

## EXECUTIVE SUMMARY

---

## EXECUTIVE SUMMARY

Loup River Public Power District (Loup Power District or the District) is filing this Draft License Application with the Federal Energy Regulatory Commission (FERC) to obtain a new license for its existing 53.4-megawatt (MW) Loup River Hydroelectric Project (FERC Project No. 1256). The Project is licensed by FERC under authority granted through the Federal Power Act (16 United States Code [USC] 791(a), et seq.) to license and oversee the operation of non-Federal hydroelectric projects on jurisdictional waters and/or Federal lands. The current license for the Project expires on April 15, 2014, and in accordance with 18 CFR §5.16, the District must file its application with FERC for a new license no later than April 16, 2012. In support of obtaining a new license for the Project, the District initiated the Integrated Licensing Process (ILP) in 2008. Subsequent to the consultation and study activities performed to date, the District is now filing this Draft License Application in accordance with 18 CFR §5.18.

### 1. PROJECT DESCRIPTION

The Project is an existing major project under FERC's regulations and has an installed nameplate capacity of 53.4 megawatts (MW). The Project is located in Nance and Platte counties, Nebraska, where water is diverted from the Loup River and routed through the 35-mile-long Loup Power Canal, which empties into the Platte River near Columbus. The Project includes various hydraulic structures, two powerhouses, and two interconnected regulating reservoirs.

The Project begins at the Headworks, where at the point of diversion, a low weir across the Loup River creates sufficient head to divert a variable portion of river flow (not to exceed 3,500 cfs) through an Intake Gate Structure into the Settling Basin. The diverted water is routed through the Upper Power Canal, which carries the water to the Monroe Powerhouse. Then the Lower Power Canal carries the water from the Monroe Powerhouse into two connected regulating reservoirs, Lake Babcock (in channel) and Lake North (off-channel), which supply water to the Columbus Powerhouse via the Intake Canal. From the Columbus Powerhouse, water discharges to the Tailrace Canal, which in turn discharges Loup River water into the Platte River approximately 2 miles downstream of the confluence of the Loup and Platte rivers.

The portion of Loup River flow that is not diverted into the Loup Power Canal passes over the Diversion Weir or through the adjacent Sluice Gate Structure and continues downstream. The portion of the Loup River below the point of diversion is referred to as the Loup River bypass reach. The Project differs somewhat from a typical hydroelectric project in that it has no significant dam, in-river reservoir, project spillway, or transmission lines.

Nebraska is the only state in the nation where all electric customers are served by public power. The Nebraska Legislature established the statutes that govern public

power in 1933, the same year that the District was formed. As a public power state, all utilities that generate, transmit, or distribute electric power for use in Nebraska must be publicly owned and operated.

All power generated by the Project is sold to Nebraska Public Power District (NPPD) at the two powerhouse substations, and NPPD dispatches the power in accordance with established operating agreements between the District and NPPD.

In connection with the Project, the District provides a variety of public benefits to residents in Nance and Platte counties, visitors from Nebraska and elsewhere, and electric ratepayers across Nebraska, including the following:

- Clean, renewable energy – The Project, which generates hydroelectric power, provides clean, renewable energy to electric ratepayers across Nebraska.
- Low energy rates – Revenue from the Project reduces electric rates for District customers.
- Recreation – The District maintains and operates five developed recreation areas and three multi-use trails, which provide opportunities for activities such as camping, hiking, biking, aquatic recreation, and Off-highway Vehicle (OHV) riding.
- Threatened and endangered species habitat – The Project’s North Sand Management Area provides habitat used by the threatened piping plover and the endangered interior least tern within the Project Boundary, contributing to the existence of these species.
- Historic resource preservation – The District has maintained the Project in excellent condition, resulting in preservation of a key resource related to the early history of public power in Nebraska as well as the Public Works Administration (PWA), which funded Project construction.
- Agriculture – The Loup Power Canal facilitates irrigation of crops adjacent to the Project.
- Economic development – The District plays a key role in economic development in Nance and Platte counties, as described below:
  - Strategic land development – The District has purchased land for industrial development and worked with the City of Columbus and the Chamber of Commerce to attract approximately 70 manufacturing companies and 6,000 jobs to the Columbus area.
  - Low-cost electric power rates – The attractive electric power rates that the District offers are a major factor in attracting a variety of industries and their many associated jobs to the area.

- Increased tax base and improved quality of life – District economic development activities have resulted in an increased tax base and an improved quality of life for Columbus and Platte County.
- Tourism – Headworks OHV Park near Genoa attracts approximately 20,000 visitors per year. OHV and dirt bike riders spend an estimated \$4.8 million per year in Nebraska on day trips to Headworks OHV Park (NOHVA, June 29, 2008<sup>1</sup>).
- Direct employment – The District employs 118 full-time employees and 6 regular part-time employees.

