteen of the published reports date between 1979 and 2005, and represent the results of investigations or evaluations of historic structures located within the SAFHD. Twelve reports have been produced describing archaeological investigations of structural remains and historical archaeological sites within the District. Nine reports have been produced discussing the historical features of the district in regards to revitalization or preservation planning.

Table 1. Reports of Previously Conducted Cultural Resources Studies for the Study Area.

Survey #	Date	Title	Author	Findings
HE-61-1H	1961	St. Anthony Falls – Nicollet Island: Landmarks at the Continent's Heart.	Barton-Aschman Associates, Inc.	
HE-79-2H & HE-79-3H	1979	Restoration and Preservation Research and Planning Study, Saint Anthony Falls Historic District.	MacDonald and Mack, Miller Dunwiddie, J.	

Survey #	Date	Title	Author	Findings
			Hess	
HE-80-2H	1980	Saint Anthony Falls Rediscovered.	MacDonald and Mack, Miller Dunwiddie, J. Hess	
HE-81-4H	1981	A History of Northern States Power Company's Main Street Hydro-Electric Station	Roberts, J. & J. Hess	
HE-84-04 & HE-84-2H	1984	Archaeological Potentials on the West Side of the Central Minneapolis Riverfront.	Anfinson, S.	Nine archaeological sites reviewed. (21HE0111-0119)
HE-84-05	1984	A Phase I Archaeological Survey of the West River Parkway, Minneapolis, Hennepin County, Minnesota.	Tordoff, J.	Seven archaeological sites investigated. (21HE0111-0117)
HE-85-07 & HE-85-1H	1985	The Hennepin Avenue Bridge Project.	Tordoff, J. and R. Clouse	One archaeological site investigated. (21HE0116)
HE-86-03 & HE-86-2H	1986	Phase I Archaeological Testing of the Fuji-Ya Parking Lot and Palisade Mill Sites, Minneapolis, Hennepin County, Minnesota.	Tordoff, J.	One archaeological site investigated (21HE0118)
HE-86-3H	1986	Mills District Streetscape, Task "A" Report: Land Use Inventory & Analysis	Roberts, W., et.al.	
HE-86-4H	1986	Mill Place Centre: A Mixed Use Riverfront Development	Mill Place Centre Partnership	
HE-86-06	1986	Archaeological Sites of the St. Anthony Falls Area.	Anfinson, S.	One archaeological site reviewed (21HE0118)
HE-87-2H	1987	HAER No. MN-18: Steel Arch Bridge (Hennepin Avenue Bridge) Hennepin Avenue Spanning the West Channel of the Mississippi River, Minneapolis, Hennepin County, Minnesota.	Howard, Needles, Tammen & Bergendoff	
HE-87-4H	1987	HABS No. MN-69: Washburn-Crosby Milling Complex.	UM School of Architecture and Landscape Architecture	
HE-87-5H	1987	HABS No. MN-29-5: Pillsbury Milling Complex.	UM School of Architecture and Landscape Architecture	
HE-87-03	1987	Archaeological Excavations Along the Proposed West River Parkway 1896, Minneapolis, Hennepin County, Minnesota.	Tordoff, J. and R. Clouse	Seven archaeological sites investigated (21HE0112-0115 & 21HE0117-0119)

Survey #	Date	Title	Author	Findings
HE-89-2H	1989	Archaeology of the Central Minneapolis Riverfront. Part 1: Historical Overview and Archaeological Potentials. The Minnesota Archaeologist, Volume 48:1-2.	Anfinson, S.	
HE-89-4H	1989	Geographic Features and Landscape Change at Saint Anthony Falls.	Zellie, C.	
HE-90-4H	1990	HAER No. MN-16: Northwestern Consolidated Elevator A, 119 Fifth Avenue South, Minneapolis, Hennepin County, Minnesota.	Frame, R., & J. Hess	
HE-90-5H	1990	HAER No. MN-14: Standard Mill, 116-118 Portland Avenue South, Minneapolis, Hennepin County, Minnesota.	Hess, J. & D. Hess	
HE-90-6H	1990	HAER No. MN-13: Minneapolis Boiler Works Building, 121-129 Fifth Avenue South, Minneapolis, Hennepin County, Minnesota.	Hess, J. & D. Hess	
HE-90-06	1990	Archaeology Along the West River Parkway, 1989, Minneapolis, Minnesota.	Szondy & R. Clouse	Two archaeological sites reviewed (21HE0111 and 0127)
HE-90-7H	1990	HAER No. MN-15: Gerber Sheet Metal Works Building, 128 Portland Avenue South, Minneapolis, Hennepin County, Minnesota.	Hess, J. & D. Hess	
HE-90-8H	1990	HAER No. MN-12: Crown Roller Mill, 105 Fifth Avenue South, Minneapolis, Hennepin County, Minnesota.	Hess, J. & D. Hess	
HE-90-9H	1990	St. Anthony Falls Interpretive Plan	Ellerbe Becket, Inc.	
HE-90-12H	1990	Summary Report for St. Anthony Falls Survey Project.	Hess, J.	
HE-94-25H	1994	HAER No. MN-69, Washburn Crosby Milling Complex Photographs.	Lowe, J.	
HE-95-08	1995	Archaeological Survey and Evaluation of Portions of the Bridgehead Site, Minneapolis, Minnesota.	Rust, J., C. Dobbs & J. McCarthy	Three archaeological sites investigated (21HE0115, 0195, 0196)
HE-1998-11H	1998	Part 1 Historic Structures Report for the Utility Building Washburn Crosby Mill Complex 630 South Second Street Minneapolis, Minnesota	Frey, Martha H.	
HE-2000-7H	2000	Downtown Minneapolis: An Historic Context	Pearson, M. & C. K. Roise	

Survey #	Date	Title	Author	Findings
HE-2003-8H	2003	Lower Saint Anthony Falls Hydroelectric Project Architecture/Historical Survey	Roise, C. & P. Peterson	
HE-03-04	2003	Archaeological Assessment for the Pillsbury A Mill Complex, Minneapolis, Hennepin County, Minnesota.	Vermeer, A.	
HE-05-XX	2005	Analysis of Effects for the Proposed Pillsbury "A" Mill Complex Project Minneapolis, Hennepin County, Minnesota.	Bradley, B.	
HE-07-XX	2007	Potential Archaeological Impacts for the Proposed Crown Hydroelectric Project.	Bradley, B. & E. Tidlow	
HE-12-XX	2012	Archaeological Monitoring Report for Investigations at the Proposed Crown Hydroelectric Project, Hennepin County, Minnesota.	Sather, D.	

Investigations of the potential archaeological impacts of the originally proposed Crown Hydroelectric project were conducted in 2007 (Bradley and Tidlow, 2007) and 2012 (Sather, 2012). Based on the proposed project design at the time, Bradley and Tidlow suggested that the area under consideration consisted of historic fill and that the potential for the discovery of intact archaeological remains related to historic milling operations was low.

In October 2012, Westwood Professional Services, Inc. was hired to monitor a geologic investigation of portions of the originally proposed project site. This investigation resulted in a report titled: Archaeological Monitoring Report for Investigations at the Proposed Crown Hydroelectric Project, Hennepin County, Minnesota (**Appendix C**).

The 2012 field investigations consisted of the monitoring of soil bore excavations conducted along the proposed path of the sub-surface Project tailrace (**Figure 1**). As bores were extracted, the recovered soils were visually inspected for signs of historic cultural deposits. The 2007 assessment by Bradley and Tidlow was supported by the 2012 field investigations; the presence of cultural materials identified in borings 1, 2, 3, and 4 located in the eastern portion of the Project area were not considered to be indicative of intact historic archaeological deposits. While cultural artifacts, including ash, brick, concrete and wood, were observed within bores 5, 6, and 7, in the western portion of the Project area, the relationship of these artifacts to the historic milling operations of the area could not be conclusively determined (Sather, 2012). However, the potential for integrity of cultural materials in the western portion of the project area was suggested; therefore, it was recommended that once definitive project plans were developed, then a plausible method of determining the full nature of the archaeological deposits would be developed.

Furthermore, in concert with the 2012 field investigations a series of 1960's photographs of the project area were provided to by the USACE, St. Paul District. The images were taken during the construction of the Lock and Dam facility and clearly indicate that the project area was extensively excavated during the

construction of the Lock and Dam facility and that no surficial feature relating to the milling operations associated with the St. Anthony Falls Historic District would have been preserved.

The 2012 soil bore monitoring, coupled with the 1960's historic photographic evidence, has supported the determination that the vast majority of the Crown Hydro site is comprised of fill material that was deposited during the USACE's original construction of the Upper Saint Anthony Falls Lock and Dam; thus, the majority of the site has been previously disturbed by these construction activities.

Previously Documented Cultural Resource Sites

Ninety-Five (95) previously documented cultural resource properties were identified within the St. Anthony Falls Waterpower Area through archival review (**Table 2**). This dataset was derived from three primary resources: 1) The St. Anthony Falls Historic District National Register of Historic Places Inventory Nomination Form; 2) The Minnesota State Historic Preservations Office cultural resource state site files system, and 3) the Minnesota Office of the State Archaeologist state archaeological site file system. The 95 cultural resource sites collectively include 118 individual components including 38 buildings, 29 structures, and 41 structural remains/archaeological sites. Thirty-Three (33) of the 95 cultural resource sites are located on the east side of the river and fifty-eight (58) are located on the west side of the river. The remaining four (4) are located either within the river or span it bank-to-bank.

Table 2: Previously Recorded Cultural Resource Properties within the St. Anthony Falls Waterpower Area Area.

Minnesota Historic Preservation Office Inventory Number	Minnesota State Archaeological Site Number	St. Anthony Falls Historic District: Waterpower Area Property Number	East/West Bank	Contributing	# Buidings	# Structures	# Sites	Property Name
HE-MPC-0196		28	e	c	1			Pillsbury Warehouse No. 2
HE-MPC-9995		29	e	c	1			Pillsbury "A" Mill
HE-MPC-3206		30	e	c	1			Pillsbury Industrial Equipment
HE-MPC-0201		34	e	c	1			Upton Block / Union Iron Works
HE-MPC-0203		37	e	c	1			Pracna Building
		41	e	c	1			St. Anthony Falls Hydraulic Laboratory
HE-MPC-0194		26	e	nc	1			Hennepin Bluff Park Shelter
HE-MPC-0195		27	e	nc	1			Pillsbury Warehouse No. 3
HE-MPC-0198		31	e	nc	1			Pillsbury Research and Development Building
HE-MPC-0200		33	e	nc	1			St. Anthony Main Skyway
		36	e	nc	1			Commercial Building
HE-MPC-9992			e		1			St. Anthony Main
HE-MPC-0199		32	e	c	2			Salisbury & Satterlee Co. Complex
HE-MPC-0202		35	e	c	2			Martin and Morrison Block
HE-MPC-0206		39	e	c		1		Main Street Hydroelectric Station
HE-MPC-0207		40	e	c		1		Log Sluice
HE-MPC-0209		42	e	c		1		Pillsbury "A" Transfomer Building
HE-MPC-0214		47	e	c		1		St. Anthony Falls Water Power Co. Canal/ Pillsbury Canal

