# River Bank

Omaha Public Power District



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# Field Report

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|---|---|---|---|
| To: | Keith Kirchner, Pat Poepsel, Rick Niedergeses | | |
| From: | Bryan Kumm | Project: | OPPD FCS 2011 Flood Inundation Structure Assessment<br>OPPD Plant, Ft. Calhoun, NE |
| CC: | Project File, David Rohan | HDR Project No: | 164565, Dept. 134 |
| Date: | September 30, 2011 | Field Report No: | FR-072 |
| RE: | Riverbank | | |

**Team Members:** Bryan Kumm

**Field Activity Objective:**

The purpose of the site visit was to meet with John Brandeau (OPPD, JB) and Brian Clinton (Lueder, BC) to observe the river bank where heavy equipment is going to be trafficking.

**Activities Conducted:**

I Met with JB and BC. BC briefed me on the situation. Lueder will be lining up a contractor to remove the sediment that was deposited by the 2011 Flood along the river bank north of the Intake Structure. The intent is to use a Caterpillar 953 track-mounted front end loader to remove the deposited sediment down to the grade prior to the flood.

**Data Obtained:**

I walked the river bank with BC and visually observed the area. A fiberglass probe rod was used in an effort to locate soft or loose areas.

Photographs were taken to document the visual observations.

**Observations:**

The current river elevation is at about Elevation 998 feet. The top of the bank appears to be about 4 feet higher than the river elevation. There is about 12 feet from the security fence to the top of the bank. The bank is surfaced with a geotextile fabric and large diameter rip rap for about 250 feet and then a sheet pile flood wall extends the remainder of the distance to the Intake Structure (about 150 feet). At the location of the sheet pile wall, the distance from the security fence to the sheet pile is about 35 feet. The top of the bank is surfaced in crushed limestone and relatively flat.

The river has deposited sediments consisting of primarily sand on both the bank and the top of the bank. Deposition on the bank was generally less than 6 inches. Deposition on top of the bank ranged from none to about 12 inches.

Visual observations and probing identified two locations were erosion has occurred near the top of the bank. The erosion appeared to have removed the rip rap and begun eroding beneath the geotextile fabric. The erosion appeared to be up to about 12 inches deep and 36 inches wide and had begun eroding a channel perpendicular to the river. Portions of the eroded channel have been fill with sediment. Using the probe rod, the deposits nearest the top of the bank at the location of the erosion tended to be looser than the other areas. It is unclear if the erosion was caused by the 2011 flood.

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| From: | Bryan Kumm | Project: | OPPD FCS 2011 Flood Inundation Structure Assessment<br>OPPD Plant, Ft. Calhoun, NE |
| CC: | Project File, David Rohan | HDR Project No: | 164565, Dept. 134 |
| Date: | October 4, 2011 | Field Report No: | FR-073 |
| RE: | Riverbank | | |

**Team Members:** Bryan Kumm

**Field Activity Objective:**

The purpose of the site visit was to observe the riverbank between the Intake Structure and the Security Building.

**Activities Conducted:**

I met with Phil Turner (OPPD, PT). PT coordinated with site security to provide access to the platform on the river side of the Condensate Storage Tank.

**Data Obtained:**

I visually observed the riverbank between the Intake Structure and the Security Building. Photographs were taken to document the visual observations.

**Observations:**

The current river elevation is at about Elevation 995½ feet. The top of the bank appears to be about 7 feet higher than the river elevation. The bank is covered in revetment consisting of concrete filled fabric bags. Several pipes were observed exiting the revetment.

The river has deposited sediments on the south side of the Condensate Storage Tank.



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# Field Report

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| To: | Keith Kirchner, Pat Poepsel, Rick Niedergeses | | |
| From: | Hugh O'Grady | Project: | OPPD FCS 2011 Flood Inundation Structure Assessment<br>OPPD Plant, Ft. Calhoun, NE |
| CC: | Project File, David Rohan | HDR Project No: | 164565, Dept. 134 |
| Date: | October 27,2011 | Field Report No: | FR-080 |
| RE: | River Bank | | |

**Team Members:**

Bryan Kumm, Cameron Collingsworth, Hugh O'Grady-HDR

**Field Activity Objective**: Inspect River Bank adjacent to Plant site for any signs the facilities have been affected or impacted by effects of the 2011 Missouri River flooding.

**Activities Conducted:**

Walked river bank outside protected areas north of the Intake Structure and areas south of the Security Building assessing miscellaneous areas now that the river level is within its banks. Present river elevation approximately 993.5 ft MSL.

**Data Obtained:**

*Documentation*

*Visual and Photography*

*Visual inspection of site. Photos were taken by Hugh O'Grady*

*Discussions*

A pre-inspection meeting was held previously with OPPD personnel (Phil Turner) to discuss safety(wear life jackets along river, maintain clearance from razor wire), access restrictions, anticipated activities, and other pertinent criteria and site issues. Phil coordinated security access to get entrance to area outside security fencing from the Sally Port gate.

*Technology*

*Other*

Site orientation is based on Plant north.

**Observations:**

- Storm structures were observable in the PA northeast of the Maintenance Shop. Pipe Outlets with cast in place concrete support at the river viewed. The northern most pipe is full of mud approximately one foot inside the end of the pipe. One pipe, in the extension out from the support, is cracked at the end with a small piece missing. The concrete base has minor scour on the river side.
- The razor wire had been removed from inside security fencing. Wash down of the Trenwa inside the security fences carried water over to the edge of the riprap embankment. This condition was most noticeable north of the end of the steel sheetpile on the north side of the Intake Structure.
- The width of the level bench outside the security fence varied due to signs of erosion. From approximately 20 feet wide in most areas to less than a couple feet in severe areas. Several small areas at the break along the top of the riprap had washout that exposed the fabric under the riprap. Smaller diameter riprap along the top section had been washed away or subsided lower in to the slope.
- Along the ground at the base of the Security fence, some areas had several inches gap between the fence fabric and the ground surface.
- Areas that had riprap washed away or slid down the slope had filled in with fine sand.
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- The slope of the riprap river bank appears to be flatter toward the north end of the site. From near the south edge of the New Warehouse heading south toward the sheet pile walls north of the Intake Structure, the slope is steeper.
- River bank north of the Security Building has razor wire along the outside of the security fence. In this area, the slope is protected by fabric formed concrete revetment.
- River bank riprap south of the Security Building is steeper than north of the Intake Structure. There is no level bench outside the security fence. The fence is situated at the top of the River Bank slope. The slope has riprap, some dead scrub vegetation growth and debris accumulation. In areas that do not have exposed riprap or where the riprap may have been eroded away, sand has been deposited.
- A storm sewer pipe support and outlet south of the Security Building has some erosion. The first pipe joint from the outlet has separated and is open. The mass of cast-in-place concrete surrounding the final section of pipe has pulled away from the pipe. The mass of concrete is breaking apart below the end of the pipe. The spigot end of the upstream pipe is partially broken off and the pipe appears to be full of sediment. Not all pipe outlets in to the river near this pipe are exposed. A pipe with a flap gate was still underwater slightly downstream of the pipe and support.
- The Boat Ramp area has several feet of mud and sand that has been deposited.