## 2. AGENCY CONSULTATION AND PROCESS TO DATE

The Project is being relicensed (and §401 Water Quality Certification sought) through FERC's ILP. This process included a series of consultation activities that began with early stakeholder outreach and the distribution of the Pre-Application Document (PAD). Following the distribution of the PAD and FERC's Scoping Meeting, the District worked with Project stakeholders to define studies to be conducted during the relicensing process. FERC provided guidance in its Scoping Documents 1 and 2 and its Study Plan Determination, while the District detailed its studies in its Proposed Study Plan and Revised Study Plan, as discussed below:

- Scoping Document 1 – FERC issued Scoping Document 1 on December 12, 2008. The purpose of Scoping Document 1 was to provide information on the Project and to solicit comments and suggestions on the preliminary list of issues and alternatives to be addressed in FERC's Environmental Assessment (EA).
- Proposed Study Plan – The District's Proposed Study Plan (PSP) was prepared in accordance with 18 CFR §5.11 and was filed on March 27, 2009. The PSP detailed 12 studies proposed by the District and agencies. Additionally, the document discussed the District's position on why additional studies were not warranted.
- Scoping Document 2 – Also on March 27, 2009, FERC issued Scoping Document 2 based on the verbal comments received at the scoping meetings and written comments received throughout the scoping process. The purpose of Scoping Document 2 was to clarify issues identified in Scoping Document 1 based on information received during the scoping process, to advise all participants about additional issues identified for inclusion in the proposed scope of the EA, and to seek additional information pertinent to these analyses.

---

<sup>1</sup> NOHVA. June 29, 2008. Personal communication from Dan Nitzel, Business Manager, NOHVA, to Jim Frear, Loup Power District.

- Revised Study Plan – The District’s Revised Study Plan (RSP) was prepared in accordance with 18 CFR §5.13 and was filed on July 27, 2009. The RSP addressed all comments received on the PSP and included updated plans for the 12 studies included in the PSP.
- Study Plan Determination – FERC issued its Study Plan Determination on August 26, 2009, in accordance with 18 CFR §5.13(c). In its Study Plan Determination, FERC approved three studies as defined in the RSP without modification, approved six studies with modification, and removed three studies. The following is the complete list of studies identified in FERC’s Study Plan Determination:
  - 1.0, Sedimentation (approved with modification)
  - 2.0, Hydrocycling (approved with modification)
  - 3.0, Water Temperature in the Platte River (deleted)
  - 4.0, Water Temperature in the Loup River Bypass Reach (approved with modification)
  - 5.0, Flow Depletion and Flow Diversion (approved with modification)
  - 6.0, Fish Passage (approved without modification)
  - 7.0, Fish Sampling (deleted)
  - 8.0, Recreation Use (approved with modification)
  - 9.0, Creel Survey (deleted – combined with 8.0, Recreation Use)
  - 10.0, Land Use Inventory (approved without modification)
  - 11.0, Section 106 Compliance (approved without modification)
  - 12.0, Ice Jam Flooding on the Loup River (approved with modification)

The District conducted these studies during 2010, and the study results were reported in the District’s Initial Study Report (August 26, 2010), Second Initial Study Report (February 11, 2011), and Updated Study Report (August 26, 2011). All studies are complete.

- Initial Study Report (ISR) – In accordance with 18 CFR §5.15, the District filed its ISR on August 26, 2010, and held its Initial Study Results Meeting on September 9, 2010. The ISR and associated Initial Study Results Meeting provided results for the following studies:
  - 1.0, Sedimentation
  - 7.0, Fish Passage

- 10.0, Land Use Inventory
- 11.0, Section 106 Compliance

All studies were completed in accordance with the RSP and FERC's Study Plan Determination. Additionally, the ISR provided progress updates for the studies that were ongoing at that time.

- Determination on Study Modifications – Pursuant to 18 CFR §5.15(c), FERC issued its Determination on Requests for Modifications to the Loup River Hydroelectric Project Study Plan for the studies presented in the ISR on December 20, 2010. In this document, FERC addressed requested study plan modifications for the sedimentation and hydrocycling studies, as received from commenting agencies. Based on these requests and other related elements on record, FERC modified only the sedimentation and hydrocycling studies. These modifications were addressed in the District's August 26, 2011, Updated Study Report.
- Second Initial Study Report (Second ISR) – At the time of ISR filing, approximately half of the District's studies were unfinished due to late-season data collection requirements. Therefore, the District filed its Second ISR on February 11, 2011, and held its Second Initial Study Results Meeting on February 23 and 24, 2011. The Second ISR and associated Second Initial Study Results Meeting provided results for the following studies:
  - 1.0, Sedimentation
  - 2.0, Hydrocycling
  - 4.0, Water Temperature in the Project Bypass Reach
  - 5.0, Flow Depletion and Flow Diversion
  - 8.0, Recreation Use
  - 12.0, Ice Jam Flooding on the Loup River

All studies were completed in accordance with the RSP and FERC's Study Plan Determination.

- Determination on Study Modifications – Pursuant to 18 CFR §5.15(c), FERC issued its Determination on Requests for Modifications to the Loup River Hydroelectric Project Study Plan for the studies presented in the Second ISR on June 10, 2011. In this document, FERC addressed requested study plan modifications for the sedimentation, hydrocycling, water temperature in the Project bypass reach, and flow depletion and flow diversion studies, as received from commenting agencies. Based on these requests and other related elements on record, FERC modified only the

sedimentation study. These modifications were addressed in the District's August 26, 2011, Updated Study Report.