		38	e	c		1		Hennepin Island Hydroelectric Plant
HE-MPC-0210		43	e	nc		1		70ft Phillip Pillsbury Park Bridge
HE-MPC-0211		44	e	nc		1		75ft Phillip Pillsbury Park Bridge
HE-MPC-0212		45	e	nc		1		80ft Phillip Pillsbury Park Bridge
HE-MPC-0213		46	e	nc		1		96ft Phillip Pillsbury Park Bridge
HE-MPC-0215		48	e	c			1	Falls of St. Anthony, East Channal Escarpment
HE-MPC-0243		76	e	c			1	Eastman Tunnel
HE-MPC-0244		77	e	c			1	Second East Side Platform Sawmills (razed)
HE-MPC-0245		78	e	c			1	Pillsbury "A" Steam Power Plant (razed)
HE-MPC-0246		79	e	c			1	St. Anthony Falls Water Power Company Tailrace / Chute's Tunnel
HE-MPC-0247		80	e	c			1	Phoenix Flour Mill/ Pillsbury Rye Mill (razed)
HE-MPC-0304			e				1	First North Star Ironworks/ North Star Flour Mill (razed)
HE-MPC-0305			e				1	Andersch Brothers Complex/ Pillsbury Warehouse No. 5 (razed)
HE-MPC-9986			e				1	Pillsbury "Manilda" Milling Building
HE-MPC-9988			e				1	Pillsbury Bran House
HE-MPC-0162		1	r	c		1		St. Anthony Falls Dam
HE-MPC-0163		2	r	c		1		Falls of St. Anthony Apron
HE-MPC-0164		3	r	c		1		Falls of St. Anthony Dike
HE-MPC-0165		4	r	nc		1		3rd Ave. Bridge
HE-MPC-0187		25	w	nc	1	3		Shiely Sand and Gravel Company Complex
HE-MPC-0168		7	w	c	1			Minneapolis Eastern Railway Engine House
HE-MPC-0170		9	w	c	1			Crown Roller Mill
HE-MPC-0171		10	w	c	1			Northwest Consolidated Elevator A
HE-MPC-0172		11	w	c	1			Standard Mill
HE-MPC-0178		17	w	c	1			Washburn A Mill Complex
HE-MPC-0181		19	w	c	1			Humboldt Flour Mill
HE-MPC-0169		8	w	nc	1			Fuji Ya Restaurant
		24	w	nc	1			Cemstone Product Company Building
HE-MPC-0281			w		1			Riverwest Apartments
HE-MPC-5068			w		1			Washburn Crosby Co. Wheel House
HE-MPC-5069			w		1			Washburn Crosby Co. Feed Elevator
HE-MPC-5070			w		1			Washburn Crosby Co. Elevator No. 1
HE-MPC-5071			w		1			Washburn Crosby Co. Wheat House
HE-MPC-9973			w		1			Crown Roller Mill Boiler House & Engine Room
HE-MPC-0166		5	w	c	2			Hall & Dann Barrel Co. Factory
HE-MPC-0175		14	w	c	2			North Star Woolen Mill
HE-MPC-0177		16	w	nc	3	1		Upper St. Anthony Falls Lock
HE-MPC-0167		6	w	c		1		Bridge No. L-8900
HE-MPC-0176		15	w	c		1		Stone Arch Bridge
HE-MPC-0179		18	w	c		1		Washburn Crosby Co. Utility Building
HE-MPC-0182		20	w	c		1		Washburn-Crosby Company Elevator No. 2
HE-MPC-0183		21	w	c		1		Bridge No. L-9331
HE-MPC-0184		22	w	c		1		Bridge No. L-9332
HE-MPC-0185		23	w	c		1		Bridge No. L-9333

HE-MPC-0173		12	w	nc		1		Whitney Garden Plaza
HE-MPC-0174		13	w	nc		1		Whitney Mill Quarter Plaza
HE-MPC-0216		49	w	c			1	Occidental Feed Mill (razed)
HE-MPC-0217		50	w	c			1	Columbia Flour Mill (razed)
HE-MPC-0218		51	w	c			1	Second Bassett Sawmill (razed)
HE-MPC-0219		52	w	c			1	First Bassett Sawmill / Second City Waterworks (razed)
HE-MPC-0220	21 HE 0275	53	w	c			1	Minneapolis Mill Company Gatehouse and Power Canal (razed)
HE-MPC-0221		54	w	c			1	People's Flour Mill (razed)
HE-MPC-0222		55	w	c			1	Arctic Flour Mill / St. Anthony Flour Mill (razed)
HE-MPC-0223		56	w	c			1	Union Flour Mill (razed)
HE-MPC-0224	21 HE 0118	57	w	c			1	First City Waterworks / Holly Flour Mill (razed)
HE-MPC-0225		58	w	c			1	Cataract Flour Mill (razed)
HE-MPC-0226	21 HE 0127	59	w	c			1	Russell's Planing Mill / Model Flour Mill / King Midas Mill (razed)
HE-MPC-0227	21 HE 0127	60	w	c			1	Russell Flour Mill / Dakota Flour Mill / King Midas Mill (burned)
HE-MPC-0228		61	w	c			1	Minneapolis Eastern Railroad Trestle Piers (razed)
HE-MPC-0229		62	w	c			1	Clapp Woolen Mill/ Empire Mill-Pillsbury "B" Elevator
HE-MPC-0230		63	w	c			1	Minneapolis Flour Mill (razed)
HE-MPC-0231	21 HE 0274	64	w	c			1	Alaska Flour Mill/ Pillsbury "B" Flour Mill (razed)
HE-MPC-0232		65	w	c			1	Minneapolis Cotton Mill/ Excelsior Mill (razed)
HE-MPC-0233		66	w	c			1	Minneapolis Paper Mill/ Pillsbury Warehouse "C" (razed)
HE-MPC-0234		67	w	c			1	Northwestern Flour Mill (razed)
HE-MPC-0235	21 HE 0272	68	w	c			1	Pettit Mill/ Northwestern Consolidated Elevator "B" (razed)
HE-MPC-0236	21 HE 0273	69	w	c			1	Zenith Flour Mill (razed)
HE-MPC-0237		70	w	c			1	Galaxy Flour Mill (razed)
HE-MPC-0238		71	w	c			1	Minneapolis and St. Louis Railroad Wheelhouse (razed)
HE-MPC-0239		72	w	c			1	Anchor Flour Mill (razed)
HE-MPC-0240		73	w	c			1	Washburn "C" Flour Mill Complex (razed)
HE-MPC-0241		74	w	c			1	Washburn "B" Flour Mill Complex (razed)
HE-MPC-0242	21 HE 0283	75	w	c			1	Pallisade Flour Mill (razed)
HE-MPC-0472			w	c			1	Gerber Sheet Metal Shop (razed)
HE-MPC-0503			w	c			1	Minneapolis Boiler Works (razed)
	21 HE 0199		w				1	1st Street Canal Gates
	21 HE 0332		w				1	Minneapolis & St. Louis Depot

Key: Minnesota Historic Preservation Office Inventory Number = State assigned inventory number for individual property; Minnesota State Archaeological Site Number = Identification issued by Minnesota Office of the State Archaeologist; St. Anthony Falls Historic District: Waterpower Area Property Number = Identification number provided in the National Register Nomination form for the waterpower area of the St. Anthony Falls Historic District; East/West Bank = identifies which side of the river the property is located; Contributing = is the property considered (c) contributing or (nc) non-contributing to the historic district; # (xx) = number of individual structures or sites included in the inventoried property; property name = historical or current name of the inventoried property.

SAFWA East Side Assemblage

The thirty-three (33) cultural resource properties on the east side of the river include sixteen (16) individual buildings, nine (9) individual structures, and ten (10) structural remains/archaeological sites

(**Figure 6**). Eleven (11) of the sixteen buildings, five (5) of the nine structures, and six (6) of the 10 structural remains/archaeological sites are considered to be contributing properties to the SAFHD's NRHP eligibility.

A majority of the inventoried cultural resource properties (n=14) are associated with the industrial/agricultural processing capacity development of the SAFWA. The four (4) buildings, four (4) structures, and eight (8) sites included in the industrial category of the East Side Assemblage are predominantly power generation and milling facilities.

The second most populated category of cultural resource properties is related to commercial activities. The nine (9) buildings and one (1) site include warehouse and retail facilities. Three of these inventoried cultural resource properties are not considered contributing features to the SAFHD's NRHP eligibility.

There are six inventoried cultural resource properties relating to either landscape or recreational facilities. The one (1) building, four (4) structures, and one (1) site included in the landscape/recreational category of the East Side Assemblage are features relating to the contemporary development of public park facilities (bridges and shelters) and 1 nature feature relating to the original geology of St. Anthony Falls. Five of these inventoried cultural resource properties relating to the development of contemporary recreational facilities are not considered contributing features of the SAFHD's NRHP eligibility.

The remaining inventoried cultural resource properties include a single site associated with transportation and three undefined facilities (2 buildings, 1 structure). One of the buildings is considered non-contributing.

SAFWA West Side Assemblage

The fifty-eight (58) cultural resource properties on the west side of the river include twenty-two (22) individual buildings, ten (10) individual structures, and thirty-one (31) structural remains/archaeological sites (**Figure 7**). Of the twenty-two (22) buildings, sixteen (16) are contributing features of the SAFHD. Six (6) are considered non-contributing. Seven (7) of the structures and two (2) of the structural remains/archaeological sites are contributing properties.

A majority of the inventoried cultural resource properties (n=42) are associated with the industrial/agricultural processing capacity development of the SAFWA. The eleven (11) buildings, seven (7) structures, and twenty-seven (27) structural remain/archaeological sites included in the industrial category of the West Side Assemblage are predominantly milling facilities.

The twenty-seven (27) structural remain/archaeological sites represent either structural remains or historically documented facilities related to the original development of the area as a milling district. Several of the sites (n=8) are recorded as both inventoried structures and archaeological sites. Eighteen (18) of these (listed on the NRHP nomination form) have been considered contributing properties the district; however, the integrity of the physical remains have not been evaluated and are only considered contributing sites due to their archaeological potential. Many of these sites are located immediately adjacent to the river front, in a tier of properties between the river and the extant buildings and

structures located further up the bluff. These structural remains and archaeological sites are situated proximal to but external from the defined boundary of the proposed Project.

The second most populated category of cultural resource properties is related to transportation. The four (4) buildings, five (5) structures, and two (2) sites in this category include five (5) bridges, two (2) railroad housing facilities and the Upper St. Anthony Falls Lock facility. The Upper St. Anthony Falls Lock facility has been determined eligible for listing on the NRHP but the formal evaluation has not been initiated by the St. Paul Corps District. Coordination regarding impacts to the Lock facility will need to be conducted in concert with the Corps.

There are two (2) inventoried cultural resource properties relating to commercial facilities. The two (2) buildings and three (3) structures include a single restaurant and a gravel operation facility. These cultural resource properties are not considered contributing features to the district, as they were developed and operated after the period of significance for the SAFHD.

There are two (2) inventoried cultural resource properties relating to landscape features. The two (2) structures include non-contributing features relating to the contemporary development of public open space facilities.

The remaining two (2) on the west side of the river are not categorically defined; one (1) site is comprised of the structural features relating to the 1st Street Canal Gates, located near the upstream portion of the project area. The other site is the historically documented Minneapolis and St. Louis Depot site.

SAFWA River Assemblage

Four (4) cultural resource properties are situated within the Mississippi River (**Figure 8**). This assemblage includes the St. Anthony Dam, The St. Anthony Falls Apron, the St. Anthony Dike, and the 3rd Avenue Bridge. The dam, apron, and dike are considered contributing features to the SAFHD's NRHP eligibility. The 3rd Avenue Bridge is considered non-contributing to the SAFHD, as it was constructed after the period of historic significance.

SAFWA Non-inventoried Documented Historic Features

In addition to the inventoried cultural resource properties detailed above, two (2) additional cultural resource features of concern have been identified during regulatory review of the currently proposed Project. These features include:

1. The remnant portions of a stone foundation that served as a support for the lumber milling platform. The remnant portion of stone foundation is situated along the western edge of the USACE Lock and Dam parking facility. It represents the remaining portions of the upstream foundation supports of the west side milling operation platform.

2. The potential historic debris (wood) that was recovered during geotechnical investigations conducted in 2012 that may be indicative of an intact tailrace. Archival review of historic maps indicated the presence of an intact tailrace in 1934. At the time of the physical investigations it

could not be determined if the recovered materials were associated with the historically documented tailrace. No diagnostic artifacts were recovered to suggest a potential date or purpose. However, wood fragments were recovered from both above and beneath a layer of sand and gravel fill located between the overlying limestone and the underlying sandstone, suggesting the presence of a filled void. It is possible this void is the filled tailrace indicated on the 1934 map (Figure X).

RECOMMENDATIONS

Structural Remains and Archaeological Sites

As currently designed, the proposed Project will not physically impact any previously documented structural remains or archaeological sites located within the APE for direct effects. However, potential archaeological remains were identified during previously executed geotechnical investigations in 2012, and may be representative of intact infrastructure related to earlier milling operations at the site. The cultural remains identified were situated between 278 and 385 inches (23.2 and 32.1 feet) below the contemporary ground surface (USACE parking lot paving).

Design efforts have been implemented to place the Project features approximately 200 inches (18 feet) below potential archaeological remains. While this does suggest that any potential intact feature(s) will be avoided during construction, the limited scope of the geotechnical investigations does not provide for a complete evaluation of the nature of the deposits. Further physical investigations would likely provide for a more complete assessment and indicate the manner in which the deposits should be managed. Engineering designs of the proposed Project should also be evaluated in regards to the location of any intact remains of the stone foundations of the lumber milling platform.

