EXHIBIT A

PROJECT DESCRIPTION

List of Tables

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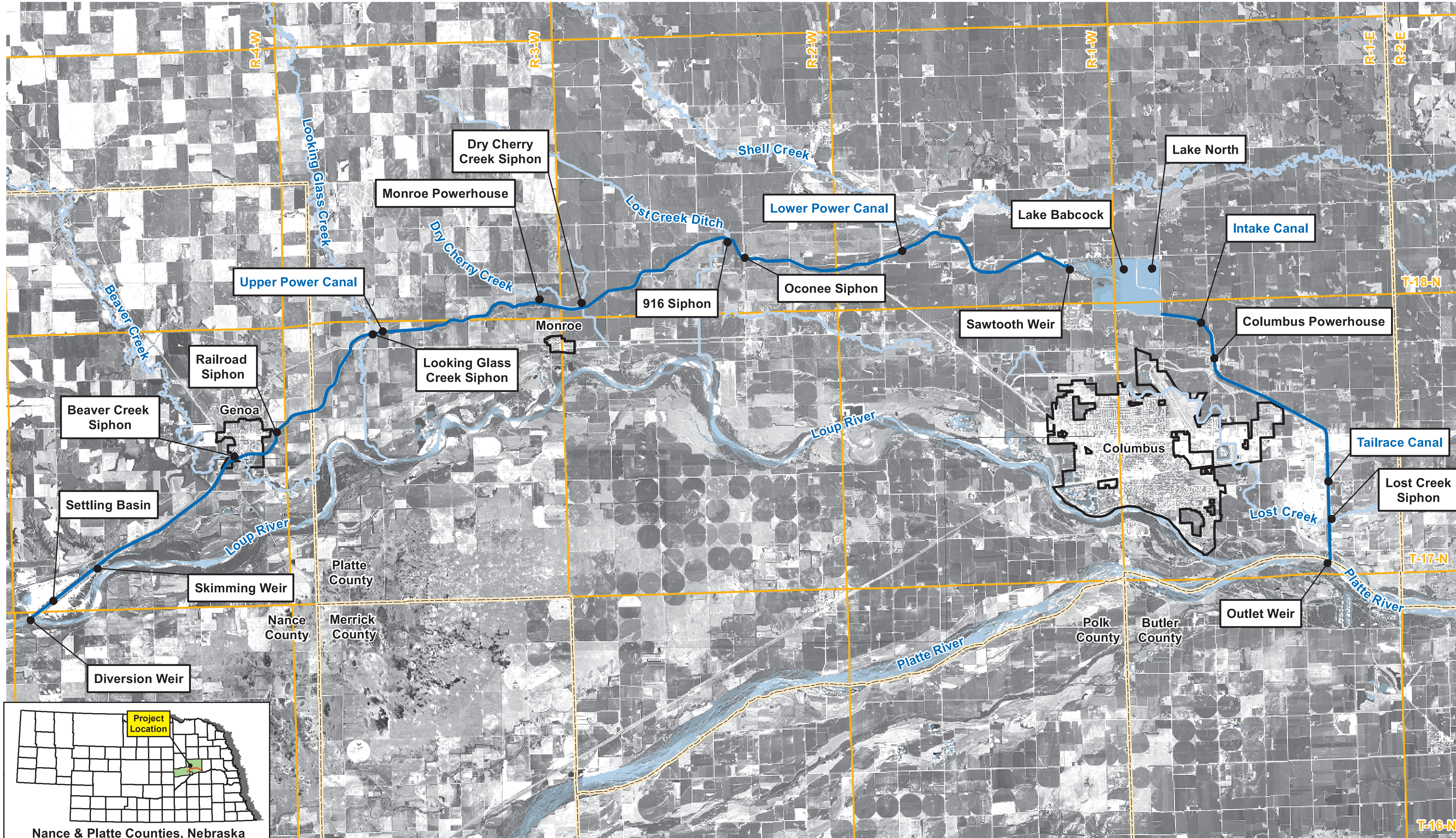
A. PROJECT DESCRIPTION

A.1 GENERAL PROJECT DESCRIPTION

Loup River Public Power District (Loup Power District or the District) owns and operates the existing 53.4-megawatt (MW) Loup River Hydroelectric Project (FERC Project No. 1256). The Loup River Hydroelectric Project (Project) uses the power of flowing water to generate electricity and is located in Nance and Platte counties, Nebraska. The communities in the vicinity of the Project are Genoa, Monroe, and Columbus, Nebraska. Figure A-1 shows the location of the Project and identifies notable Project components. The Project is a historic district eligible for listing on the National Register of Historic Places (NRHP). The majority of Project structures and components contribute to the historic district, and many are individually eligible for listing on the NRHP. Additional discussion of the historic district and individually eligible properties is included in Exhibit E.