- Updated Study Report – In accordance with 18 CFR §5.15(f) the District presented the results documented in the Updated Study Report to FERC and other relicensing participants during the Updated Study Results Meeting held on September 8, 2011. The presented studies included analyses required as a result of FERC's December 20, 2010, and June 10, 2011, Determinations on Study Modifications. The following studies were presented:
  - Study 1.0, Sedimentation
  - Study 2.0 Hydrocycling
- Determination on Additional Study Modifications – Comments from resource agencies have been received on the District's study results, presented in the Updated Study Report. FERC's Determination on additional study modifications is expected in December 2012.
- Endangered Species Act Section 7 Consultation – Based on the potential occurrence of Federally listed species in the vicinity of the Project, the District has entered into informal, ongoing Section 7 consultation with USFWS. The District has prepared a Preliminary Draft Biological Assessment (BA) (see Appendix E-2). USFWS, NGPC, and the District are currently consulting on potential species conservation measures. The District anticipates including mutually agreed upon species conservation measures in the Draft BA, to be submitted with the District's License Application.

### 3. DRAFT LICENSE APPLICATION ORGANIZATION

The Draft License Application follows the form and content requirements set forth in 18 CFR §5.18(a)(5)(iii) and is divided into four volumes, as listed below. Summaries of Draft License Application content are provided in Section 5, Draft License Application Section Summary.

The Draft License Application filed with FERC includes information that is considered privileged<sup>2</sup> or Critical Energy Infrastructure Information<sup>3</sup> (CEII). This

---

<sup>2</sup> Privileged information is information that is sensitive and not publicly available because, for example, it relates to the specific location of threatened or endangered species or an archaeological resource, disclosure of which may jeopardize the resource.

<sup>3</sup> CEII is specific engineering, vulnerability, or detailed design information about proposed or existing critical infrastructure (physical or virtual) that relates details about the production, generation, transmission, or distribution of energy; could be useful to a person planning an attack

information has been withheld from the publicly available document. Sections where information has been withheld are duly noted. Privileged information or CEII may be requested directly from FERC by filing a formal Freedom of Information Act (FOIA) or CEII request. Instructions for filing a request are available on FERC's website at <http://www.ferc.gov/legal/ceii-foia.asp>.

Volume 1 includes the following information and exhibits:

- Executive Summary
- General Information
- Initial Statement
  - Appendix IS-1 – Applications and Approvals
- Exhibit A – Project Description
- Exhibit B – Project Operation and Resource Utilization
  - Appendix B-1 – Monthly Flow Duration Curves, Loup River at Point of Diversion
  - Appendix B-2 – Monthly Flow Duration Curves, Loup River Power Canal at Genoa
- Exhibit C – Project History and Proposed Construction Schedule
- Exhibit D – Statement of Costs and Financing
- Exhibit F – Design Drawings and Supporting Design Report
- Exhibit G – Project Maps
  - Appendix G-1 – Project Boundary Maps
  - Appendix G-2 – Project Boundary Modifications
- Exhibit H – Plans and Ability of Applicant to Operate Project Efficiently

Volume 2 includes the environmental report and associated appendices, as follows:

- Exhibit E – Environmental Report
  - Appendix E-1 – Exhibit E Figures
  - Appendix E-2 – Draft Biological Assessment
  - Appendix E-3 – Water Quality Data

---

on critical infrastructure; is exempt from mandatory disclosure under the Freedom of Information Act; and gives strategic information beyond the location of the critical infrastructure.



- Appendix E-4 – Draft Recreation Management Plan
- Appendix E-5 – Consultation

Volume 3 contains the following privileged information:

- Exhibit E, Table E-62, Archaeological Sensitivity Areas Subject to Further Consideration
- Exhibit E, Appendix E-5, Consultation, Contact Information of Relicensing Participants

Volume 4 contains the following Critical Energy Infrastructure Information (CEII):

- Exhibit F Design Drawings

#### **4. DRAFT LICENSE APPLICATION SUMMARY**

##### **4.1 Proposed Action**

The District is seeking a new license for the continued operation and maintenance of the Loup River Project. With the exception of new and improved recreation amenities, the District is proposing no new Project facilities and no changes to existing Project operations.

##### **4.2 General Information**

The General Information Section: 1) states the District's proprietary right as owner and operator of all Project facilities, 2) lists government entities and Indian tribes potentially affected by relicensing, and 3) verifies public accessibility and accuracy of the document.

##### **4.3 Initial Statement**

The Initial Statement notes the District's intent to apply to FERC for a new license. It also provides Project location information, District contact information and its status as a public power utility and political subdivision of the state of Nebraska. The Initial Statement then lists applicable state regulatory requirements and statutes and provides the Project's associated compliance status. A brief Project description is included and public benefits are highlighted. The Initial Statement concludes by noting that the Project does not occupy any lands of the United States and that the District is proposing no new Project facilities, beyond amenities planned to enhance the Project's recreational opportunities.

