



Meeting Notes

Project:	Loup River Hydroelectric Project FERC Project No. 1256		
Subject:	Agency Follow-up Meeting – Study Needs Continued		
Meeting Date:	August 19, 2008, 10:00 am – 2:00 pm	Meeting Location:	New World Inn, Columbus, NE
Notes by:	HDR		

Attendees: See Attached

Meeting Agenda:

1. Welcome/Introductions
2. Workgroup Reports
3. Continuation of Issues and Potential Study Discussion
4. Supplementary Issues Discussion
5. Agency Information Needs
6. Next Steps

Discussion:

1. Welcome/Introductions

All in attendance introduced themselves. Project notebooks were distributed to new attendees, the meeting packet of information was explained, and the agenda for the meeting was discussed.

2. Workgroup Reports

HDR explained that neither workgroup had met since the July 24th agency meeting. The Water Rights Workgroup intends to reconvene when the workgroup receives requested water rights information from Loup Power District (District) (see Section 5 - Agency Information Needs). The National Park Service (NPS) asked if the workgroups could have some time at the meeting to meet and it was decided that some time would be set aside during the day's meeting. The District asked to be included on all workgroup correspondence as a member of those workgroups. Although workgroups are encouraged to meet into the future, input to the relicensing process would occur after the PAD is available for agency review.

3. Continuation of Issues and Potential Studies Discussion

Flow Depletion in the By-Pass Reach

It was discussed that the amount of flow going past the diversion could affect river morphology and temperature. The first step is to analyze the data to determine the effects of the District's operations on river flows and sediment supply. The next step in the process after evaluating sediment and flow is to identify the corresponding biological response. It was added that the effect of future depletions, while not a direct Project effect, needs to be considered (reference the DNR Fully Appropriated Basin Report). USFWS added that, under the Endangered Species Act, the District/FERC will need to consider direct and indirect effects as well as future trends and reference effects to the baseline. It was added that seasonal quantification of flow is also important, such as flows depleted during irrigation season.

It was discussed that flow affects multiple items, such as sediment transport, and a fundamental understanding of flow may help evaluate the effects to other resources, such as sand bar development and erosion. Again, it was noted that the first step is to analyze the data to determine the effects of the District's operations on river flows and sediment supply. If operational effects are minimal, then the habitat/biology issues may go away.

It was suggested that evaluation of issues related to the project is moving toward a modeling exercise to be able to evaluate how the system responds to changes in flows. The USFWS added that a simple model can be used to evaluate a river system before more detailed modeling is required, the key being to understand the system at the reach level under past and present flow regimes.

Information relative to how the Headworks Structures work was discussed. In general, diversion is affected by river flows and existing capacity in the settling basin (dredged verses not-dredged). It is a manual process requiring certain activities to admit flow, but minimize sedimentation in the basin. It is a variable process relative to how much and how often the gates can be open. In this particular year, it was discussed that due to mechanical issues, not as much was dredged as the District would have liked before they had to shut down due to presence of terns and plovers. Therefore, although flows were high in the Loup, the District was not able to divert commensurate flow due to too much sediment in the settling basin.

The availability of data was discussed. It was noted that gage data and rating curves have been requested from the USGS. This information can be analyzed to help gain an understanding of flow. USGS noted that they have information on sediment and grain size. It was added that some historical cross-sections from the 1970s and 1990s are available from the Corps and/or NDNR to assist with understanding historical river morphology.

Flow Depletion Above the Diversion at Genoa

It was noted that the District's intent for relicensing is to maintain their existing water right of 3,500 cfs and thus they would not sell their water right to upstream users. The USFWS noted that flow depletion above the diversion is not a direct project effect, but it affects the future baseline for consideration of future project effects and needs to be considered when evaluating future conditions. The group agreed that flow depletions due to upstream use would be part of the baseline for future conditions, and this issue can be folded into the evaluation of flow depletion of the bypass reach and flow depletion downstream of the tailrace. The DNR noted that they would like to continue discussions with the District for clarification on this issue.