The Project begins at the Headworks, where a low weir is used to divert available water (up to 3,500 cubic feet per second [cfs] in accordance with the District's water right limit and the hydraulic capacity of the Loup Power Canal) from the Loup River through a gated intake structure into the 35-mile-long Loup Power Canal and generation system. The gently sloping cross-country canal segments were constructed from on-site materials and are provided with weirs and siphons as necessary. The Project includes two powerhouses (Monroe Powerhouse and Columbus Powerhouse), Upper and Lower power canals, and two connected regulating reservoirs: Lake Babcock (in-channel) and Lake North (off-channel). Water exiting the Project enters the Platte River east of Columbus, approximately 2 miles downstream of the confluence of the Loup and Platte rivers.

The Project is licensed to the District, which has owned, operated, and maintained the Project since it was constructed. However, the six turbine generating units are dispatched by the Nebraska Public Power District (NPPD) to maximize Project benefits within the substantially more extensive NPPD system in accordance with established operating agreements between the two utilities. In addition, all power generated by the Project is sold to NPPD at the two powerhouse substations. Thus, there are no electric transmission lines associated with the Project.



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Aerial Imagery: 2010 National Agricultural Inventory Project, Nance and Platte Counties Mosaic.
Coporate Limits: 2010 Census Tiger Files
Waterway: 2011 National Hydrography Dataset (NHD)
Stream Areas/Lakes: 2000 Tiger Line Files, Platte and Nance Counties.

Legend

- Loup Power Canal
- Waterway
- Corporate Limits
- Township/Range
- County Line

Loup Power District Hydro Project

Project Location

Loup River Hydroelectric Project
FERC Project No. 1256
Draft License Application

DATE
November 2011

FIGURE
A-1

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A.2 DESCRIPTION OF PRIMARY PROJECT FACILITIES

The following subsections describe the principal features of the Project, generally from upstream to downstream. Unless otherwise indicated, the sources of this information are the District's current "Genoa-Columbus Project (FERC Project 1256-NE) Operating Plan" (Loup Power District, 2006) and the *Final Report, Loup River Public Power District, Columbus, Nebraska* (Harza Engineering Co., February 1938).

A.2.1 Diversion Weir

The Diversion Weir is located in the Loup River at River Mile (RM) 34.2, approximately midway between Fullerton and Genoa, Nebraska. The structure is founded on the sand and silt river bed, is approximately 1,320 feet long, and has a height of approximately 9 feet above grade. The Diversion Weir consists of a low concrete weir with a concrete apron stabilized with steel sheeting at its heel and toe. The fixed crest of the weir is at an elevation of 1,574 feet above mean sea level[1] (MSL), and wooden flashboards (or planks) are normally maintained along the top of the weir to create an effective crest elevation of 1,576 feet MSL. These sacrificial flashboards are designed to fail under heavy ice loads or extreme high water to prevent damage to the permanent fixed weir. The right, or south, abutment of the Diversion Weir is flanked by a dike extending approximately 3,000 feet to high ground. In mid-channel, the Diversion Weir makes an abrupt downstream turn and extends approximately 250 feet to terminate at the most riverward pier of the Sluice Gate Structure, described in Section A.2.3.

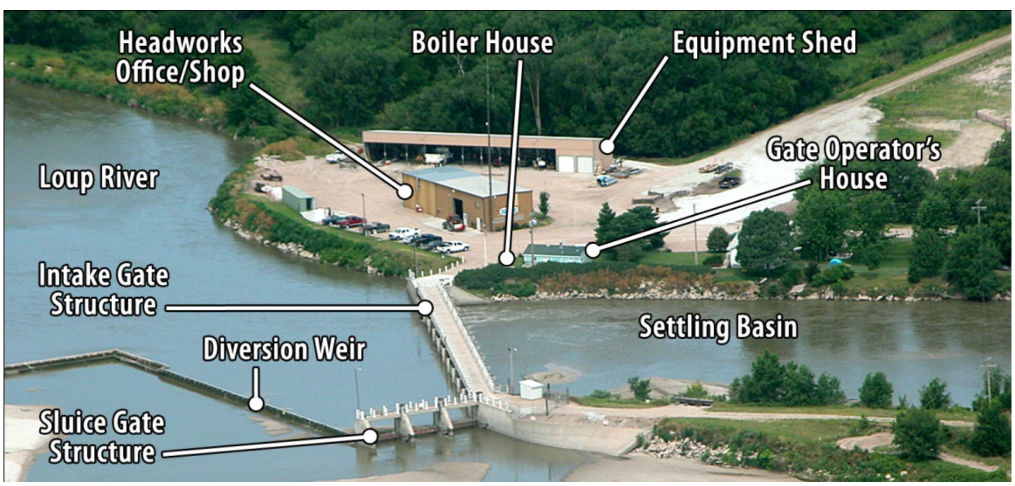


Photo A-1. Aerial view of the Headworks.