It is recommended that efforts be made to examine these features in advance of the commencement of construction and determine the nature of the deposits. Further it is recommended that efforts be made to determine if such an examination could be completed through non-invasive means. Lacking the ability to assess the feature(s) prior to construction, it is recommended that an on-site archaeological monitor be required during construction efforts.

As currently designed, construction site access to the Project area will pass in close proximity to the structural/archaeological remains of the Cataract Mill. It is recommended that the integrity of these remains be assessed prior to the commencement of construction to ensure that any construction or related actions undertaken in concert with the proposed Project will not have a direct impact on the remains. Efforts may be necessary to secure the remains prior to the commencement of construction.

Historic Buildings and Structures

As currently designed, no previously inventoried historic buildings or structures located within the SAFHD will be physically impacted by the proposed construction. The single instance of potential impact is identified proximal to the structural/archaeological remains of the Cataract mill facility located immediately adjacent to the access road to the current USACE parking facility, as discussed above.

Many of the historic structures included in the district's nomination form consist of structural remains or archaeological sites. These are also the inventoried structures that are in closest proximity to the proposed Project (**Figure 7**). As these are structural remains that have been identified as contributing to the district due to their below-ground archaeological potential, the Project will have no visual impact on these properties.

Visual impact to surrounding above-ground structures was considered during Project design. Efforts have been made to ensure that the design of the above ground features of the proposed facility (i.e. the powerhouse) adhere to design criteria set forth in St. Anthony Falls Historic District Design Guidelines, and will be finalized through discussion with the appropriate regulatory agencies, to create a design best suited to conform to the aesthetic of the existing lock and dam structure.

As the proposed Project is located entirely within the established boundaries of the St. Anthony Falls Historic District it is recommended that efforts be undertaken to assess the potential indirect effects of the proposed Project. This should include modelling efforts to determine which contributing buildings/structures/sites situated within the NHRP district as currently identified will be impacted. This process will be initiated by determining:

- which structures in the surrounding portions of the SAFHD have an unobstructed view of the Project area (as currently designed);
- how much of a barrier do existing standing structures immediately adjacent to the proposed Project (within one to two blocks along the north and south shores of the river) serve as a shield to other listed/contributing structures on banks of the river;
- where the visual horizon for the Project is in the direction of the identified structures within the view shed, to assess and qualify the extent of the indirect APE. This exercise will also allow Crown Hydro to potentially modify or revise the indirect APE based on the data collected;
- what setting, access, use, atmospheric, audible, and other impacts the construction and operation of the proposed facility will have on the surrounding features included in, or associated with adjacent historic districts.

REFERENCES

Anfinson, Scott F.

1989 Archaeology of the Central Minneapolis Waterfront, Part 1: Historical Overview and archaeological Potentials. The Minnesota Archaeologist, Volume 48.

1990 Archaeology of the Central Minneapolis Waterfront, Part 2: Archaeological Explorations and Interpretive Potentials. The Minnesota Archaeologist, Volume 49.

Bradley, Betsy and Evelyn M. Tidlow

2007 Potential Archaeological Impacts for the Proposed Crown Hydroelectric Project. Report prepared for Engineering Partners International, LLC, Bloomington, MN.

Coddington, Donn

1971 National Register of Historic Places Nomination Form. St. Anthony Falls Historic District. On file with the Minnesota State Historic Preservation Office, St. Paul.

Hess, Jeffrey A. and C. Kudzia

1991 National Register of Historic Places Continuation Sheets. St. Anthony Falls Historic District. On file with the Minnesota State Historic Preservation Office, St. Paul.

Minnesota Geospatial Information Office

2016 http://www.mngeo.state.mn.us/glo/glo_ol.php?mapxy=-10381332.75514 5618396.9269895

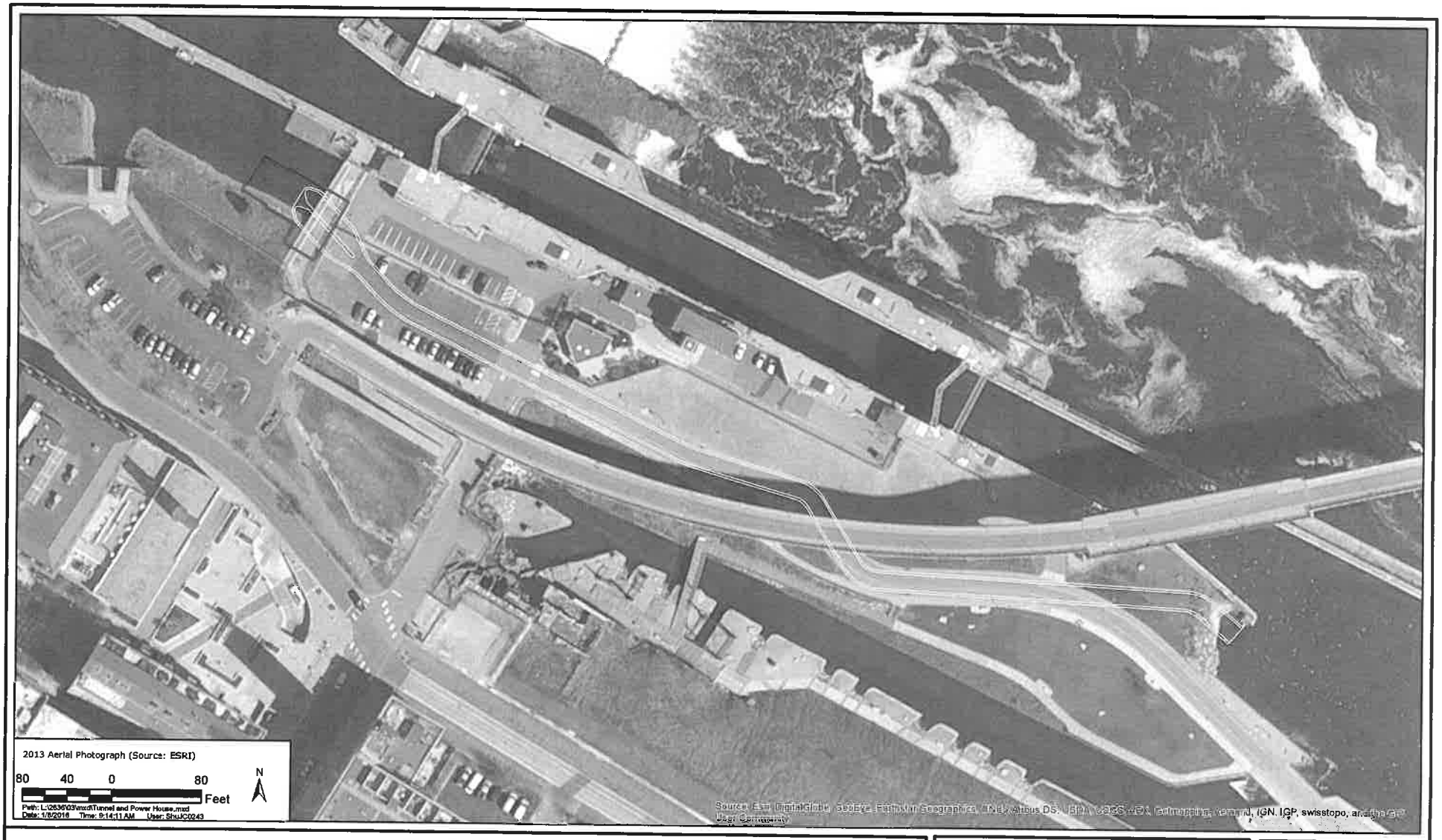
National Park Service

1995 *How to Apply the National Register Criteria.* National Register Bulletin 15, National Park Service, Washington, D.C.

University of Minnesota

2015 Minnesota Historical Aerial Photographs Online. https://www.lib.umn.edu/apps/mhapo/

FIGURES



CROWN HYDRO

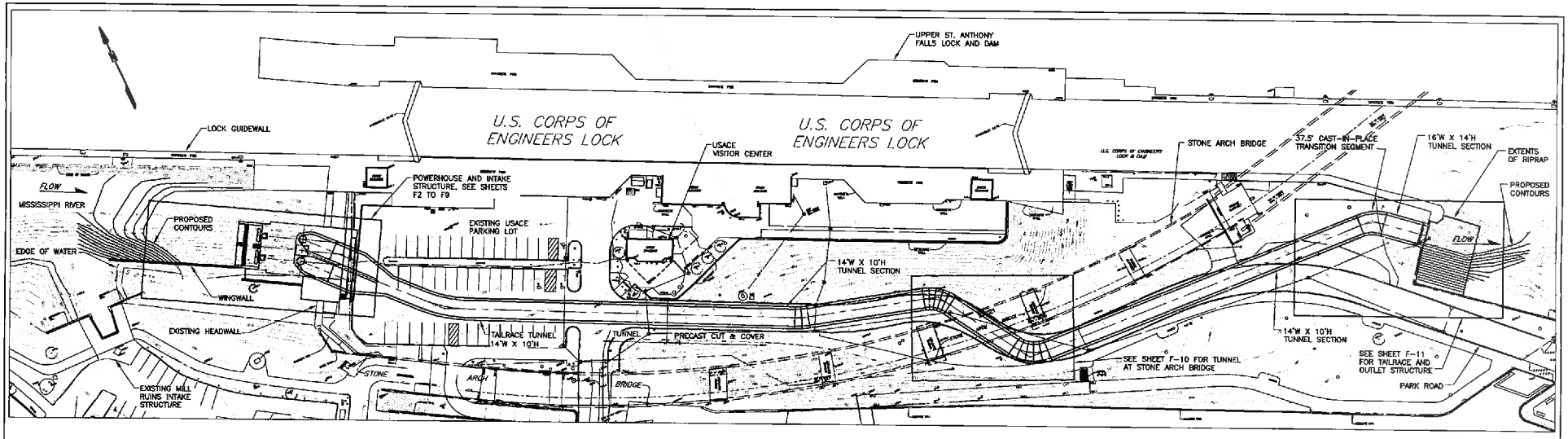
Tunnel and Powerhouse

WENCK ASSOCIATES

Responsive partner. Exceptional outcomes.

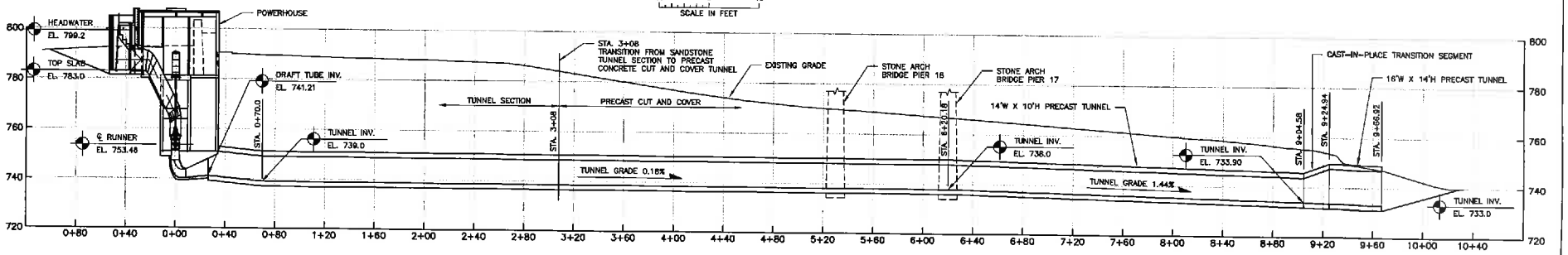
JAN 2016

Figure 1



SITE PLAN

40 0 40
SCALE IN FEET



PROFILE

SCALE: VERT. 1" = 20'
HORIZ. 1" = 40'