Flow Depletion on the Platte River System

HDR provided information regarding the water budget for the canal system based on gage and irrigation data from the last five years:

- 8th Street Gage (1.5 miles upstream of re-entry) – ~1.1 million ac-ft/year
- Loup withdrawal at Diversion (skimming weir gage)– ~1.1 million ac-ft/year
- Irrigation withdrawals – 2,000 ac-ft year
- Canal, lake, and settling basin evaporation – 6,000 to 7,000 ac-ft/year

It was noted that there are two commercial withdrawals from the canal [ADM (downstream of 8th Street) & Preferred Rocks of Genoa (Preferred) of Genoa (upstream of the skimming wier gage)]; however, commercial uses are non-consumptive. It was also noted that the evaporative losses are likely less in the canal than in the bypass reach, based on an average of 120 ft width verses the much wider bypass reach. The water budget analysis included Lake North/Lake Babcock.

Seepage from the system is estimated at 4 to 5 percent; however, the seepage is likely intercepted by the Lost Creek flood control project and returned to the canal system as seen by the increases in the flows at the 8th Street gauge. It was noted that the total irrigation and evaporation is within the level of accuracy of

the gages. Overall, HDR's initial studies suggest that the canal is a relatively closed system with essentially no net loss.

Other inflows were asked about. It was provided that there are a few locations where small local drainage areas drain to the canal. The District is getting those quantified, but the canal system is pretty close to flow-through system.

It was noted by the USFWS that based on this preliminary discussion, the data used for determining the water budget may be sufficient but, as USFWS has not yet reviewed the methodology, they are not yet prepared to endorse HDR's conclusions. The USFWS asked if the water budget report would be made available for review prior to issuing the PAD. It was discussed that while it would be more efficient to have agency input on the report prior to the PAD being issued, there would likely not be time for a preliminary review. It was understood that USFWS may have comments that would need to be addressed after the PAD has been submitted.

Although HDR's initial studies suggest that the water budget shows that the canal system does not contribute to flow depletions on the Platte River, USFWS does not yet endorse this conclusion and also noted that Project operations may have a more pronounced affect on the Platte River as flows on the Platte are reduced over time.

Hydraulic Habitat Connectivity & Distribution and Vegetation Species Composition and Distribution

These items were discussed as sub-sets of the broader issues of sediment budgets and flows. A conceptual understanding of sediment budget and the impacts on morphology are needed as a framework for further evaluation of habitat issues.

Dredging and Discharge at the Settling Basin

It was discussed that there are two main categories associated with this issue: overcovering of tern and plover nests and fish entrainment/entrainment.

Overcovering of Nests

HDR provided details on District protocols relative to dredging and the birds.

- Dredging has no impact on the birds unless Loup is discharging on the north side of the Settling Basin
- District personnel watch closely for the arrival of the first birds of the season
- When the District personnel are checking the dredge discharge pipe lines, and the birds simulate being injured, the District will contact the USFWS or the Tern and Plover Partnership. At this time the District will also begin to make plans to stop dredging very soon because they know this is a nesting sign. Typically this is early June when dredging is stopped for bird nesting.
- Dredging is stopped until mid-late August with start-up resuming on the south side of the Settling Basin.
- Nesting areas are protected prior to stoppage of dredging by establishing a sand berm/cut trees positioned to divert the dredge water and protect the nesting colonies. This has worked well for the District over the years.
- This Bird Protection process has been in place prior to the current headwork's supervisor's employment, which was the late 90's and he believes the protection was initiated in the early 1990's.

The Tern and Plover Partnership added that sediment size is the key for nesting locations. They primarily nest between outlet pipes 9 and 14. This is the area that is bermed for protection. In addition, the slurry and resultant mud flats from dredging operations are good foraging areas. Bird numbers were fairly good this year. It was noted that there were no nests on the Loup River due to extended high water and that the sand pile provided a critical area for nesting.