[1] Throughout this application, mean sea level references the U.S. Geological Survey National Geodetic Vertical Datum of 1929 (NGVD 29).

A.2.2 Intake Gate Structure

The Intake Gate Structure is located on the north bank of the river. It is constructed of reinforced concrete and supports 11 steel radial gates that admit Loup River water into the Settling Basin, the first segment of the Loup Power Canal. Each gate is 24 feet long with a maximum opening of 5 feet. The elevation of the concrete gate sills is 1,569.5 feet MSL. Six gates are equipped with electric motors; the other five gates are operated by either electric- or gasoline-powered gyros. An integral concrete service bridge spans the Settling Basin and provides for vehicle and operator access to all intake gates and utilities.

The downstream end of the Intake Gate Structure connects at a right angle with the Sluice Gate Structure, described in Section A.2.3. To ensure operation of the intake and sluice gates during cold weather, a steam boiler with appropriate fixed piping and hoses is provided for ice control and thawing of all gates. The upstream end of the Intake Gate Structure is flanked by a sand-fill dike extending approximately 7,200 feet to high ground with a crown elevation of 1,586 feet MSL.

A.2.3 Sluice Gate Structure

The Sluice Gate Structure spans the portion of river flowing between the downstream leg of the Diversion Weir and the Intake Gate Structure. The Sluice Gate Structure is constructed of reinforced concrete and supports three steel radial gates. Each steel gate is 20 feet long with a maximum opening of 6 feet. The elevation of the sluice gate sills is 1,568 feet MSL. All three gates are equipped with electric motors and can be accessed from an integral concrete service bridge.

A.2.4 Settling Basin

Water diverted from the Loup River enters the Settling Basin. The Settling Basin is designed for very slow flow velocity to allow heavier sediment materials to settle out of the water before it enters the much narrower, faster flowing Upper Power Canal. Design flow velocity through the Settling Basin is less than 1 foot per second. The Settling Basin is approximately 2 miles long and has a bottom width of 200 feet and a nominal depth of 16 feet. Hydraulic capacity of the basin varies depending on the accumulation of sand, silt, and sediment within the basin. Maximum hydraulic capacity, when the basin is largely free of sediment, is 3,500 cfs. Maximum basin water surface elevation is 1,572 feet MSL.

A.2.5 Hydraulic Dredge

A floating Hydraulic Dredge is employed to remove accumulated sediment from the Settling Basin. The Hydraulic Dredge operates using an electrically driven 2,500-horsepower pump with 30-inch suction and 28-inch discharge lines. The hoist-supported suction line is equipped with a dustpan-type suction head.

The dredged material (in the form of silt, sand, and gravel) is pumped by the dredge through an articulated steel pipeline to a series of discharge pipes spaced along both sides of the Settling Basin. These fixed pipes lead to the North and South Sand Management Areas (SMAs), discussed in Section A.2.6, on either side of the Settling Basin. The discharge pipe locations are shown in Figure A-2. Return water from the North and South SMAs is routed through a series of dikes and ditches and drains back into either the Loup River or the Loup Power Canal, depending on the location of the discharge.

The District's original 1937 dredge has reached the end of its economic life and is being retired. A new hydraulic dredge has been ordered and is scheduled to enter service in September 2012. The new dredge will be very similar to its predecessor in form and function. However, it will have a more powerful 3,000-horsepower pump and use more energy-efficient variable frequency drive electric motors. The new dredge will also employ modern controls and monitoring systems.