##### **4.4 Exhibit A – Project Description**

Exhibit A provides a detailed overview of the cumulative Project and then focuses on the specifications of individual Project structures and facilities.

#### 4.5 Exhibit B – Project Operation and Resource Utilization

Highlights of Exhibit B content are provided as follows:

Average annual power generation since Project construction (1938 to 2010) is 136,405 megawatt hours (MWh). At a power factor of 0.95, the total Project plant factor is estimated to be 29.1 percent. For the period from 2007 to 2010, the Project plant factor is estimated to be 38.2 percent based on an average annual power generation of 178,874 MWh.

The dependable capacity of the Project is 45 megawatts (MW) based on the NPPD Columbus hydro accreditation, which includes all Monroe and Columbus powerhouse generating units.

Project diversion flow rates range from a low of 0 cfs to a maximum of 3,500 cfs. The average diversion rate, as measured at USGS Gage 06792500, Loup River Power Canal near Genoa, NE, has been 1,630 cfs (based on USGS data from 1937 through 2009).

#### 4.6 Exhibit C – Construction History and Proposed Construction Schedule

Exhibit C provides information on Project improvements that have been—or are currently being—implemented pursuant to FERC authorization or as general maintenance since issuance of the District’s license in 1982. This exhibit then specifies that any and all proposed construction is limited to the recreation improvements planned for implementation during the license term.

#### 4.7 Exhibit D – Statement of Cost and Financing

Highlights of Exhibit D content are provided as follows:

Average annual Project costs for period 2007 through 2010 are approximately \$6.4 million. The proposed license would increase annual O&M costs by approximately \$43,300. Based on the 2010 power purchase agreement price of \$44.12 per megawatt hour (MWh) and the Project’s average annual power production of 136,405 MWh, the annual value of Project power is approximately \$6.0 million. Project power is subject to on- and off-peak values, which are dependent on the hourly fluctuations of the wholesale power market. The average daily price for on-peak power is determined as \$30.99/MWh with an average daily high price of \$53.83/MWh. The average daily price for off-peak power is determined as \$16.98/MWh with an average daily high price of \$37.48/MWh.

#### 4.8 Exhibit E – Environmental Report

Exhibit E discusses the existing environmental, recreational, cultural, and land resources in the vicinity of, and affected by, the continued operation of the Project. The following sections summarize the proposed protection, mitigation, and

enhancement (PM&E) measures proposed by the District in association with each resource.

#### 4.8.1 Geology and Soils

The District will continue to use BMPs to minimize erosion and sedimentation during construction activities and normal operations.

#### 4.8.2 Water Resources

The District will continue to discharge the majority of dredged material from the Settling Basin to the North SMA. This measure is intended to deter migration of the Loup River's south bank, immediately downstream of the Diversion Weir.

#### 4.8.3 Fish and Aquatic Resources

In association with this Draft License Application, during hot summer conditions, the District will continue to defer non-emergency maintenance procedures that require substantial curtailment of Loup Power Canal flows. This measure would minimize the potential for low dissolved oxygen levels in the Loup Power Canal and potential fish kills that could result.

In 2011, the District implemented measures to increase awareness of invasive species, including zebra mussels, in efforts to minimize the chance of infestation at Lake North and to ensure that the existing recreational opportunities afforded by Lake North continue. Specifically, the District posted signs, developed in association with NGPC, that outline the threat posed by invasive aquatic species and measures that can be taken to minimize risk.

The District has initiated discussions with fish and wildlife agencies related to the potential need for enhanced flow in the Loup River bypass reach to provide improved aquatic conditions. Results of these discussions will be included in the License Application.

#### 4.8.4 Wildlife and Botanical Resources

In order to maintain compliance with the Migratory Bird Treaty Act (16 USC 703-712), the District will continue to employ the following procedure when initiating any action that could result in a potential take. Furthermore, associated documentation would be provided to FERC and/or USFWS, as appropriate:

- A qualified biologist would conduct a field survey of the affected habitats and structures to determine the absence or presence of nesting migratory birds.
- Survey documentation would be prepared and would include biologist qualifications, survey methods, date and time of survey, species observed/heard and location, avoidance measures implemented, and

circumstances where it has been determined that one or more active bird nests cannot be avoided.

The District proposes to continue its recently executed public outreach initiative related to invasive species. More specifically, the District will maintain the recently placed signage specific to invasive species control and will evaluate additional outreach methods, if determined necessary.

The District proposes its continued compliance with regulations applicable to the NGPC-managed Lake Babcock Waterfowl Refuge.

#### 4.8.5 Wetlands, Riparian, and Littoral Habitat

The District understands the function that floodplains, wetlands, and riparian and littoral habitat have related to water quality, wildlife habitat, and flood storage. With this understanding, the District will do the following:

- Avoid and minimize impacts on these resources during construction activities associated with the planned recreation improvements and throughout normal operations.
- Comply with the conditions provided in its existing CWA Section 404 Permit (Permit No. 2007-3190-KEA). This permit was most recently issued on January 8, 2010, and authorizes dredging activities at the Settling Basin that discharges to the South SMA.<sup>4</sup>
- Continue periodic treatment of undesirable *Phragmites* in Lake Babcock.