USFWS asked about the MOU with Preferred. It was provided that the participating members of the MOU are Preferred, NGPC, and USFWS. The District and the Tern and Plover Partnership, are cooperating parties to the MOU. The USFWS stated that as a signatory, they were OK with all conditions in the MOU.

USFWS agreed that there doesn't appear to be anything to study regarding overcovering of nests. However, there may be ways to improve the situation through the Adaptive Management Plan. The USFWS noted that the management plan may be discussed as part of the section 7 consultation.

Fish Entrainment/Entrapment

NGPC asked if any monitoring has been done to identify the types or quantity of species that dredging operations affect – no studies have been done, but the majority of fish observed on the sandpile are small minnows and shiners. The Tern and Plover Partnership noted that the birds like beak length food or longer and that the dredging operations provide a good food source for the birds.

The Tern and Plover Partnership asked why dredging must occur the way it does. The District explained that in the spring, the southeast corner of the settling basin is the only place deep enough to start the dredge and they work upstream towards the intake structure. They dredge a section on the south side and then move to the north side as they move west up the settling basin.

It was discussed that as there were no indications that dredging activities are depleting the fish population or negatively affecting the birds; therefore, entrainment and entrapment of fish may not be an issue.

Economic Value

NPPD noted that the District sells all of the power produced by the hydroelectric project to NPPD. It was discussed that the following items were important for consideration:

- Changes in operations and effect on economics
- Value of water bypassed for species protection verses used for Project purposes
- Value of peaking ability
- Value of irrigation from the canal
- Recreational value to Platte & Nance counties and Columbus
- Aesthetic value
- Employment value of the hydroelectric project
- Incremental effects on the economy
- Cost of operations compared to net value of benefits

Fish Passage

The NGPC noted that the question relative to fish passage is how much of a barrier is the diversion structure. The goal of a study would be to determine the extent of the barrier to fish passage.

They elaborated that one way to do this was through tagging. Specifically, they are interested in channel catfish and flathead catfish as highly valued sport fish, smaller species may also be a concern. If the diversion is determined to be a barrier, a bypass may be needed.

HDR asked if a distribution sample of species above and below would identify if species are equally distributed above and below the diversion. NGPC said that would be a starting point. However, there could be an isolating effect on catfish because they migrate upstream to spawn. If the diversion is a barrier to this, there may be a decline in the species upstream.

Types of fish passages were discussed. NGPC added that it is important to focus on a species when considering fish passage and it is too early to speculate on the type or probable success of fish passages.

4. Supplementary Issues

Prior to the meeting, USFWS had provided a list that included the following supplementary issues for discussion. The USFWS indicated that they would provide a supplement to their Technical Advisory Letter to include these issues.

Power Lines and Migratory Birds

It was noted that all transmission lines connecting with the Project are owned by NPPD. USFWS asked about past work orders that were discussed at District board meetings regarding replacement of power poles. The District provided that it sells the hydropower to NPPD, and the District then buys power back from NPPD to distribute to their customers. The power lines that the District has are not part of the relicensing. It was noted that NPPD has an easement for its transmission lines on District property. Therefore, power lines would remain with or without the relicensing project.

The USFWS provided that the issue would be listed in their Technical Advisory letter for the District to respond to, but may not be an issue.

Water Quality

The USFWS provided that as they learn more about the Project, new issues may arise and the need to supplement the Technical Advisory letter may occur. The USFWS' questions about water quality, especially Project area waterbody impairments by *E coli*, nutrients, and PCBs and reasons for concern were discussed.

It was discussed that the source for nutrient impairment in Lake North/Lake Babcock was unknown but NDEQ is working with the District to identify other potential in-flows to the canal system.

The data available for PCBs is fish tissue data from the power canal. The USFWS noted that the District had issued a work order to replace a transformer containing insulating oil with PCBs and noted that PCBs had been found in fish caught in the canal. Although no source has been identified, the District canal system is the furthest known upstream location in the lower Platte River/Loup River basin with PCB contamination. There is no history of sediment sampling for PCBs in the Project area. It was noted by USFWS that either: 1) the source of the contamination is located within the Project area, or b) contaminated fish migrated from the lower Platte River into the canal system. It was noted that both the USGS and NDEQ have sampled water and fish tissue for PCBs either within or near the Project area. The District provided that no information has been requested from them.