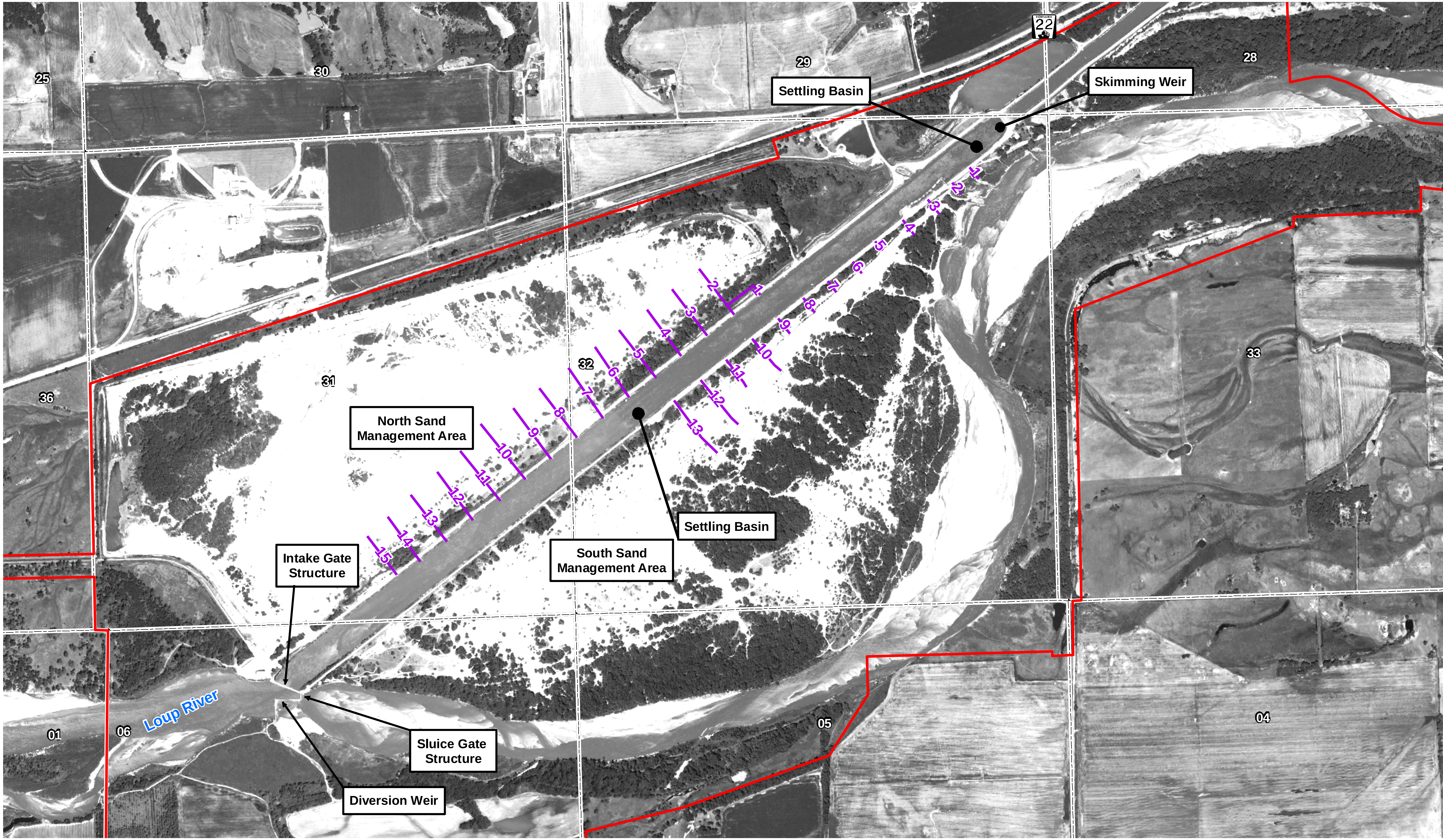
A.2.6 Sand Management Areas

The North and South SMAs are located on either side of the Settling Basin. The North SMA is approximately 320 acres in size and is located north of the Settling Basin, away from the Loup River. The South SMA is approximately 400 acres in size and is located south of the Settling Basin, adjacent to the Loup River.

As previously stated, the material dredged from the Settling Basin is distributed to the North and South SMAs through fixed 28-inch-diameter steel discharge pipes on either side of the Settling Basin. There are 13 discharge pipes for the South SMA, evenly spaced from the most northeast corner to the approximate center of the South SMA. The North SMA has 15 discharge pipes evenly spaced along its entire length. The discharge pipe locations are shown in Figure A-2.

A.2.7 Skimming Weir

The Skimming Weir is located at the downstream end of the Settling Basin. Here, decanted water passes over the Skimming Weir into a narrower section of the Loup Power Canal, where the maximum flow velocity is 2.25 feet per second. This fixed-crest concrete weir is 133.5 feet long and has a bridge-like superstructure with eight 18-inch-wide piers that create nine 12.5-foot-long openings. The weir is fitted with screens to collect trash and debris before it can enter the Upper Power Canal. The crest elevation of the Skimming Weir is 1,568.2 feet MSL. Overflow depth varies from 1.6 feet at 800 cfs to 4.2 feet at 3,500 cfs. The water level in the Settling Basin (and the depth of the basin) varies with the amount of water passing over the Skimming Weir. Just upstream of the Skimming Weir, a stream gage (USGS Gage 06792500, Loup River Power Canal near Genoa, NE) records water flow entering the Upper Power Canal.