CEII
CONTAINS CRITICAL ENERGY INFRASTRUCTURE INFORMATION – DO NOT RELEASE

EXHIBIT F-1 SHEET 1 OF 11

CROWN HYDRO
HENNEPIN COUNTY, MINNESOTA
SITE PLAN

WENCK ASSOCIATES FERC. NO. 11175

DATE:	SCALE:	APPROVED:
MARCH 2015	AS SHOWN	

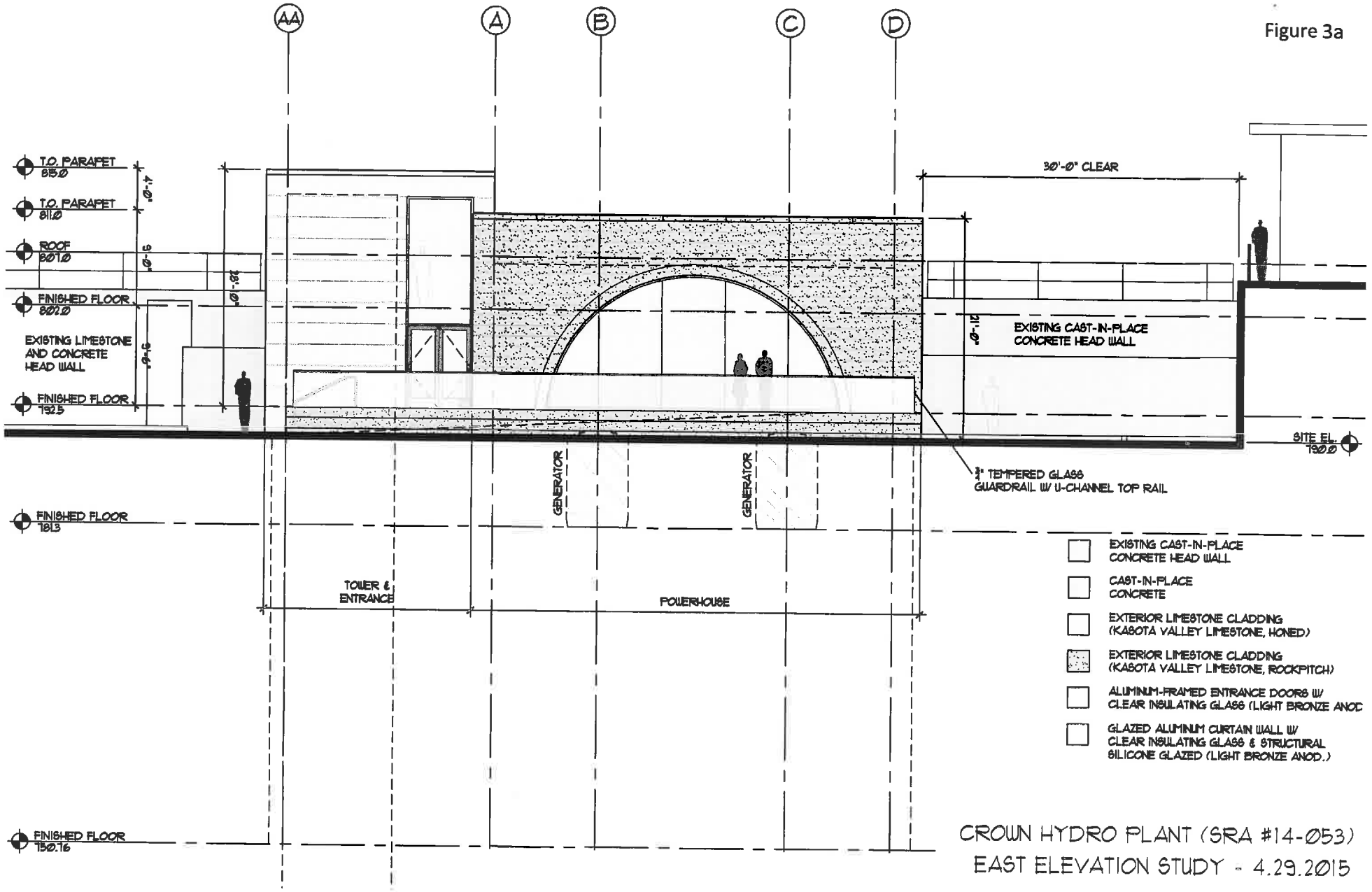
PRELIMINARY
NOT FOR CONSTRUCTION

Figure 2

P-11175-

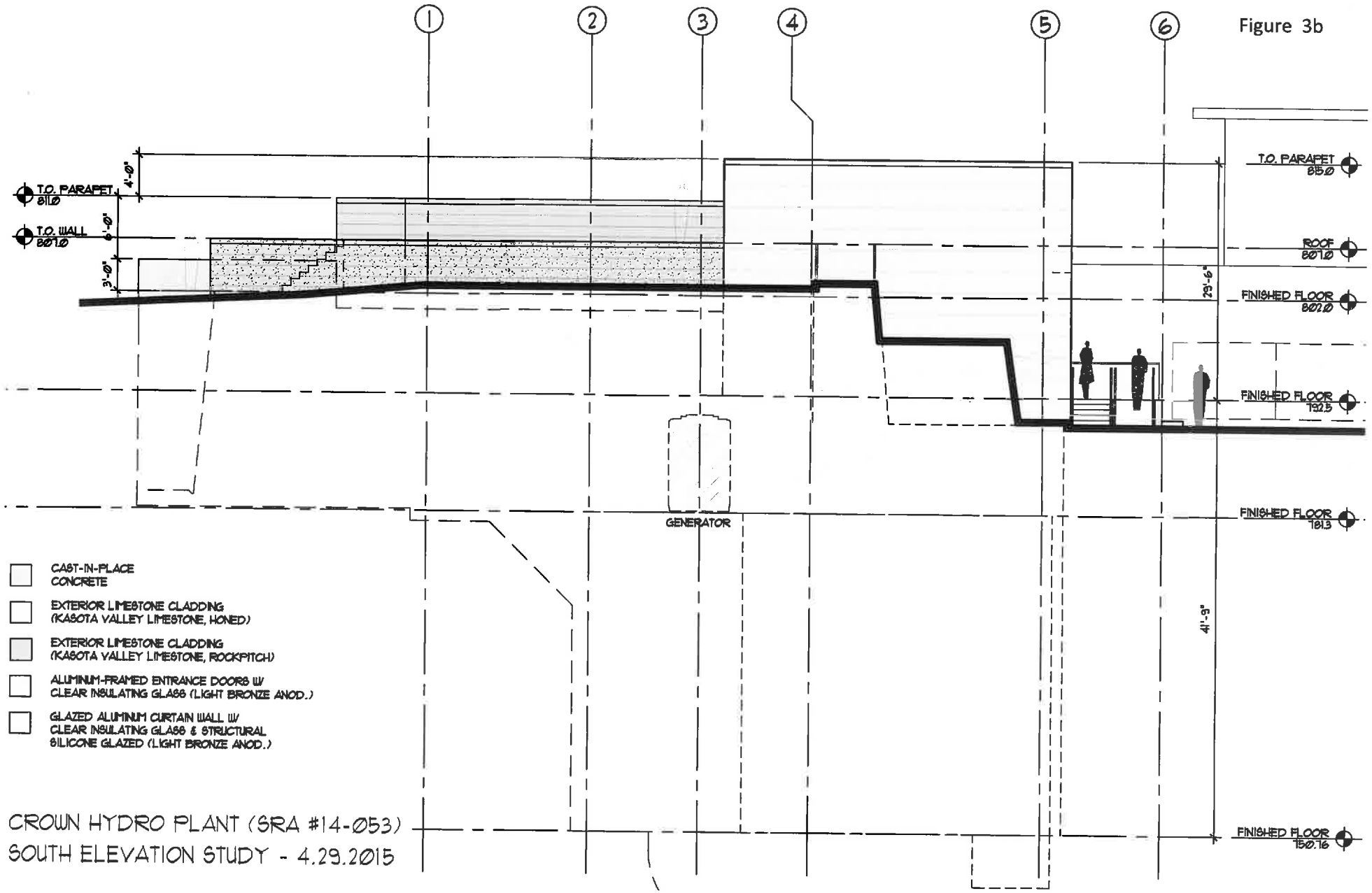
FILE NAME: 14375-F1.DWG

Figure 3a



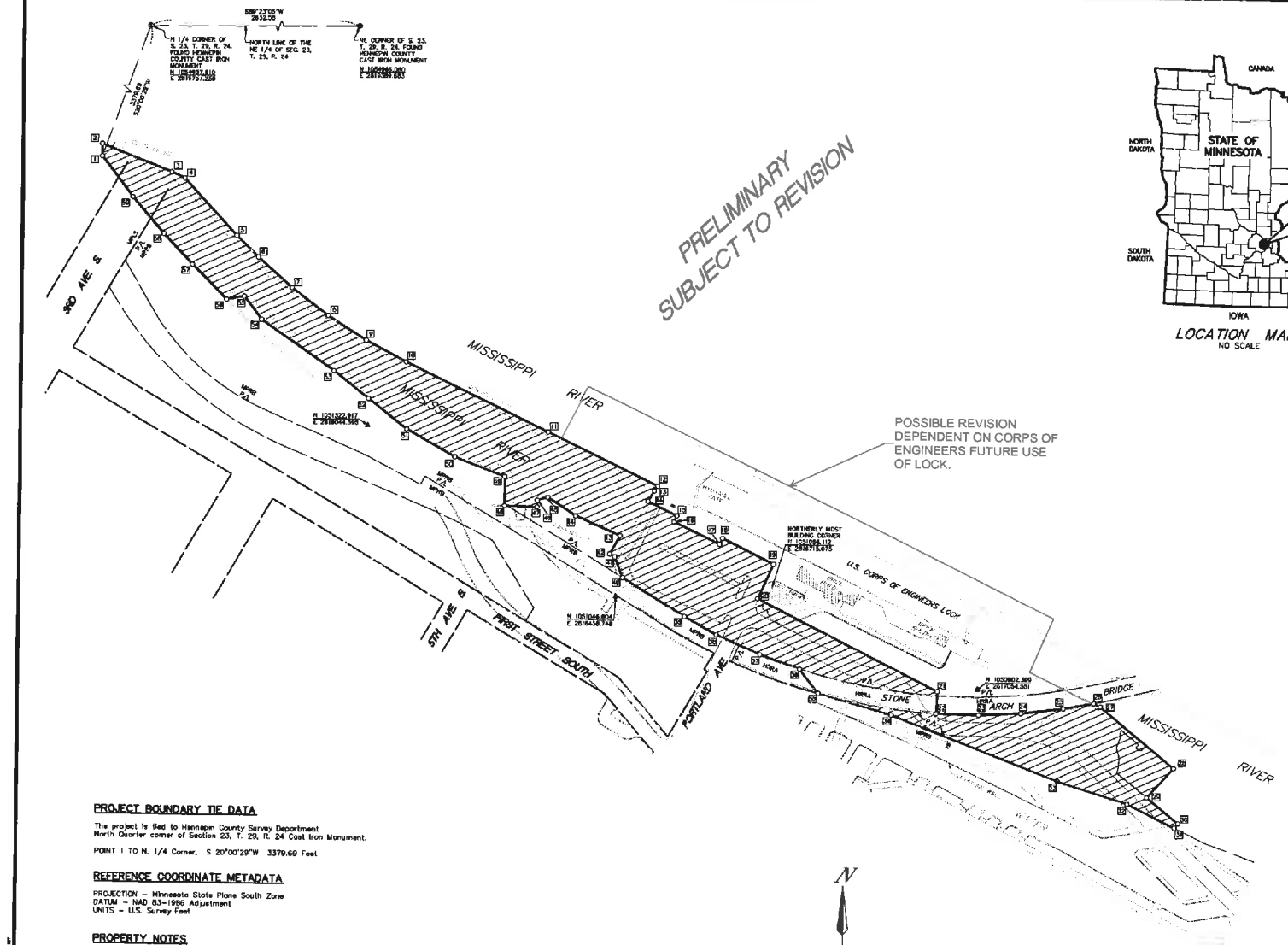
CROWN HYDRO PLANT (SRA #14-053)
EAST ELEVATION STUDY - 4.29.2015

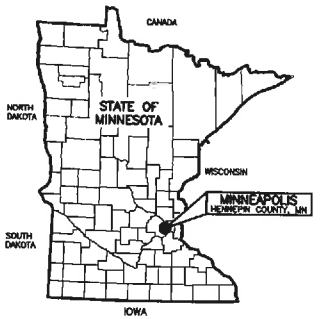
Figure 3b



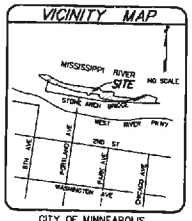
CROWN HYDRO PLANT (SRA #14-053)
SOUTH ELEVATION STUDY - 4.29.2015

Figure 4: Project Area





LOCATION MAP
NO SCALE



CITY OF MINNEAPOLIS
HENNEPIN COUNTY, MN

LEGEND

△	Denotes iron monument set with plastic cap marked "SLS CONT POINT"
[1]	Denotes project boundary
	Denotes property boundary angle point
P/L	Denotes property line

PROPERTY OWNERS

HRRA	Denotes Hennepin County Regional Railroad Authority
MPLS	Denotes City of Minneapolis
MPRB	Denotes Minneapolis Park and Recreation Board

AREA

Boundary Area = 188,864 square feet or 4.336 acres

PROJECT BOUNDARY TIE DATA

The project is tied to Hennepin County Survey Department
North Quarter corner of Section 23, T. 29, R. 24 Cast Iron Monument.