It was discussed that PCBs were prevalent in the use of transformers 1940-1970. The NDEQ added that PCBs are a legacy contaminant that will be around for decades. However, overall, there is a decreasing trend in PCB level in the environment.

The USFWS provided that PCBs are a concern because they can be toxic to humans and wildlife, including threatened & endangered species. They added that fish tissue samples are good indicators of PCBs. Specifically, PCBs are a concern for pallid sturgeon all the way down in the lower Platte River. A study conducted by the Service identified PCBs as a contaminant of concern in shovelnose sturgeon from the lower Platte River and it is presumed that pallid sturgeon life history characteristics likely place them at greater risk than shovelnose sturgeon to reproductive effects from exposure to PCBs. Terns and plovers may also be impacted by PCBs because of their foraging habits. The USFWS provided that segments of the Platte River downstream from the Project are also listed for PCBs. However, it is unknown whether the power canal is a possible source.

Possible ways to study this issue would be to identify all possible sources of PCBs and perform sediment sampling of the canal to determine if the canal is a source.

Ice Jams

The DNR and USFWS both noted that the District's operations may affect ice jams. The DNR cited a report from the Corps of Engineers regarding the March 1993 flood on the Loup River that indicated that the affect of the District's operation on ice jams is unknown and that a study of this affect would be beneficial. It was provided by DNR that in past studies performed by the Corps, it was decided that there was not good information. The DNR has 12 years of data on the river and the Corps suggested models be developed to help determine the occurrence and location of ice jams. The report suggested that frazil ice combined with river morphology of the bypass reach is creating problems. The report suggested that the District look at maintenance issues and operations. It was also discussed that the report notes (page 15) that the Project may affect the flow and sediment regime which may also have impacted ice formation and transport processes.

Information relative to the formation of frazil ice was provided and the District's experience was that it was more prevalent at Columbus. Frazil ice is formed underwater on District structures when subzero air temperatures, wind & turbulence create super cooled water which then forms needle shaped crystals of ice. This crystal slush is not particularly buoyant and can extend throughout the water column. It can attach to metal screens and very quickly close off flow at pump stations, hydros, and water intakes.

The USFWS noted that ice jams and habitat forming flows are good for terns and plovers because they scrub vegetation off of sandbars used for nesting and foraging. However, destruction of property is not desirable. The DNR noted that their concern with ice jams revolves around floodplain management and potential loss of human life.

Lost Creek

USFWS requested information relative to hydrology of Lost Creek. The District noted that there is a drain in the tailrace in which the District discharges water for cattle based on a landowner agreement from when the canal was built. It was noted that the hydrology of Lost Creek changed dramatically after the Corps constructed the Lost Creek flood control ditch.

5. Agency Information Needs

Several agencies have requested additional information to assist with their understanding of the Loup River Hydroelectric project. The agency information needs discussed at the meeting were:

- USFWS & NPS requested a map showing FERC boundaries for the Project (digital format if possible) – It was discussed that this information is currently being prepared for inclusion in the PAD. HDR and the District will investigate if these can be posted separately on the website but would not be available prior to the PAD.

- USFWS requested a copy of the existing license articles
- USFWS requested information relative to hydrology of Lost Creek at the tailrace including: a) when water is released into lost creek, b) purpose for releasing water, c) quantities of water released.
- USFWS requested locations where small local drainage areas drain to the Project's canal system.
- DNR and USFWS requested information from the District relative to calculation of Just Compensation agreements which include: a) number of agreements, b) points of diversion, c) times of diversion, d) quantity of water diverted e) compensation costs on a per acre-foot basis, f) estimated power produced per acre-foot
- DNR requested the agreement between NGPC and the District to release water for protection of species in the Loup River bypass reach – it was noted that there is no formal agreement for this practice.
- DNR and USFWS requested copies of all of the District's agreements with entities made since the inception of the project, particularly agreements pertaining to irrigation or water. (DNR provided a list of known irrigators with water rights at the diversion).
- DNR requested information on what FERC does if a new license isn't granted. HDR will furnish regulation references.