#### 4.8.6 Rare, Threatened, and Endangered Species

Since 1988, the District has voluntarily cooperated with USFWS, NGPC, and TPCP to protect nesting interior least terns and piping plovers within the Project Boundary. These efforts include the cessation of dredging activity during the nesting/fledging season each year. During the upcoming license period, the District will continue to work jointly with the cooperating agencies regarding the suspension of dredging activity during the nesting/fledging season.

In accordance with the Memorandum of Understanding (MOU) and associated adaptive management plan (AMP) (developed by Preferred Sands, USFWS, and NGPC to protect piping plovers and interior least terns) the District will continue to work with Preferred Sands to monitor the arrival and departure of the birds. Further, the District will alter dredging operations, as stated above, for the protection of these species.

---

<sup>4</sup> USACE has determined that a CWA Section 404 permit is not necessary for Project discharges to the North SMA.

#### 4.8.7 Recreation and Land Use

During the new license period, the District will continue its cooperative effort with the Nebraska Off-Highway Vehicle Association (NOHVA) by providing trail riding opportunities at Headworks OHV Park and hosting NOHVA jamborees. The District will also continue its partnership with Columbus Area Recreational Trails (CART) via sponsorship and maintenance of its existing public trail network.

In addition to the continuation of successful recreational cooperatives, the District has identified the following Project improvements in its Draft Recreation Management Plan (Appendix E-4). All listed improvements are intended to enhance the existing recreational opportunities associated with the Project.

- Construct a wheelchair-accessible fishing pier, which would meet ADA guidelines, along the north shore of Lake North
- Construct a new 2,000-foot pedestrian/bicycle trail segment along the southeast side of Lake Babcock
- Construct a new permanent restroom facility at Headworks OHV Park that meet ADA guidelines
- Install a new sand volleyball court at Headworks Park
- Upgrade camper outlets at Headworks Park and Lake North Park
- Designate a no-wake zone in the southeast corner of Lake North in order to enhance recognized fishing opportunities
- Improve and replace playground equipment at all developed recreation areas

#### 4.8.8 Aesthetic Resources

In association with Project relicensing, the District developed a Draft Historic Properties Management Plan (HPMP) that includes preservation measures relevant to the continued aesthetic value provided by notable District structures, including the aesthetically pleasing Monroe and Columbus powerhouses.

In hopes to deter undesirable or criminal activity at Tailrace Park, the District is considering ending vehicular access to the park while maintaining pedestrian access for those wishing to use the recognized fishing opportunities.

#### 4.8.9 Cultural Resources

The District has developed a Draft HPMP that is being provided to the Nebraska State Historical Preservation Officer (SHPO) for review. The Draft HPMP reflects the comments received during the consultation process, incorporates study recommendations, and establishes the following three goals for managing historic properties within the Project's Area of Potential Effect (APE):

- Ensure continued normal operation of the Project while maintaining and preserving the integrity of historic properties within the APE.
- To the extent possible, avoid, minimize, or mitigate adverse effects on historic properties within the APE.
- Ensure that historic properties are managed in a way that does not impede the District's ability to comply with the terms of its operating license and other applicable Federal, state, and local statutes.

#### 4.8.10 Socio-economic Resources

In its continued efforts to provide low electric rates to its customers, the District proposes to continue the cost-effective operations that have historically benefited rate payers and promoted economic development. Additionally, the District is proposing multiple enhancements to Project-related recreation amenities, in association with its Draft Recreation Management Plan (Appendix E-4).

#### 4.8.11 Tribal Resources

If a tribe notifies the District of the presence of a property of traditional religious or cultural importance within the APE, the District will consult with Nebraska SHPO and the tribe to develop management measures appropriate to the property and will amend the HPMP as appropriate in accordance with the amendment protocols contained therein.

If archaeological remains are encountered by District personnel, contractors, or consultants during any land-altering activities within the APE, or if a contributing element to the LPD historic district is affected in an unanticipated manner, the District shall follow specific protocols detailed in the HPMP to provide for the security, protection, and integrity of the cultural property.

### 4.9 Exhibit F – Design Drawings and Supporting Design Report

Exhibit F contains design drawings that include overall plan views, elevations, profiles, and sections of the principal Project works. These drawings have been determined critical energy infrastructure information (CEII); therefore, they are being filed exclusively with FERC in Volume 4 of this DLA. This Exhibit also references the District's most recent Part 12D Independent Consultant Safety Inspection Report, as it relates to supporting design information.

### 4.10 Exhibit G – Project Maps

Exhibit G contains a series of 14 maps which illustrate the Project Boundary and primary Project facilities. Also included are discussions of proposed modifications to the Project Boundary. Specifically, the District is proposing to remove three areas from the Project Boundary that are not necessary for Project operations/purposes and

to add three areas to the Project Boundary that are related to requirements of the existing License (and anticipated new License).