POINT 1 TO N. 1/4 Corner, S 20°00'29"W 3379.69 Feet

REFERENCE COORDINATE METADATA

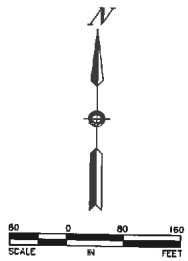
PROJECTION – Minnesota State Plane South Zone
DATUM – NAD 83-1986 Adjustment
UNITS – U.S. Survey Feet

PROPERTY NOTES

1.) Adjoining ownership information shown hereon was obtained from the Hennepin County Property Tax information web site. Ownership information is subject to revision upon receipt of a title search by a title insurance company.

2.) Land within the Project Boundary is federal owned and is indicated by cross hatching within.

3.) Land within the Project Boundary is Hennepin County Regional Railroad Authority owned and is indicated by HRRA within.



I hereby certify that this sketch, plan, or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of Minnesota.

Dated this 18th day of March

SUNDE LAND SURVEYING, LLC.

By: _____
Mark S. Hanson, P.L.S. Minn. Lic. No. 15480

MARK S. HANSON REGISTERED LAND SURVEYOR 15480 STATE OF MINNESOTA

EXHIBIT G

CROWN MILL HYDROELECTRIC PROJECT
HENNEPIN COUNTY, MINNESOTA
PROJECT BOUNDARY

WENCK ASSOCIATES, INC.
FERC NO. 11175-000

DATE:	SCALE:	APPROVED:
MARCH 19, 2015	1 INCH = 80 FEET	

FERC Project Area

Priviledged Information - Not For Public Distribution

FERC NO. P-11175-000

Figure 5
Crown Hydroelectric Project
St. Anthony Falls Waterpower Area
Hennepin County, Minnesota

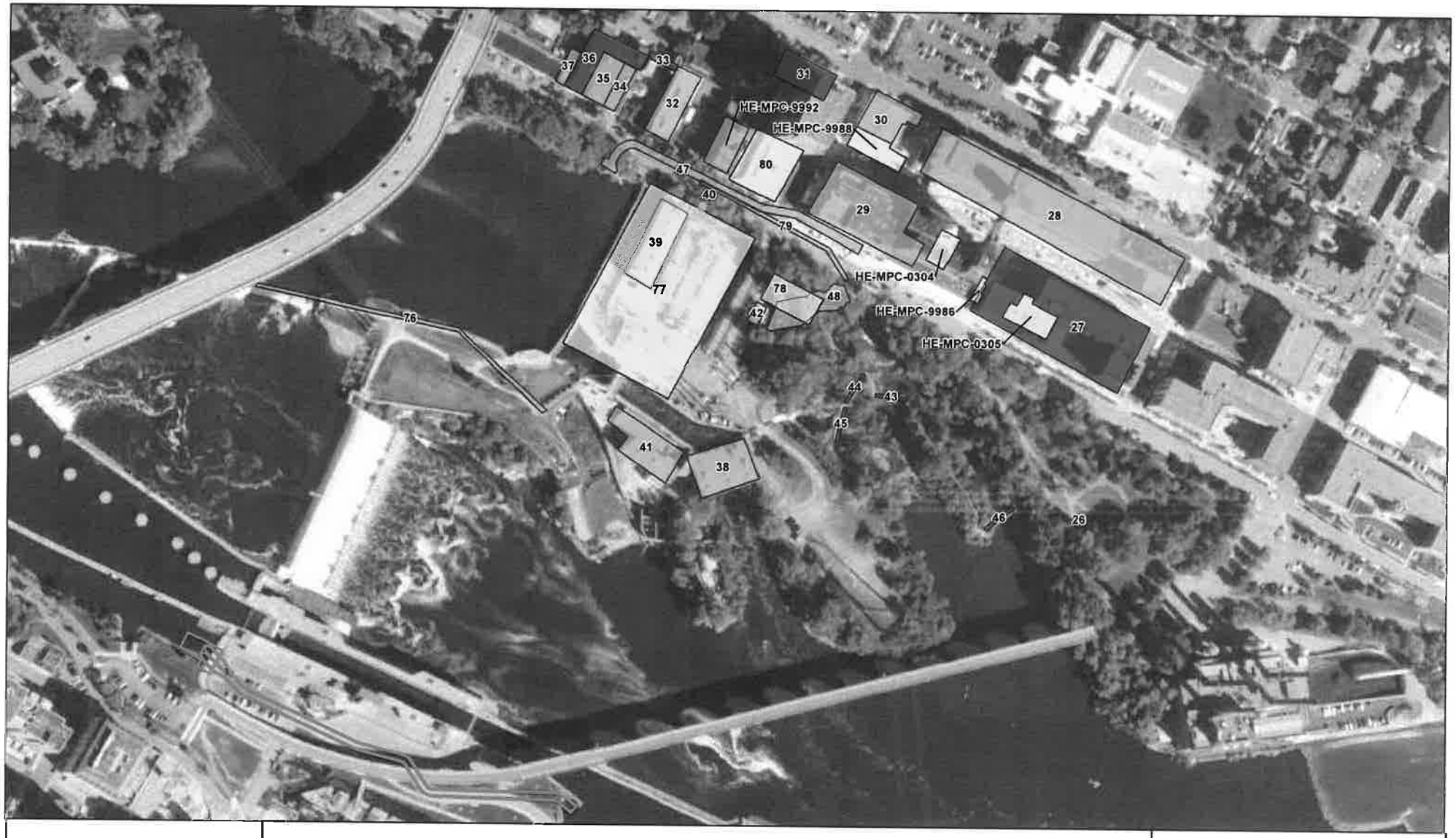


Figure 6
Crown Hydroelectric Project
St. Anthony Falls Waterpower Area – East Side
Hennepin County, Minnesota

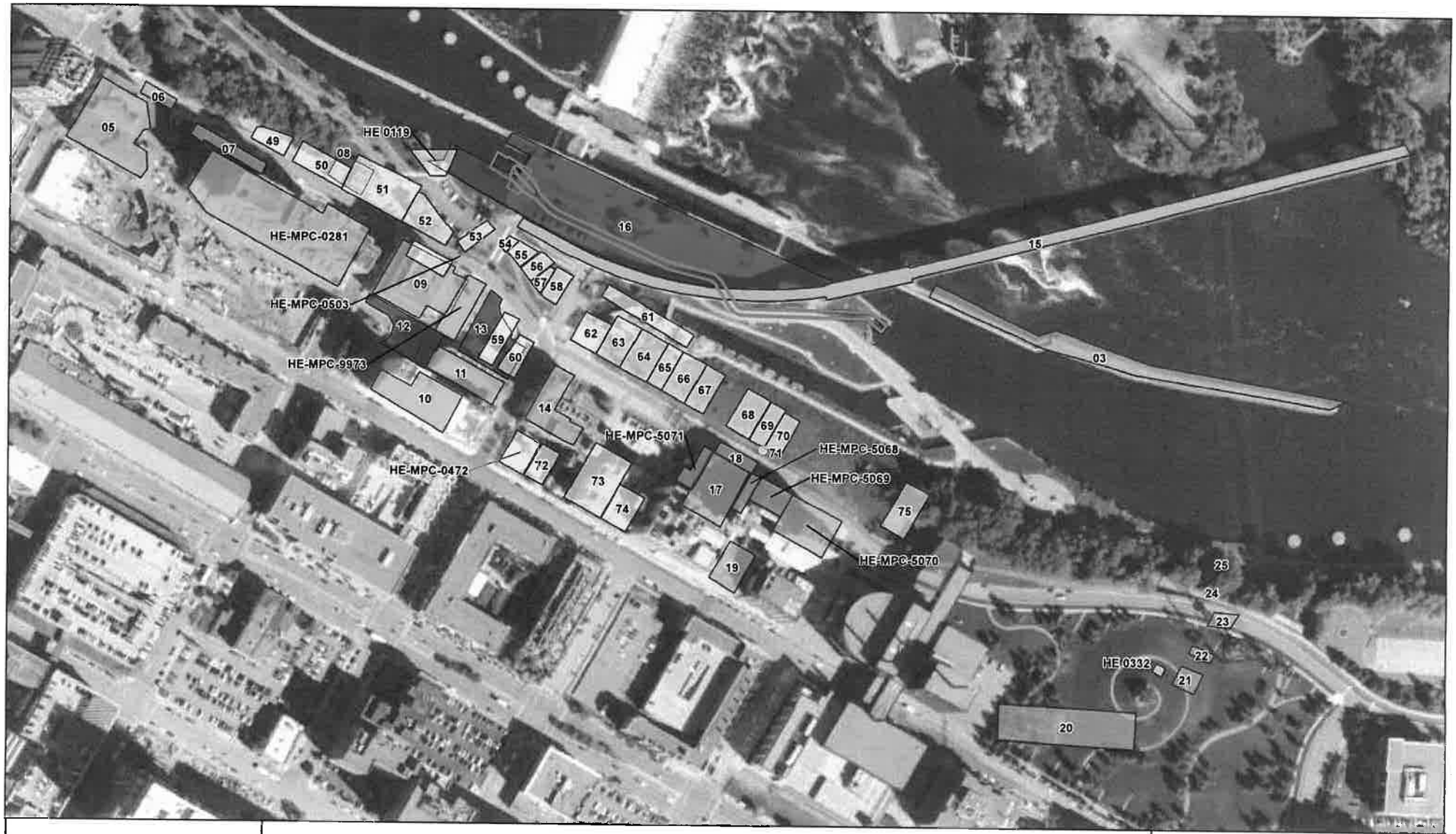


Figure 7
Crown Hydroelectric Project
St. Anthony Falls Waterpower Area – West Side
Hennepin County, Minnesota

0 100 200 Feet

1:2,400

N

W E

S

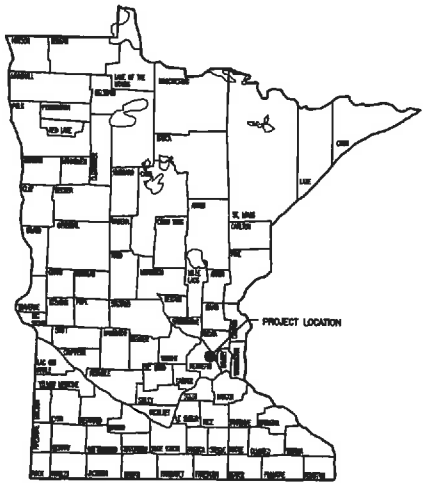
For Environmental Review Purposes Only

Figure 8
Crown Hydroelectric Project
St. Anthony Falls Waterpower Area – River Area
Hennepin County, Minnesota