1,000 500 0 1,000
Feet

Legend
Project Boundary
Section Line

Aerial Imagery: 2010 National Agricultural Inventory Project, Nance and Platte Counties Mosaic

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Loup Power District Hydro Project

Settling Basin Dredge Discharge Locations

Loup River Hydroelectric Project
FERC Project No. 1256
Draft License Application

DATE
November 2011

FIGURE
A-2

A.2.8 Upper Power Canal

The Upper Power Canal has a hydraulic capacity of 3,500 cfs (6,942 acre-feet per day). The Upper Power Canal parallels the south side of the Nebraska Central Railroad (formerly Union Pacific Railroad) from the Settling Basin to Genoa, where it flows under Beaver Creek through an inverted siphon. The 10-mile canal segment then skirts along the south side of Genoa until it flows under the railroad in another siphon. The Upper Power Canal continues along the north side of the Loup River Valley, crosses under Looking Glass Creek in a third siphon, and continues to the Monroe Powerhouse. All three siphons are three-barrel concrete structures designed as rigid boxes and are capable of passing the maximum canal flow of 3,500 cfs at a velocity of 5.22 feet per second. Dimensions of the siphons are provided in Table A-1.

Table A-1. Upper Power Canal Siphon Dimensions

Siphon	Length (ft)	Barrel	
		Width (ft)	Height (ft)
Beaver Creek	550	12.5	16
Railroad	67.5	11.67	15
Looking Glass Creek	420	12.5	16

From the Settling Basin to the Looking Glass Creek Siphon, the Upper Power Canal has a bottom width of 73 feet and a normal water depth of 14.3 feet. Freeboard is 5 feet, and the design velocity is 2.25 feet per second. Much of this upstream canal segment is constructed in sand. From the Looking Glass Creek Siphon to the Monroe Powerhouse, the Upper Power Canal has a bottom width of 39 feet and a normal water depth of 19.5 feet. The canal bottom profile slopes only 3 inches per mile. The Monroe Powerhouse automatically maintains a constant headwater elevation; therefore, the Upper Power Canal has no effective storage.

A.2.9 Monroe Powerhouse

The Monroe Powerhouse is located 0.75 mile north of Monroe. It is a reinforced concrete structure that is 129 feet long, 39 feet wide, and 87 feet high. The station intake and powerhouse were built as one structure, with the scroll cases formed in concrete. The Monroe Powerhouse spans the canal and functions as an energy-producing canal drop structure.

The plant was designed for a normal gross head of 32 feet. It contains three 3,200-horsepower, vertical axis Francis turbines directly connected to generators rated at 2,750 kilovolt-amperes (kVA) at a 0.95 power factor. At full load, each turbine generating unit can pass 1,000 cfs. All three units were sequentially rehabilitated and modernized from 2004 to 2007. Power is generated at 6.9 kV and stepped up to 34.5 kV at the substation located at the north end of the powerhouse.

There is no transmission associated with the Monroe Powerhouse because the powerhouse bus is directly connected to the substation via underground bus cable. Prior to the power entering the substation, the power is metered and purchased by NPPD. At the substation, the 6.9 kV power from the Monroe Powerhouse is stepped up to 34.5 kV, which interconnects with the District's and Cornhusker Public Power District's 34.5kv sub-transmission system and 12.5kv distribution systems.

Rating and descriptive data for the existing turbine and generating units are provided in Tables A-2 and A-3, respectively.

Table A-2. Monroe Powerhouse Turbines

Item	Monroe Powerhouse
Number of Vertical Axis Francis Turbines	3
Manufacturer	James Leffel/American Hydro
Rotational Speed	112.5 rpm
Maximum Hydraulic Capacity	1,000 cfs
Minimum Hydraulic Capacity	300 cfs
Rated Turbine Capacity	3,200 hp
Rated Net Head	28.6 feet

Notes:
rpm = revolutions per minute
cfs = cubic feet per second
hp = horsepower

Table A-3. Monroe Powerhouse Generators

Item	Monroe Powerhouse
Number of Synchronous Generators	3
Manufacturer	Westinghouse
Rotational Speed	112.5 rpm
Rated Generator Capacity	2,750 kVA
Frequency	60 Hz, 3-Phase
Voltage	6,900
Power Factor	0.95

Notes:
rpm = revolutions per minute
kVA = kilovolt-amperes
Hz = Hertz

Six electrically operated vertical head gates (two to each turbine generating unit) provide for closing off the turbine intake flumes. A 25-ton bridge crane provides for equipment handling and maintenance in the Monroe Powerhouse.

In the event of a total plant shutdown, a single automated radial bypass gate will automatically[2] redirect the canal flow around the turbine units. The 15-foot-4-inch-wide gate is fully enclosed from the elements at the north end of the powerhouse. It is operated by means of a 5-ton electrically powered hoist equipped with a solenoid brake. A 9-ton counterweight is used to lift the gate. When the solenoid is released, a centrifugal fan brake automatically comes into operation. Precise discharge control is accomplished by means of floats and relay control of the radial bypass gate.