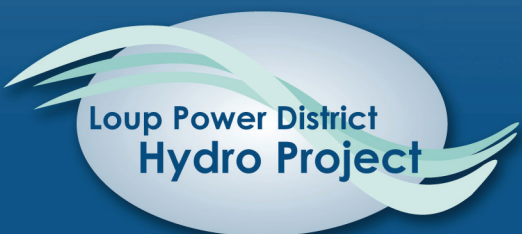
#### **4.11 Exhibit H – Plans and Ability of Applicant to Operate Project Efficiently**

Exhibit H discusses the District’s ability to operate the Project efficiently and cites experience gained through District ownership and operation since the Project was originally licensed and constructed in the 1930s. It also details the need for Project power generation and summarizes the cost and availability of alternate sources of power.



# LOUP RIVER HYDROELECTRIC PROJECT FERC PROJECT No. 1256

## DRAFT LICENSE APPLICATION



NOVEMBER 18, 2011



**TABLE OF CONTENTS**

**ACRONYMS, ABBREVIATIONS, AND SHORT FORMS ..... vii**

**GENERAL INFORMATION..... 1**

**INITIAL STATEMENT ..... 7**

**EXHIBIT A PROJECT DESCRIPTION ..... A-1**

A.1 GENERAL PROJECT DESCRIPTION..... A-1

A.2 DESCRIPTION OF PRIMARY PROJECT FACILITIES..... A-3

A.2.1 Diversion Weir ..... A-3

A.2.2 Intake Gate Structure..... A-4

A.2.3 Sluice Gate Structure..... A-4

A.2.4 Settling Basin..... A-4

A.2.5 Hydraulic Dredge ..... A-4

A.2.6 Sand Management Areas ..... A-5

A.2.7 Skimming Weir ..... A-5

A.2.8 Upper Power Canal ..... A-7

A.2.9 Monroe Powerhouse..... A-7

A.2.10 Lower Power Canal ..... A-9

A.2.11 Sawtooth Weir ..... A-10

A.2.12 Regulating Reservoirs ..... A-10

A.2.13 Intake Canal ..... A-11

A.2.14 Powerhouse Inlet Structure ..... A-12

A.2.15 Penstocks ..... A-12

A.2.16 Columbus Powerhouse..... A-12

A.2.17 Tailrace Canal ..... A-14

A.2.18 Outlet Weir..... A-15

A.2.19 Project Bypass Reach ..... A-15

A.2.20 Transmission Lines..... A-15

A.2.21 Project Lands..... A-15

A.3 REFERENCES ..... A-16

<b>EXHIBIT B</b>	<b>PROJECT OPERATION AND RESOURCE UTILIZATION.....</b>	<b>B-1</b>
B.1	CURRENT AND PROPOSED PROJECT OPERATION .....	B-1
B.1.1	Powerplant Operation.....	B-1
B.1.2	Estimated Annual Plant Factor .....	B-1
B.1.3	Project Operations.....	B-2
B.2	POWER GENERATION.....	B-13
B.2.1	Dependable Capacity and Average Annual Generation .....	B-13
B.2.2	Project Flows.....	B-14
B.2.3	Minimum, Mean, and Maximum Flows .....	B-15
B.2.4	Area Capacity Relationship .....	B-18
B.2.5	Hydraulic Capacity of Power Plants.....	B-20
B.2.6	Tailwater Ratings and Power Capability Versus Head.....	B-20
B.3	USE OF POWER GENERATED.....	B-22
B.4	PROPOSED FACILITIES AND OPERATIONAL CHANGES .....	B-23
B.5	REFERENCES .....	B-23
<b>EXHIBIT C</b>	<b>CONSTRUCTION HISTORY AND PROPOSED CONSTRUCTION SCHEDULE .....</b>	<b>C-1</b>
C.1	CONSTRUCTION HISTORY .....	C-1
C.2	PROPOSED CONSTRUCTION SCHEDULE.....	C-2
<b>EXHIBIT D</b>	<b>STATEMENT OF COSTS AND FINANCING.....</b>	<b>D-1</b>
D.1	ORIGINAL COST OF PROJECT .....	D-1
D.2	ESTIMATED AMOUNT PAYABLE IN THE EVENT OF PROJECT TAKEOVER PURSUANT TO SECTION 14 OF THE FEDERAL POWER ACT .....	D-1
D.3	ESTIMATED COSTS OF PROPOSED DEVELOPMENT .....	D-1
D.4	ESTIMATED AVERAGE ANNUAL COST OF THE PROJECT .....	D-1
D.5	ESTIMATED ANNUAL VALUE OF PROJECT POWER.....	D-3
D.6	SOURCES AND EXTENT OF FINANCING AND ANNUAL REVENUES.....	D-3
D.7	ESTIMATED COST TO DEVELOP LICENSE APPLICATION .....	D-3
D.8	ON- AND OFF-PEAK VALUES OF PROJECT POWER.....	D-3
D.8.1	On-Peak .....	D-4
D.8.2	Off-Peak .....	D-4
D.9	ESTIMATED CHANGES DUE TO PROJECT OPERATIONS .....	D-4