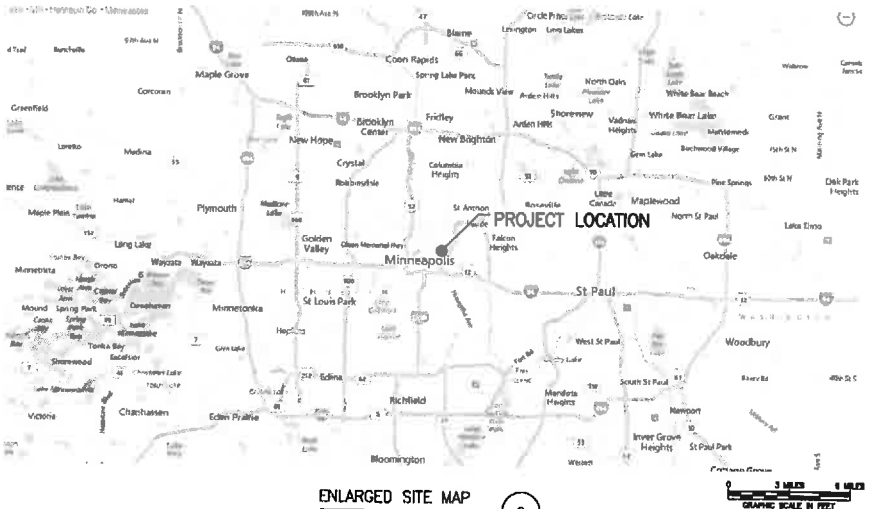
Powerhouse and Tailrace

Existing Contributing Structures

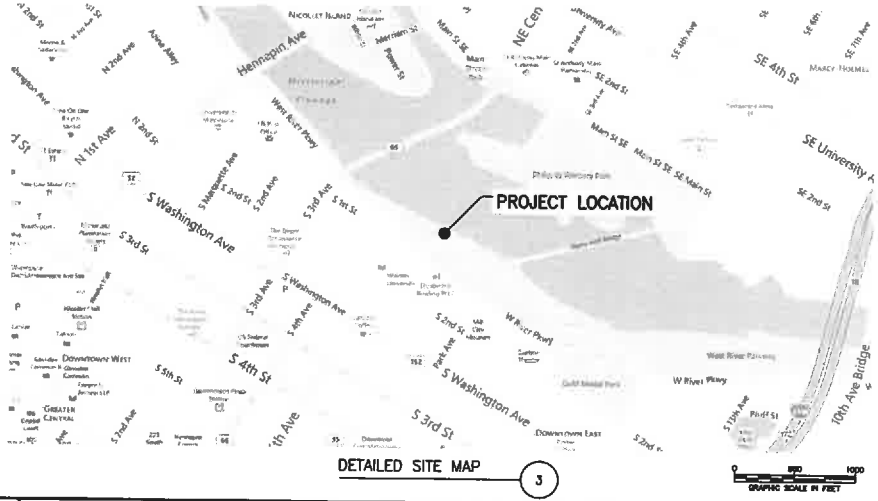
APPENDIX A



MINNESOTA STATE MAP 1



ENLARGED SITE MAP 2



DETAILED SITE MAP 3

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
1	ISSUED FOR REVIEW	JVB	JT	06/28/13

SEAL

CONSULTANT: ENGINEERING PARTNERS INTERNATIONAL

CONSULTANT: Wenck

PROJECT TITLE: CONCEPT PLAN

CROWN HYDRO , LLC

SHEET TITLE: PROJECT VICINITY MAP

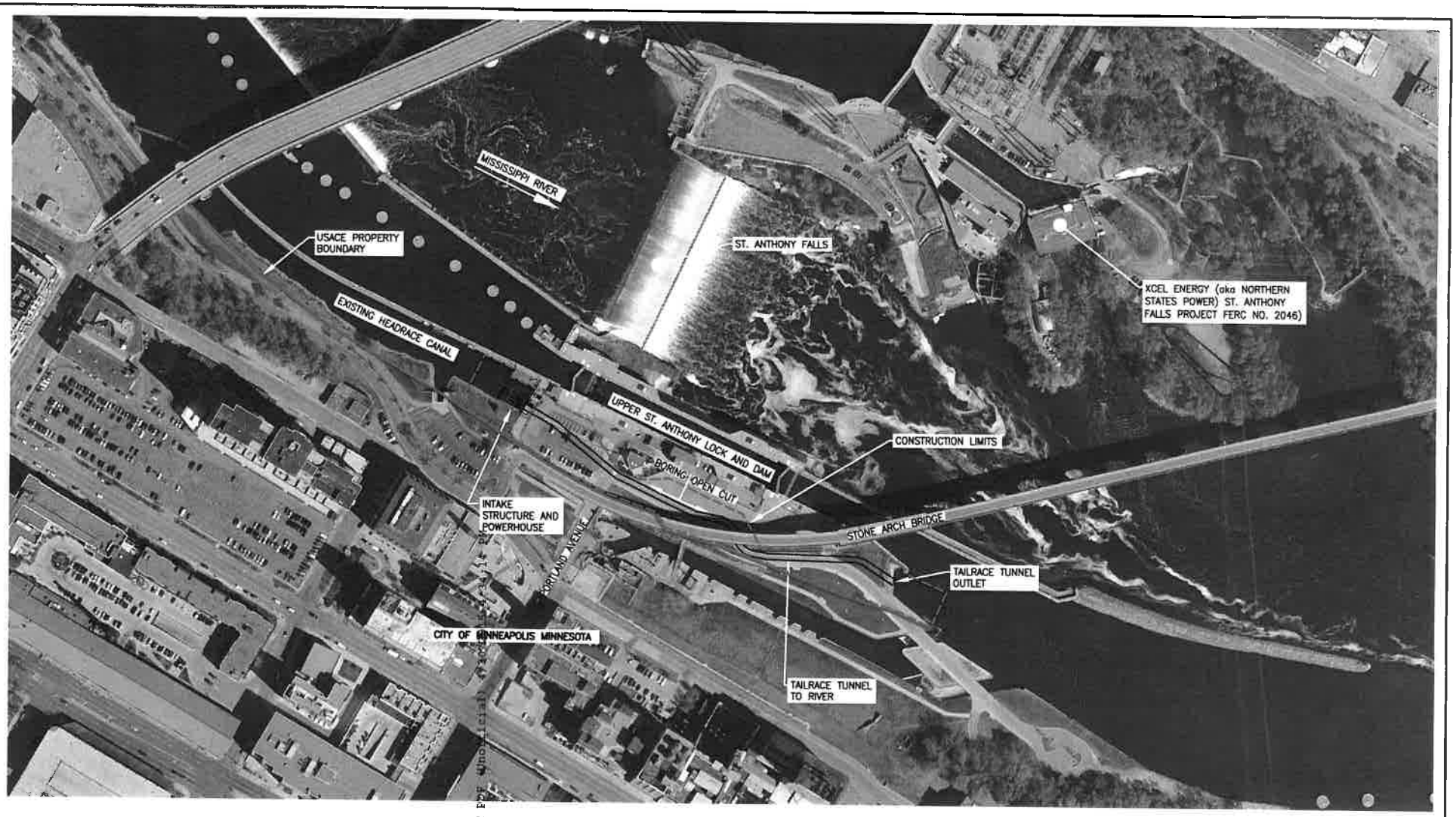
DWN BY	CHK'D	APP'D	DWG DATE
JVB	JT	JT	06/28/2013

SCALE: AS NOTED

PROJECT NO.: 2636-02

SHEET NO.: FIGURE 1

REV NO.: 1



GRAPHIC SCALE IN FEET

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
1	ISSUED FOR REVIEW	JVB	JT	06/28/13

SEE FERC PDF (Unofficial) 20150430-5055

CONSULTANT: ENGINEERING PARTNERS INTERNATIONAL, LLC

CONSULTANT: Wenck Associates, Inc. Consulting Engineers

PROJECT TITLE: CONCEPT PLAN

CROWN HYDRO , LLC

SHEET TITLE: PROPOSED CONSTRUCTION LIMITS

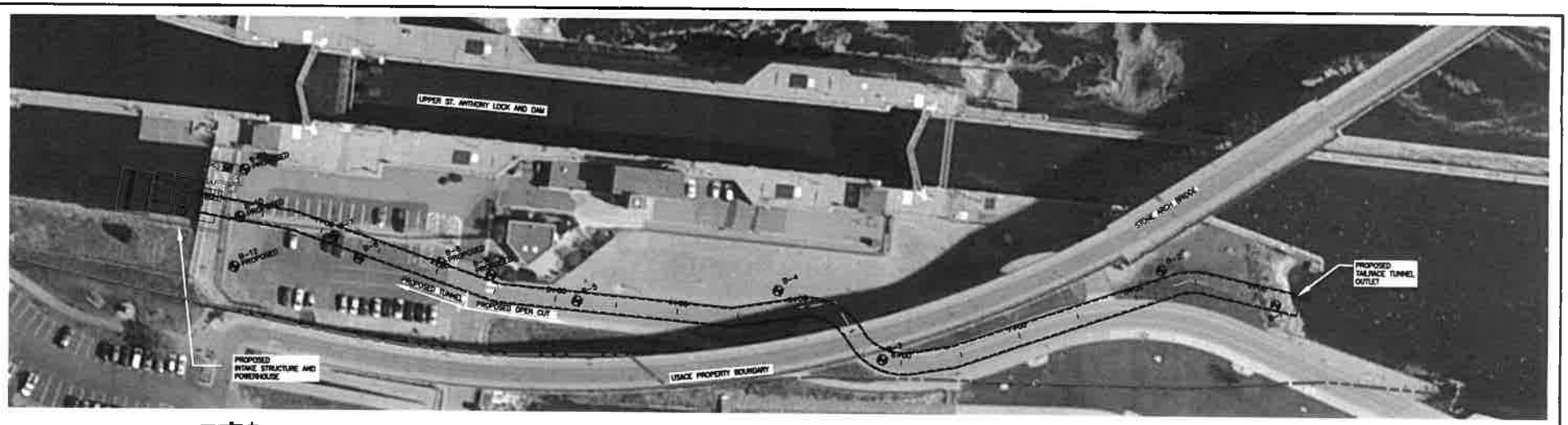
DWN BY	CHK'D	APP'D	DWG DATE
JVB	JT	JT	06/28/2013

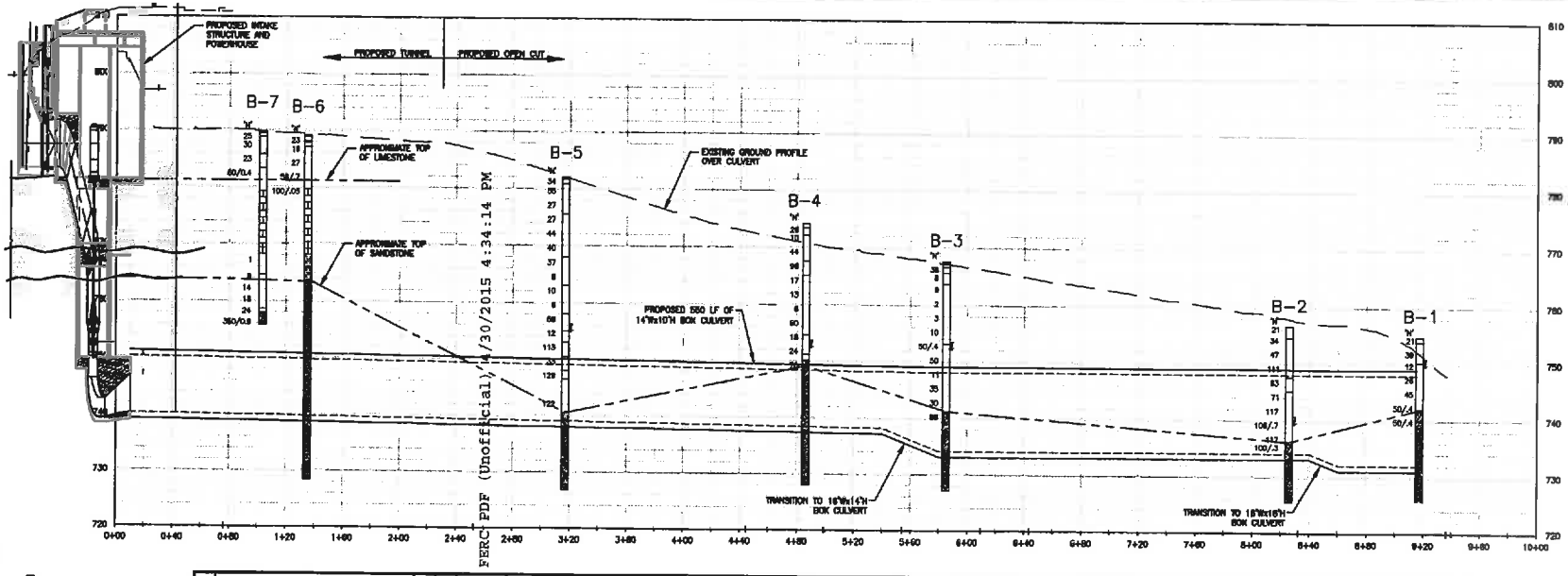
SCALE: AS NOTED

PROJECT NO.: 2636-02

SHEET NO.: FIGURE 2

REV NO.: 1





0 40 80
GRAPHIC SCALE IN FEET

NOTES:

1. BORING INFORMATION WAS PROVIDED BY AMERICAN ENGINEERING AND TEST TECHNICAL REPORT 12-21-2012
2. BORINGS 1-7 ARE EXISTING
   BORINGS 8-12 ARE PROPOSED.