A.2.10 Lower Power Canal

Similar to the Upper Power Canal, the Lower Power Canal has a hydraulic capacity of 3,500 cfs (6,942 acre-feet per day). The Lower Power Canal extends approximately 13 miles from the Monroe Powerhouse to Lake Babcock, the in-channel regulating reservoir, and has a bottom width of 39 feet and a water depth of 19.5 feet. The Lower Power Canal flows under two siphons, the Dry/Cherry Creek Siphon and the Oconee Siphon (at the Union Pacific Railroad). These siphons, like those on the Upper Power Canal, are three-barrel concrete structures designed as rigid boxes.

[2] The radial bypass gate is fitted with a floatation device that automatically opens the gate in response to high water levels.

Additionally, the 916 Siphon carries Lost Creek under the Lower Power Canal. Dimensions of the siphons are provided in Table A-4.

Table A-4. Lower Power Canal Siphon Dimensions

Siphon	Length (ft)	Barrel	
		Width (ft)	Height (ft)
Dry/Cherry Creek	74	11.75	15
916	315.67	6.67	5
Oconee	67.5	11.67	15

A.2.11 Sawtooth Weir

The Sawtooth Weir is a concrete weir structure located where the Lower Power Canal enters Lake Babcock, the in-channel regulating reservoir. Its purpose is to control the depth of water in the Lower Power Canal and to prevent Lake Babcock from back-flowing in the event of a canal breach. When this weir is viewed from above, it has a sawtooth or zigzag shape. This design geometry was used to obtain a greater crest length (and overflow capacity) for the 227.5 feet available between abutments. The top of weir elevation is 1,527.4 feet MSL. Head loss at this structure is approximately 0.40 feet at the maximum canal flow rate.

A.2.12 Regulating Reservoirs

Lake Babcock

Lake Babcock, the original, in-channel regulating reservoir, is located 3 miles north of Columbus. Its purpose is to temporarily pond water for later release through the Columbus Powerhouse during peak load periods. Lake Babcock was created in a natural depression by building compacted earth embankments on the north, east, and south sides. Lake Babcock covers 760 acres at its full pool elevation of 1,531 feet MSL.[3] Lake Babcock's effective storage capacity for power generation is approximately 2,270 acre-feet at an elevation of 1,531 feet MSL and 730 acre-feet at an elevation of 1,529 feet MSL. The majority of the time, daily fluctuation of the reservoir surface is about 2 feet; however, during periods of low flow and high electrical demand, fluctuations often increase to 3 feet, with a maximum fluctuation of 5 feet.

[3] The original maximum pool elevation in Lake Babcock was 1,529 feet MSL; however, in the 1960s due to siltation that restricted water storage, the District began operating with a maximum pool elevation of 1,531 feet MSL. This change in operations reduced the available freeboard from 6 to 4 feet.

The open water portion of Lake Babcock experiences substantial wave buildup on windy days. Therefore, much of the shore is protected with riprap. In addition, a substantial reach of embankment near the reservoir outlet and bordering Lake North is protected with a concave seawall constructed of concrete.

Lake North

After 25 years of Project operation, sediment accumulation in Lake Babcock had substantially reduced its ponding capacity, and the District constructed a second regulating reservoir adjacent to and connected with Lake Babcock. This off-channel regulating reservoir, named Lake North, was completed in 1962. It was constructed by adding new compacted earth embankments to the north and east and using existing Lake Babcock embankments to the south and west. Lake North covers approximately 200 acres at an elevation of 1,531 feet MSL, providing an estimated 2,080 acre-feet of gross storage capacity.

A concrete control structure in the south dike is the only link between the in-channel reservoir and the off-channel reservoir and is oriented and designed to reduce the inflow of sediment to the lake. All flow into and out of Lake North passes through this opening. A set of steel stoplogs are stored at the control structure; they can be installed using a mobile crane to isolate the two reservoirs as necessary for maintenance or emergency purposes.

To control wave erosion, the majority of the Lake North shoreline has been lined with steel sheet pile protection and concrete riprap.

Together, these two interconnected lakes form the current connected regulating reservoirs for the Project, which has a normal maximum surface area of 960 acres at an elevation of 1,531 feet MSL. The gross storage capacity of this two-reservoir impoundment is approximately 4,100 acre-feet.

The regulating reservoirs are normally operated between elevations of 1,529 and 1,531 feet MSL. Usable ponding capacity between these elevations is estimated to be approximately 1,840 acre-feet.