6. Next Steps

HDR provided that all of the information gathered during the agency meetings will be used to develop the PAD. The PAD will include study concepts for studies that the District proposes to conduct. Upon submittal to FERC, the PAD will be made available to agencies for review. While the PAD is being reviewed, the District will begin development of detailed studies and may contact various agencies for input. HDR and the District noted that it is their intention to continue to meet with agencies and provide information as needed after the PAD is submitted in order to continue to work through issues and develop detailed study plans.

Within 90 days after the PAD is submitted, FERC will issue a scoping document and request comments on the PAD and scoping document. A draft study plan (with details of each study) will be submitted after the formal comment period ends. Agencies will have several opportunities to comment on the study plan which will be finalized in 3rd quarter 2009. HDR re-iterated that the PAD is a starting point in the process and that there are multiple opportunities for review and there would likely be the need for coordination throughout the rest of the project.

It was added that when the PAD is filed, the FERC "clock" starts and locks in milestone dates. We will all know the dates for these milestones and that we will be locked into meeting those milestone dates. The deadlines will be firm and are driven from the FERC process.



Attendance by Meeting

Hydroelectric Relicensing
FERC Project No. 1256

Meeting Type: Agency

Meeting Name: Study Needs Continued

Date: 8 /19/2008

Time: 10:00 AM

Location: New World Inn & Conference Center

Name	Organization	Contact Type
Frank Albrecht	Nebraska Game and Parks Commission	Agency - Local
Don Anderson	U.S. Fish and Wildlife Service	Agency - Federal
Jean Angell	Nebraska Department of Natural Resources	Agency - Local
John Bender	Nebraska Department of Environmental Quality	Agency - Local
Ryan Bjerke	Lower Platte River Corridor Alliance	NGOs & Stakeholders
Mary Bomberger Brown	Tern and Plover Conservation Partnership	NGOs & Stakeholders
Pat Engelbert	HDR Engineering, Inc.	HDR
Jim Frear	Loup Power District	LPD Project Team
Dennis Grennan	HDR Engineering, Inc.	HDR
Robert Harms	U.S. Fish and Wildlife Service	Agency - Federal
David Jundt	Nebraska Department of Health and Human Services;	Agency - Local

Name	Organization	Contact Type
Jerry Kenny	Platte River Recovery Implementation Program	NGOs & Stakeholders
Joseph Mangiamelli	City of Columbus	Agency - Local
Robert Mohler	Lower Loup Natural Resources District	Agency - Local
Matt Pillard	HDR Engineering, Inc.	HDR
Lisa Richardson	HDR Engineering, Inc.	HDR
Jeff Runge	U.S. Fish and Wildlife Service	Agency - Federal
Jeff Schuckman	Nebraska Game and Parks Commission	Agency - Local
Matt Schwarz	U.S. Fish and Wildlife Service	Agency - Federal
John Shadle	Nebraska Public Power District	Agency - Local
Bill Sigler	HDR Engineering, Inc.	HDR
Kristal Stoner	Nebraska Game and Parks Commission	Agency - Local
Neal Suess	Loup Power District	LPD Project Team
Robert Swanson	U.S. Geological Survey	Agency - Federal
Randy Thoreson	National Park Service Field Office	Agency - Federal

Name	Organization	Contact Type
Dave Tunink	Nebraska Game and Parks Commision	Agency - Local
George Waldow	HDR Engineering, Inc.	HDR
Mark Weekley	National Park Service	Agency - Federal
Stephanie White	HDR Engineering, Inc.	HDR
Ron Ziola	Loup Power District	LPD Project Team
Gene Zuerlein	Nebraska Game and Parks Commission	Agency - Local