REV	REVISION DESCRIPTION	DRN	APP	REV DATE

SEAL

CONSULTANT
ENGINEERING PARTNERS INTERNATIONAL LLC
1298 EAGAN INDUSTRIAL RD. SUITE 201
EAGAN, MINNESOTA 55121
O 651-209-0108 – F 651-209-0109

CONSULTANT
WENCK
Responsive partner. Exceptional outcomes.
1800 PIONEER CREEK CENTER
MAPLE PLAIN, MINNESOTA
PH 763-479-4200
FAX 763-479-4242

PROJECT TITLE
CONCEPT PLAN

CROWN HYDRO, LLC

SHEET TITLE
PLAN AND PROFILE

DRN BY	CHK'D	APP'D	DWG DATE
JVB	JT	JT	12/08/2014

SCALE AS NOTED

PROJECT NO. 2836-02

SHEET NO. FIGURE 3

REV NO.

APPENDIX B

merjent

p 612.746.3660 ■ f 612.746.3679 ■ www.merjent.com

800 Washington Avenue North ■ Suite 315 ■ Minneapolis, Minnesota ■ 55401

July 18, 2016

Sarah Beimers
Manager of Government Programs and Compliance
Minnesota State Historic Preservation Office
Minnesota Historical Society
345 Kellogg Blvd. W.
St. Paul, MN 55102-1903

SUBJECT: DEFINING THE AREA OF POTENTIAL EFFECT REGARDING CROWN HYDRO PROPOSED CROWN MILL HYDROELECTRIC PROJECT, MINNEAPOLIS, MINNEOSTA – LICENSE AMMENDMENT REQUEST
(PROJECT NO. 11175-025)

Dear Ms. Beimers:

In conjunction with the review and compliance efforts obligated under Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), the Crown Hydro, LLC, (Crown Hydro) acting as the non-federal representative for the U.S. Federal Energy Regulatory Commission (FERC) is consulting with you to determine and document the area of potential effects (APE) as defined in 36 CFR 800.16(d) and request your comments on the application for the proposed Crown Mill Hydroelectric Project (Project).

Crown Hydro proposes to construct and operate the 3.4 megawatt Project on the Mississippi River located in the City of Minneapolis in Hennepin County, Minnesota. The location for the project is planned on U.S. Army Corps of Engineers (COE) lands within the Upper St. Anthony Falls Lock and Dam complex (Figure 1). The proposed project would generate an estimated 21,200 megawatt-hours (MWH) of energy per year, powering approximately 2,300 homes with clean energy. Once complete Crown would sell the electricity to Xcel Energy for distribution to its consumers.

The facility will be developed through the use of existing infrastructure and the construction of new components to make the Project operational. A new tunnel race will be constructed and the existing dam and concrete spillway (also known as St. Anthony Falls) would be used to power two 1.7 megawatt turbines to generate the energy. The majority of the project, including most of the powerhouse components, would be underground and out of view of the local community (Figure 2). The above ground footprint would be limited to the housing for the generator, which is currently planned to be located adjacent to the existing COE parking lot (Figure 3a and b).

The proposed Project is located entirely within the boundaries of the St. Anthony Falls Historic District (District), named after the falls along the Mississippi River that the district is centered around and includes areas on both banks of the Mississippi River between Plymouth and South Tenth Avenues in Minneapolis (Figure 4). Considered both a "geologic marvel and geographic landmark," the falls holds cultural significance to indigenous populations and after European contact, is considered the birthplace of Minneapolis and the epicenter of hydroelectric power generation and saw and flour milling industries in the state (Heritage Preservation Commission, 2012).

A review of the National Register of Historic Places (NRHP) identifies 85 historic properties located in the district that are considered contributing properties to the District and are listed in the NRHP. Of specific note are the contributing District structures and features located at and in close proximity of the Project including the Crown Roller Mill and its facilities within the Mississippi River. Properties within the river include the locations of the headrace canal, intake structures, intake tunnel, turbine shafts, tailrace tunnel and tailrace canal. These properties are considered by the Minnesota Historical Society as being an "extremely important component of the Historic District" (Programmatic Agreement No. 11175). The results of a cultural resource survey conducted in 1994 by Crown Hydro noted that some of the buried historic properties had been either severely damaged or completely destroyed by previous infrastructure construction projects in the area.

Crown Hydro is initiating this consultation to comply with the Section 106 of the NHPA. It is anticipated that consultation will include participation in the identification of historic properties (as defined in 36 CFR 800.16(l)) within a defined APE for the project accompanied by an assessment of the effects of the proposed action on any such properties identified; and development of alternatives and proposed measures that might avoid, minimize, or mitigate any adverse effects of the proposed action on such properties.

Crown Hydro proposes defining APE for both direct and indirect effects. The direct APE in which potential ground disturbing activities may occur, would comprise an estimated area comprised of less than 2.0 acres. This area of direct APE includes a direct disturbance area associated with the construction footprint of the proposed facility and a fenced and controlled workspace area and is synonymous with the defined FERC Project Boundary. The Project area is constrained by existing public transportation routes and physical barriers (Mississippi River). Physical construction will be limited to the immediate area of the proposed hydroelectric facility and the workspace immediately south. The direct APE for archaeological and historic/architectural resources will encompass all portions of the Project area where actual ground disturbances will be executed (the Project footprint). This will include all areas used for project staging and temporary construction.

Crown Hydro proposes defining the Project APE for indirect effects to character or setting; nature of site access; site use; or alterations of visual, atmospheric, and audible features, using the following criteria:

- Initially, Crown Hydro will conservatively identify all listed historic properties and any **properties eligible for listing in the NRHP either individually or as eligible/contributing to the NRHP-listed or NRHP-eligible historic districts already identified** properties within the identified historic district(s) within the **direct** APE by searching the Minnesota State Historic Preservation Office's database and any other sources that may provide similar information. As the facility generator is proposed to be constructed at/in the existing dam on the upstream end of the parking lot, the potential impacts to historic features will need to be assessed.
    - Dam wall remnant located near the western edge of the current parking facility.
    - Possible subsurface tunnel indicated during geotechnical borings,
    - The Upper Saint Anthony Falls (USAF) lock structure,
    - The Saint Anthony Falls Locks and Dams Historic District,
    - The Upper Harbor Historic District.
- It is understood that the proposed Project is located entirely within the established boundaries of the St. Anthony Falls Historic District. To assess the potential impact of the proposed Project, Crown Hydro will employ modelling efforts to determine which contributing buildings/structures in the NHRP-listed district as currently identified that are located within a One-Mile radius of the proposed project will be impacted. This process will be initiated by determining:
    - which structures in the surrounding one-half-mile radius have an unobstructed view of the Project area (as currently designed);

- how much of a barrier do existing standing structures immediately adjacent to the proposed Project (within one to two blocks along the north and south shores of the river) serve as a shield to other listed/contributing structures on banks of the river;
- where the visual horizon for the Project is in the direction of the identified structures within the view shed to assess and qualify the extent of the indirect APE. This exercise will also allow Crown Hydro to potentially modify or revise the indirect APE based on the data collected;
- what setting, access, use, atmospheric, audible, and other impacts the construction and operation of the proposed facility will have on the surrounding features included in or associated with adjacent historic districts,.

- As the proposed Project is located on the southern banks of the Mississippi River trench at or near the surface of the river, it is anticipated that the placement of the Project near the topographic low will limit the impacts to the Historic District and structures surrounding the proposed Project.
- Concentrated efforts will be executed on determining impacts of river view shed along southern banks of the river. Efforts to define construction methods of structure and its ability to conform with existing architecture (ie. Construction will be adjacent to existing Lock and Dam structures, which have been identified as eligible for listing on the National Register). As the proposed Project is scheduled to be constructed within and adjacent to NHRP listed and eligible sites, the design of the facility will endeavor to comply with the Secretary of the Interior's Standards.

Please respond with any comments concerning the delineation of the direct APE or the methodology to develop an indirect APE to Crown Hydro Attn: Mr. Dean Sather, 800 Washington Ave. N., Suite 315, Minneapolis, MN 55401. If you have any questions on the proposed project or need any additional information regarding this issue, please contact Mr. Sather directly by telephone at 612-924-3984, or by e-mail at dsather@merjent.com.

Sincerely,
Merjent, Inc.

Dean T. Sather
Senior Analyst/Cultural Resource Specialist

Project No.: 11175-025

Enclosure: Map

From: Perkl, Bradley E MVP
To: Dean Sather; Sarah Beimers
Cc: Hamer, Vanessa MVP
Subject: RE: Draft APE for the Crown Hydro Project
Date: Wednesday, June 15, 2016 9:42:15 AM

Dean:

Thanks for the draft APE consult letter. Do you have maps of where these proposed works will be? I thought the a new headrace building would be built on the upstream wall of the existing dam /parking lot, with the tailrace going under the lot/stone arch bridge.

I think a mile APE is too broad-I would suggest a half mile from the upstream side and the immediate environs (e.g., from the river shore to a block or two out) along the north and south shores of the river... Other than a new tail race, there wouldn't be much visible from downstream, depending on the height of the head house. A viewshed map and drawings would be nice.

While the USAF is considered eligible, we really don't have a definitive document specifically addressing this, as far as I know. The Corps may undertake such an endeavor associated with a presumably impending 'Disposition Study' for the USAF following closure of the gates of June last. We have asked for funds to complete such a study but have yet to receive monies, and no telling when that may happen-may be literally years out.

If the head house would be constructed at/in the existing dam on the upstream end of the parking lot, the historic dam wall remnant will need to be reckoned with, along with the remnants of a tunnel running under the lot that was encountered in recent borings and the USAF lock structure, plus all the other non-Corps historic structures...

Please contact me with questions. Thank you.

Bradley E. Perkl, Ph.D.
District Archaeologist
Environmental Compliance
U.S. Army Corps of Engineers, St. Paul District
RPEDN-PD-C
180 Fifth Street East, Suite 700
St. Paul, MN 55101
651-290-5370
bradley.e.perkl@usace.army.mil

-----Original Message-----
From: Dean Sather [mailto:dsather@merjent.com]
Sent: Thursday, June 09, 2016 8:34 AM
To: Sarah Beimers <sarah.beimers@mnhs.org>; Perkl, Bradley E MVP <Bradley.E.Perkl@usace.army.mil>
Subject: [EXTERNAL] Draft APE for the Crown Hydro Project

Sarah and Brad,

Attached is a first draft text of a proposed Area of Potential Effect definition for the Crown Hydro Project. I have citations and graphics in the works and will compile them soon. I am interested in having a first review from both of you as we will be activlely consulting with both of your offices in regards to this project. Please, provide your comments, concerns, complaints, and critiques. I appreciate any input you can provide.

Dean

Dean Sather

TractorWorks Building

612.746.3660 main

800 Washington Avenue N.

612.924.3984 direct

Suite 315

Minneapolis, MN 55401

612.746.3679 fax

Blockedwww.merjent.com

dsather@merjent.com

APPENDIX C

ARCHAEOLOGICAL MONITORING REPORT FOR INVESTIGATIONS AT THE PROPOSED CROWN HYDROELECTRIC PROJECT, HENNEPIN COUNTY, MINNESOTA

October 22, 2012

Prepared for
Wenck Associates, Inc.
1800 Pioneer Creek Center
Maple Plain, MN 55359

Prepared by
Dean T. Sather, MA, RPA
Westwood Professional Services, Inc.
7699 Anagram Drive
Eden Prairie, MN 55344

INTRODUCTION

Westwood Professional Services, Inc. (Westwood) was retained by Wenck Associates, Inc. (Wenck) to monitor subsurface boring investigations conducted for the Crown Hydroelectric project. The project is located along the banks of the Mississippi River near downtown Minneapolis, Minnesota in Section 23, Township 29 north, Range 24 west, Hennepin County, Minnesota. Westwood archaeologist Dean T. Sather monitored the soil borings to provide a preliminary gauge of the potential for intact sub-surface historic or prehistoric deposits to be located within the project area.

The western portion of the project area is situated in the parking facility for the Upper Lock and Dam (St. Anthony Falls) installation near the northern terminus of Portland Avenue in downtown Minneapolis. The project area extends towards the east from the parking facility roughly following the route of a paved roadway. The individual soil boring locations are all situated south of the Upper Lock and Dam facility and north of the Mill Ruins Park.

METHODOLOGY

Westwood archaeologists conducted a preliminary Cultural Resource Literature Review and Assessment of the proposed project area in October of 2012. Westwood Cultural Resource Specialist Dean T. Sather conducted background research and a literature review of existing archaeological survey reports. Field investigations consisted of the monitoring of the excavations of soil borings. As samples were extracted, the cores were visually inspected for signs of significant or substantial cultural deposits. Due to proximity of the project area to several previously recorded archaeological sites and National Register properties the project area was considered to have moderate potential

for prehistoric cultural resources. As subsurface borings of the project were to be conducted, it was suggested that these actions be monitored by archaeological personnel to make an initial assessment of the potential for intact archaeological deposits.