A.2.13 Intake Canal

Water exiting Lake Babcock, the in-channel regulating reservoir, flows 1.5 miles through the Intake Canal to Columbus Powerhouse. There is no control structure at the outlet from Lake Babcock; flow and reservoir elevation are regulated by the turbine gates at the Columbus Powerhouse.

The Intake Canal was designed for a capacity of 4,800 cfs, which is the hydraulic capacity of the turbine generating units in the Columbus Powerhouse. The bottom width of the Intake Canal is 108 feet when it leaves Lake Babcock. This width reduces to 94 feet as the Intake Canal approaches the Powerhouse Inlet Structure. The embankments for the Intake Canal were constructed of compacted earth fill, similar to the reservoir dikes. Intake Canal water depth varies from 17.2 to 22.2 feet, depending on the reservoir stage and rate of flow. The slope of the canal profile is 3 inches per mile. Flow velocity in the canal varies from 1.4 to 2.0 feet per second.

A.2.14 Powerhouse Inlet Structure

The Intake Canal terminates at the Powerhouse Inlet Structure. This three-bay reinforced concrete structure is 60 feet long, 104 feet wide, and 40 feet high. A concrete tower structure for the gate hoists extends an additional 34 feet above the deck of the Powerhouse Inlet Structure. Canal flow is smoothly routed through vertical steel trash rack panels with 2.375-inch openings that are designed to exclude large items that could harm the turbines or mechanical equipment in the Columbus Powerhouse. A large mechanical trash rake is mounted on rails to traverse the inlet width and clean the trash racks.

Behind the trash racks, each inlet bay is provided with a vertical steel inlet gate that can be lowered to stop inflow to the Penstocks for maintenance or emergency purposes. Each gate weighs 26,500 pounds and is designed to close off the passage under maximum flow conditions.

A.2.15 Penstocks

Three steel Penstocks connect the Powerhouse Inlet Structure with the Columbus Powerhouse. Each penstock is 20 feet in diameter and 385 feet in length. Thickness of the riveted steel sections increases from 3/8 inch at the top to 7/8 inch at the bottom, where hydraulic pressure is greatest. The Penstocks are supported on a gravel base that extends up to the spring line of the pipe. Flow velocity in the Penstocks is approximately 5.1 feet per second. The Penstocks were designed for a low velocity to eliminate the need for a surge tank.

A.2.16 Columbus Powerhouse

The Columbus Powerhouse is located 2.5 miles northeast of Columbus. It is the primary power-generating element of the Project. With 3.5 times the head and 1.4 times the flow capacity of the Monroe Powerhouse, it generates approximately 80 percent of total Project power.

The Columbus Powerhouse is a reinforced concrete structure that is 180 feet long, 57 feet wide, and 115 feet high. It was designed for a normal head of 115 feet, and it contains three 18,000-horsepower, vertical axis Francis turbines directly connected to generators rated at 16,000 kVA at a 0.95 power factor. All three units were sequentially rehabilitated and modernized from 2004 to 2007. Rating and descriptive data for the turbines and generators are provided in Tables A-5 and A-6, respectively.

Table A-5. Columbus Powerhouse Turbines

Item	Columbus Powerhouse
Number of Vertical Axis Francis Turbines	3
Manufacturer	I.P. Morris/American Hydro
Rotational Speed	150 rpm
Maximum Hydraulic Capacity	2,060 cfs[a]
Minimum Hydraulic Capacity	1,000 cfs
Rated Turbine Capacity	18,000 hp
Rated Net Head	113.5 feet

Notes:

rpm = revolutions per minute

cfs = cubic feet per second

hp = horsepower

[a] This source of this data is Acoustic Technologies, July 15, 2005, "Loup Power District, Columbus Powerhouse Unit 1 Performance Test," Wareham, MA.

Table A-6. Columbus Powerhouse Generators

Item	Columbus Powerhouse
Number of Synchronous Generators	3
Manufacturer	Allis Chalmers/Woods Group
Rotational Speed	150 rpm
Rated Generator Capacity	16,000 kVA
Frequency	60 Hz, 3-Phase
Voltage	13,800
Power Factor	0.95

Notes:

rpm = revolutions per minute

kVA = kilovolt-amperes

Hz = Hertz

At full gate, each turbine generating unit can pass 2,060 cfs. However, total plant generation is limited by the 4,800-cfs hydraulic capacity of the Intake Canal. The turbine generating units normally operate at about 1,600 cfs for the most efficient use of water. The lowest practical discharge from a single turbine generating unit at the Columbus Powerhouse is 1,000 cfs. The Intake Canal, Columbus Powerhouse, and Tailrace Canal were specifically designed for the zero-to-4,800-cfs flow variation of hydrocycling[4] operation.