<b>EXHIBIT F</b>	<b>DESIGN DRAWINGS AND SUPPORTING DESIGN REPORT .....</b>	<b>F-1</b>
F.1	DESIGN DRAWINGS.....	F-1
F.2	SUPPORTING DESIGN REPORT.....	F-2
<b>EXHIBIT G</b>	<b>PROJECT MAPS.....</b>	<b>G-1</b>
G.1	MAP OVERVIEW.....	G-1
G.2	PROJECT BOUNDARY MODIFICATIONS.....	G-2
G.2.1	Preferred Sands' Operational Location Removal.....	G-2
G.2.2	Platte County Drainage District Lost Creek Ditch Flowage Area Removal.....	G-3
G.2.3	Lake Babcock Park Area Addition .....	G-5
G.2.4	Former Borrow Location Removal .....	G-5
G.2.5	Former Private Cabin Location Addition .....	G-6
G.2.6	Lower Platte River Channel Addition .....	G-6
G.3	REFERENCES .....	G-7
<b>EXHIBIT H</b>	<b>PLANS AND ABILITY OF APPLICANT TO OPERATE PROJECT EFFICIENTLY .....</b>	<b>H-1</b>
H.1	EFFICIENT AND RELIABLE ELECTRIC SERVICE.....	H-1
H.1.1	Increase in Capacity or Generation .....	H-1
H.1.2	Coordination of Operation with Other Water Resource Projects.....	H-1
H.1.3	Coordination of Operation with Other Electrical Systems .....	H-1
H.2	NEED FOR PROJECT POWER .....	H-2
H.2.1	Cost and Availability of Alternative Sources of Power .....	H-2
H.2.2	Increased Cost to Replace Power Generated by the Project.....	H-3
H.2.3	Effects of Alternative Sources of Power.....	H-4
H.3	COST AND AVAILABILITY OF ALTERNATIVE SOURCES OF POWER.....	H-5
H.3.1	Average Annual Cost of Power.....	H-5
H.3.2	Projected Resources Required by the Licensee to Meet Short- and Long-Term Capacity and Energy Requirements .....	H-5
H.4	USE OF PROJECT POWER FOR THE DISTRICT'S INDUSTRIAL FACILITY .....	H-5
H.5	USE OF PROJECT POWER BY INDIAN TRIBE AS APPLICANT.....	H-5
H.6	IMPACTS ON TRANSMISSION SYSTEM OF RECEIVING OR NOT RECEIVING PROJECT LICENSE .....	H-5
H.7	NEED FOR PROJECT MODIFICATIONS AND CONSISTENCY WITH COMPREHENSIVE PLANS.....	H-5

H.8	FINANCIAL AND PERSONNEL RESOURCES .....	H-6
	H.8.1 Financial Resources .....	H-6
	H.8.2 Personnel Resources .....	H-6
H.9	EXPANSION OF PROJECT LANDS.....	H-7
H.10	ELECTRICITY CONSUMPTION EFFICIENCY IMPROVEMENT PROGRAM.....	H-7
H.11	AFFECTED INDIAN TRIBES .....	H-7
H.12	SAFE MANAGEMENT, OPERATION, AND MAINTENANCE OF THE PROJECT .....	H-7
	H.12.1 Operation During Flood Conditions.....	H-7
	H.12.2 Warning Devices for Downstream Public Safety .....	H-8
	H.12.3 Emergency Action Plan .....	H-8
	H.12.4 Monitoring Devices .....	H-8
	H.12.5 Employee and Public Safety.....	H-9
H.13	CURRENT PROJECT OPERATIONS .....	H-10
	H.13.1 Normal Operations .....	H-10
	H.13.2 High Flow Operations .....	H-12
	H.13.3 Low Flow Operations .....	H-13
	H.13.4 Cold Weather Operations .....	H-13
H.14	PROJECT HISTORY .....	H-14
H.15	POWER GENERATION LOST DUE TO UNSCHEDULED OUTAGES.....	H-16
H.16	COMPLIANCE WITH EXISTING LICENSE .....	H-16
H.17	PROJECT-RELATED ACTIONS THAT AFFECT THE PUBLIC.....	H-16
H.18	OWNERSHIP AND OPERATING EXPENSES .....	H-17
H.19	ANNUAL FEES FOR USE OF FEDERAL OR INDIAN LANDS.....	H-17

## LIST OF TABLES

Table A-1.	Upper Power Canal Siphon Dimensions .....	A-7
Table A-2.	Monroe Powerhouse Turbines.....	A-8
Table A-3.	Monroe Powerhouse Generators.....	A-9
Table A-4.	Lower Power Canal Siphon Dimensions .....	A-10
Table A-5.	Columbus Powerhouse Turbines.....	A-13

Table A-6. Columbus Powerhouse Generators.....A-13

Table B-1. Project Plant Factor .....B-1

Table B-2. Average Total Project Power Production (1938-2010).....B-14

Table B-3. Average Daily Minimum, Mean, and Maximum Flows by Month on the  
Loup River at the Point of Diversion, Water Year 1950 to Water Year 2010.....B-17