ARCHAEOLOGICAL LITERATURE REVIEW

Westwood conducted a Cultural Resources Literature Review for the proposed project area. The known cultural resources information, derived from previous professional cultural resources surveys and reported site information, was collected from the Office of the State Archaeologist in St. Paul, Minnesota. Collected data includes archaeological site files and previous cultural resources studies and reports. In addition, Westwood reviewed 19th-century Public Land Survey (PLS) maps and the Andreas' Atlas to identify potential historic-period cultural features that may yet exist in the project area.

The proposed project is located within the St. Anthony Falls Historic District. The district was originally nominated for listing in 1971 (Coddington, 1971). Based on archaeological and archival investigations executed during the 1980's (Anfinson 1989, 1990), the historic district was increased in 1991 to include 68 contributing properties consisting of standing structures, architectural features and archaeological sites (Hess and Kudzia, 1991).

An earlier investigation of the potential archaeological impacts of the Crown Hydroelectric project was conducted in 2007 (Bradley and Tidlow, 2007). Based on the proposed project design at the time of their study, Bradley and Tidlow suggested that much of the area under consideration consists of historic fill and that the potential for the discovery of intact archaeological remains related to historic milling operations was low.

The current project has shifted to include areas further to the north and east of the original study. Examination of the historic maps provided in the 2007 report indicate that the project area may include southern portions of Upton's Island.

FIELD INVESTIGATION RESULTS

Archaeological monitoring of the excavation of the subsurface borings was conducted between October 9th and October 19th, 2012 by Westwood Senior Cultural Resource Specialist Dean T. Sather. All noted depths are approximate and based on depths indicated on provided subsurface boring logs.

Subsurface Boring #1 (B-1) was located near the eastern edge of the investigation area. It was placed approximately 2 meters west of the edge of the Mississippi River bank. The opening elevation was 754.9 foot.

- 0 - 10 inches: Fill material consisting of silty sands with small quantities of gravels and organics. No cultural materials.
- 10 – 54 inches: Fill material consisting of silty sands and gravels. **Small quantities of brick and concrete mixed into fill material. No discernible separate layer of construction debris.**

- 54 – 154 inches: Fill material consisting of gravel and sand. No cultural materials.
- 154 – 191 inches: Weathered Sandstone. No cultural materials.
- 191 – ca 350 inches: Sandstone.

Subsurface Boring #2 (B-2) was located approximately 100 foot west of B-1. The opening elevation was 756.3 foot.

- 0 - 24 inches: Fill material consisting of silty sands with small quantities of gravels and organics. No cultural materials.
- 24 – 108 inches: Fill material consisting of silty sands and gravels. No cultural materials.
- 108 – 138 inches: Fill material consisting of gravel and sand. No cultural materials.
- 138 – 246 inches: Fill material consisting of silty sands and gravels. **Small quantities of wood fragments. No discernible separate layer of construction debris.**
- 246 – 271 inches: Weathered Sandstone. No cultural materials.
- 271 – 375 inches: Sandstone.

Subsurface Boring #3 (B-3) was located approximately 250 foot west of B-2. The opening elevation was 767.5 foot.

- 0 – 5 inches: Bituminous paving. No cultural material.
- 5 – 12 inches: Fill material consisting of crushed limestone. No cultural material.
- 12 – 24 inches: Fill material consisting of silty sands and gravels. No cultural material.
- 24 – 48 inches: Fill material consisting of silty sands and gravels. **Small quantities of concrete mixed into fill material. No discernible separate layer of construction debris.**
- 48 – 172 inches: Fill material consisting of silty sands and gravels. **Small quantities of brick and ash/cinder mixed into fill material. No discernible separate layer of construction debris.**
- 172 – 318 inches: Fill material consisting of sands and gravels. No cultural material.
- 318 – 345 inches: Weathered Sandstone. No cultural materials.
- 345 – 486 inches: Sandstone.

Subsurface Boring #4 (B-4) was located approximately 100 foot north and west of B-3. The opening elevation was 774.1 foot.

- 0 – 7 inches: Fill material consisting of gravel and limestone cobbles. No cultural material.
- 7 – 24 inches: Fill material consisting of sand and gravel and limestone cobbles. No cultural material.
- 24 – 78 inches: Fill material consisting of sands and gravels. No cultural material.
- 78 – 108 inches: Fill material consisting of sands and gravels. No cultural material.

- 108 – 236 inches: Fill material consisting of sands and gravels. **Small quantities of brick and ash/cinder mixed into fill material. No discernible separate layer of construction debris.**
- 236 – 276 inches: Fill material consisting of sands and gravels. No cultural material.
- 276 – 288 inches: Fill material consisting of shale. No cultural materials.
- 288 – 300 inches: Fill material consisting of water bearing silty sands and gravels. No cultural material.
- 300 – 326 inches: Weathered Sandstone. No cultural materials.
- 326 – 550 inches: Sandstone.

Subsurface Boring #5 (B-5) was located approximately 200 foot west of B-4. The opening elevation was 782.0 foot.

- 0 – 5 inches: Bituminous paving. No cultural material.
- 5 – 15 inches: Fill material consisting of crushed limestone. No cultural material.
- 15 – 78 inches: Fill material consisting of sands and gravels. No cultural material.
- 78 – 168 inches: Fill material consisting of sands and gravels. No cultural material.
- 168 – 236 inches: Fill material consisting of sands and gravels. **Small quantities of ash or cinder mixed into fill material. No discernible separate layer of construction debris.**
- 236 – 288 inches: Fill material consisting of silty sands and gravels. **Small quantities of brick mixed into fill material. No discernible separate layer of construction debris.**
- 288 – 324 inches: Fill material consisting of silty sands and gravels. **Small quantities of brick, concrete and wood fragments mixed into fill material. No discernible separate layer of construction debris.**
- 324 – 348 inches: Fill material consisting of silty sands and roots. No cultural material.
- 348 – 396 inches: Fill material consisting of silty sands and gravels. **Small quantities of concrete and wood fragments mixed into fill material. No discernible separate layer of construction debris.**
- 396 – 416 inches: Fill material consisting of sands and gravels. No cultural material.
- 416 – 498 inches: Fill material consisting mostly of sand. **A single fragment of unidentifiable metal was recovered at 498 inch level (base of fill).**
- 498 – 660 inches: Sandstone.

Subsurface Boring #6 (B-6) was located approximately 175 foot west of B-5. The opening elevation was 789.0 foot.

- 0 – 3 inches: Bituminous paving. No cultural material.
- 3 – 12 inches: Fill material consisting of crushed limestone. No cultural material.
- 12 – 15 inches: Fill material consisting of sand and silt with small quantities of gravel. No cultural material.

- 15 – 24 inches: Fill material of silty, clayey sands with small quantities of gravel. No cultural material.
- 24 – 114 inches: Fill material consisting of sands and gravels. **Small quantities of ash or cinder mixed into fill material. No discernible separate layer of construction debris.**
- 114 – 238 inches: Limestone - Weathered.
- 238 – 252 inches: Limestone - Fresh.
- 252 – 308 inches: Shale.
- 308 – 728 inches: Sandstone.

Subsurface Boring #7 (B-7) was located approximately 10 foot north of B-6. The opening elevation was 789.5 foot.

- 0 – 4 inches: Bituminous paving. No cultural material.
- 4 – 12 inches: Fill material consisting of crushed limestone. No cultural material.
- 12 – 48 inches: Fill material consisting of silty sands and small quantities of gravel. No cultural material.
- 48 – 78 inches: Fill material consisting of sands and gravels. No cultural material.
- 78 – 126 inches: Fill material consisting of silty sands and gravels. No cultural material.
- 126 – 246 inches: Limestone - Weathered.
- 246 – 258 inches: Limestone - Weathered.
- 258 – 278 inches: **Fill material consisting of substantial quantities of wood.**
- 278 – 302 inches: A void. **This has been interpreted as a potential tunnel remnant.**
- 302 – 372 inches: Fill material consisting mostly of sands and gravel. No cultural material.
- 372 – 382 inches: Fill material consisting of sands and gravels. No cultural material.
- 382 – 385 inches: **Fill material consisting mostly of wood fragments.**
- 385 – 408 inches: Sandstone.

RECOMMENDATIONS

Each of the seven excavated subsurface borings produced cultural materials. The relationship of these cultural artifacts to the historic milling operations of the area is unknown. The ability to assess and define cultural deposits from two inch bore cores is limited, at best. However, there appears to be a potential amount of integrity of cultural materials in the western portion of the project area.

In the eastern series of **Subsurface Borings (B-1 through B-4)**, the majority of artifacts observed during this investigations were not recovered from discreet or intact layers of construction debris but were small quantity inclusions within thick fill layers composed predominantly sand and gravel. The brick, wood, concrete and ash/cinder fragments were not found in single, discernible layers which might be indicative of singular

depositional episodes. Rather, the items appear to be included in fill materials being derived from other locations.

In **Subsurface Boring #5** there is an increase in the quantity of cultural materials distributed throughout the profile. Ash, brick, concrete and wood fragments are observed in four different, but contiguous strata. As with the previous four subsurface borings, these materials are not recovered from discreet cultural material bearing levels, but throughout a 10 foot thick series of fill layers. The increase in quantity of cultural materials from the eastern to western project areas may be indicative of an increasing proximity to intact cultural deposits.

Subsurface Boring #6 exhibits a limited amount of cultural material recovered from the base of a single stratigraphic layer immediately overlying the limestone bedrock. The lack of cultural material, as compared to that recovered from B-5, is not immediately explained with current data.

Subsurface Boring #7 presented the most intact and integral example of cultural deposits recovered during the monitoring process. A twenty inch layer of wood fragments was encountered immediately over a 24 inch void. This void has been interpreted as a tunnel remnant. Following the void is a series of depositional layers consisting of 80 inches of culturally sterile sands and gravels underlain by a three inch layer of wood fragments. All of these layers were recovered beneath the intact weathered limestone layer. The upper wood fragment layer may represent debris associated with the construction of the tunnel. The lower layer containing wood fragments may represent debris deposited following the abandonment of the tunnel.

The increase in quantity of cultural materials from the eastern to western project areas may be indicative of an increasing proximity to intact cultural deposits such as those suggested to have been encountered in B-7. It must be stressed that the ability to precisely define archaeological processes based on individual cores is difficult and interpretations must be viewed as speculative.

The presence of cultural materials in each of the borings does indicate the presence of historic deposits. The integrity of these deposits is, as yet, undefined. The increased quantity and concentration of artifacts encountered from the east to west may indicate that more substantial and potentially integral historic archaeological deposits are located towards the western end of the project area. This pattern is tentatively supported by the materials recovered in B-7.

Once more defined project plans are provided, a plausible method for discerning the full nature of the archaeological deposits can be developed. It is recommended that any further construction activities associated with the Crown Hydroelectric project be monitored. If possible, the extent and dimensions of the void encountered beneath the limestone in B-7 should be defined and possibly avoided by future project design.

REFERENCES

Anfinson, Scott F.
1989 Archaeology of the Central Minneapolis Waterfront, Part 1: Historical Overview and archaeological Potentials. The Minnesota Archaeologist, Volume 48.
1990 Archaeology of the Central Minneapolis Waterfront, Part 2: Archaeological Explorations and Interpretive Potentials. The Minnesota Archaeologist, Volume 49.
1990 Archaeological Regions in Minnesota and the Woodland Period. In The Woodland Tradition in the Western Great Lakes: Papers Presented to Elden Johnson, edited by G.E. Gibbon, pp. 135-166. University of Minnesota Publications in Anthropology No. 4, Minneapolis.

Bradley, Betsy and Evelyn M. Tidlow
2007 Potential Archaeological Impacts for the Proposed Crown Hydroelectric Project. Report prepared for Engineering Partners International, LLC, Bloomington, MN.

Coddington, Donn
1971 National Register of Historic Places Nomination Form. St. Anthony Falls Historic District. On file with the Minnesota State Historic Preservation Office, St. Paul.

Hess, Jeffrey A. and C. Kudzia
1991 National Register of Historic Places Continuation Sheets. St. Anthony Falls Historic District. On file with the Minnesota State Historic Preservation Office, St. Paul.

Minnesota Department of Natural Resources.
2007 The Minnesota Department of Natural Resources Web Site (online). Accessed 2007-5-29 at http://www.dnr.state.mn.us/sitetools/copyright.html