A 75-ton bridge crane provides for equipment handling and maintenance in the Columbus Powerhouse. The crane also has a 15-ton auxiliary hook. Power is generated at 13,800 volts and stepped up to 115,000 volts by District-owned transformers as it enters the NPPD-owned transmission facilities located at the east end of the Columbus Powerhouse.

There is no transmission associated with the Columbus Powerhouse because each of the three generator step-up transformers is connected directly to the NPPD 115 kV bus.

A.2.17 Tailrace Canal

After passing through the Columbus Powerhouse, water is discharged to the Tailrace Canal. The Tailrace Canal is approximately 5.5 miles long and was excavated along its entire length. It has a bottom width of 42 feet and a normal water depth of about 19 feet. Immediately upstream of the Outlet Weir, the Tailrace Canal widens to approximately 600 feet. This canal segment was designed to carry a nominal 4,800 cfs at a velocity of 3 feet per second. The slope of the hydraulic gradient is 0.0007 foot/foot (4.4 inches per mile).

The Lost Creek Siphon carries Lost Creek under the Tailrace Canal. The siphon consists of a 60-inch-diameter, 247.5-foot-long, west-to-east-flowing pipe that drops approximately 20 feet below Lost Creek to pass under the Tailrace Canal. The pipe then rises approximately 15 feet to discharge into the re-aligned Lost Creek on the east side of the Tailrace Canal. Because of the intermittent flow and high sediment characteristics of Lost Creek, it is necessary to prevent the siphon invert from becoming blocked with sediment. This is accomplished by providing for flow through the siphon using water from the Tailrace Canal. A 24-inch by 45-inch adjustable sluice gate was installed in the west canal embankment. This gate opens to a 24-inch-diameter culvert that passes through the embankment and discharges into the west entrance of the Lost Creek Siphon. At full gate opening and normal canal level, this sluiceway can maintain a flushing flow of 27 cfs from the Tailrace Canal to

[4] Hydrocycling refers to the method of producing hydroelectricity “on-demand” by temporarily ponding water in a regulating reservoir until the water is needed to produce electricity, typically within the same 24-hour period.

the Lost Creek Siphon. Based on District gate-opening records, it is estimated that the average daily flow discharged from the Loup Power Canal into the Lost Creek Siphon is approximately 12 cfs.

A.2.18 Outlet Weir

The Outlet Weir, also called the Tailrace Weir, is located at the confluence of the Tailrace Canal and the Platte River, at RM 101.5. It is east of Columbus and approximately 2 miles downstream of the confluence of the Loup River with the Platte River. This concrete overflow weir has a straight 700-foot-long crest. The transition from the narrower canal section to this width is 550 feet long. The weir crest was originally constructed at an elevation of 1,413 feet MSL. In late 1952, it was lowered approximately 18 inches to lower the tailwater at the Columbus Powerhouse and to increase the velocity of flow through the Tailrace Canal to carry sedimentation to the Platte River. This action was necessary due to sloughing in the Tailrace Canal, which caused sediment to settle out.

A.2.19 Project Bypass Reach

The portion of the Loup River from the Diversion Weir to the confluence with the Platte River, approximately 34 miles, is referred to as the Loup River bypass reach. The portion of the Platte River from the Loup River confluence to the Tailrace Return, approximately 2 miles, is referred to as the Platte River bypass reach. Together, the Loup and Platte river bypass reaches constitute the Project bypass reach.

A.2.20 Transmission Lines

All power produced at the Monroe and Columbus Powerhouses is sold at the on-site substations to NPPD. For this reason, no overhead transmission voltage lines are associated with the Project license.

At the Monroe Powerhouse, the powerhouse bus is directly connected to the substation via underground bus cable. Prior to the power entering the substation, the power is metered and purchased by NPPD. At the substation, the 6.9 kV power from the Monroe Powerhouse is stepped up to 34.5 kV, which interconnects with the District's and Cornhusker Public Power District's 34.5kv sub-transmission system and 12.5kv distribution systems.

At the Columbus Powerhouse, power is generated at 13,800 volts and is stepped up to 115,000 volts by District-owned transformers as it enters the NPPD-owned transmission facilities located to the east of the Columbus Powerhouse. There is no transmission associated with the Columbus Powerhouse because each of the three generator step-up transformers is connected directly to the NPPD 115 kV bus.

A.2.21 Project Lands

There are no lands of the United States enclosed within the Project Boundary.

A.3 REFERENCES

Harza Engineering Co. February 1938. *Final Report, Loup River Public Power District, Columbus, Nebraska*. Chicago, IL.

Loup Power District. 2006. "Genoa-Columbus Project (FERC Project 1256-NE) Operating Plan."