Table B-4. Average Daily Minimum, Mean, and Maximum Flows by Month on the  
Loup Power Canal near Genoa, Water Year 1950 to Water Year 2010.....B-18

Table D-1. Preliminary Cost Estimate of Proposed Environmental Measures..... D-2

Table F-1. Design Drawings .....F-1

Table G-1. Project Boundary Maps ..... G-1

Table H-1. NPPD Sources of Energy (2010)..... H-3

Table H-2. Fatal Incidents/Accidents Involving the Public ..... H-10

**LIST OF GRAPHS**

Graph B-1. Loup Power District Settling Basin Dredging History.....B-6

Graph B-2. Reservoir Area Capacity Curve .....B-19

Graph B-3. Monroe Powerhouse Tailwater Rating Curve.....B-21

Graph B-4. Columbus Powerhouse Tailwater Rating Curve.....B-22

**LIST OF FIGURES**

Figure A-1. Project Location .....A-2

Figure A-2. Settling Basin Dredge Discharge Locations .....A-6

Figure B-1. Settling Basin Dredge Discharge Locations .....B-4

Figure B-2. Original Dredge Flume Arrangement .....B-5

## LIST OF APPENDICES

Appendix IS-1. Applications and Approvals

Appendix B-1. Monthly Flow Duration Curves, Loup River at Point of Diversion

Appendix B-2. Monthly Flow Duration Curves, Loup River Power Canal at Genoa

Appendix G-1. Project Boundary Maps

Appendix G-2. Project Boundary Modifications

## ACRONYMS, ABBREVIATIONS, AND SHORT FORMS

ACHP	Advisory Council on Historic Preservation
ADA	Americans with Disabilities Act
ADM	Archer Daniel Midlands
AF	acre-feet
AHZ	Active Habitat Zone
AMP	Adaptive Management Plan
Applicant	Loup River Public Power District (also Loup Power District or the District)
Application	Application for a New License for the Loup River Hydroelectric Project (FERC Project No. 1256)
BA	Biological Assessment
BMP	best management practices
CART	Columbus Area Recreational Trails, Inc.
CEII	Critical Energy Infrastructure Information
CFR	Code of Federal Regulations
cfs	cubic feet per second
CPUE	catch per unit effort
CWA	Clean Water Act
District	Loup River Public Power District (also Loup Power District)
DLA	Draft License Application
DO	dissolved oxygen
EA	Environmental Assessment

EAP	Emergency Action Plan
EFH	essential fish habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act of 1973
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FOIA	Freedom of Information Act
FPA	Federal Power Act
FR	Federal Register
ha	hectare
hp	horsepower
HPMP	Historic Properties Management Plan
Hz	hertz
ILP	Integrated Licensing Process
ISR	Initial Study Report
kV	kilovolt(s)
kVA	kilovolt-ampere(s)
LIP	Locational Imbalance Prices
Loup Power District	Loup River Public Power District (also the District)
LPD	Loup Power District
LWCF	Land and Water Conservation Fund
µg/L	micrograms per liter
mL	milliliter(s)
MOU	Memorandum of Understanding



MSL	above mean sea level
MW	megawatt(s)
MWh	megawatt hour(s)
mya	million years ago
N/A	not applicable
NAC	Nebraska Administrative Code
NCDC	National Climatic Data Center
NDEQ	Nebraska Department of Environmental Quality
NDNR	Nebraska Department of Natural Resources
NEPA	National Environmental Policy Act
NESCA	Nongame and Endangered Species Conservation Act
NGPC	Nebraska Game and Parks Commission
NGVD 29	National Geodetic Vertical Datum of 1929
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NOHVA	Nebraska Off Highway Vehicle Association
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPPD	Nebraska Public Power District
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRI	Nationwide Rivers Inventory
NRPA	National Recreation and Park Association

NSHS	Nebraska State Historical Society
NTU	nephelometric turbidity units
NWI	National Wetlands Inventory
O&M	operations and maintenance
OHV	Off-Highway Vehicle
PA	Programmatic Agreement
PAD	Pre-Application Document
PCB	polychlorinated biphenyl
PPA	power purchase agreement
ppb	parts per billion
Project	Loup River Hydroelectric Project
PSP	Proposed Study Plan
PWA	Public Works Administration
RAFTMP	Region VII Ambient Fish Tissue Monitoring Program
RENEW	Recovery of Nationally Endangered Wildlife
RM	River Mile
rpm	revolutions per minute
RPMA	recovery priority management areas
RSP	Revised Study Plan
RTE	rare, threatened, or endangered
SCADA	supervisory control and data acquisition
SCORP	State Comprehensive Outdoor Recreation Plan
Secretary's Standards	The Secretary of the Interior's Standards for the Treatment of Historic Properties

SHPO	State Historic Preservation Office
SMA	Sand Management Area
SPP	Southwest Power Pool
TCP	traditional cultural property
TMDL	total maximum daily load
TPCP	Tern and Plover Conservation Partnership
U.S.	United States
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USR	Updated Study Report
WMA	Wildlife Management Area