

Technical Memorandum

Date: Wednesday, October 17, 2018

Project: Whelan Energy Center Temporary Ash Disposal Area

To: Public Power Generation Agency and Hastings Utilities, Hastings, Nebraska

From: Lori Calub, PE

Subject: 40 CFR §257.60 Placement Above the Uppermost Aquifer Compliance and Certification

Purpose

The Coal Combustion Residual (CCR) Rule, specifically CFR Title 40, Part 257, Section 257.60, states that, “New CCR landfills, existing and new CCR surface impoundment, and any lateral expansions of CCR units must be constructed with a base that is located no less than 1.52 meters (five feet) above the upper limit of the uppermost aquifer, or must demonstrate that there will not be an intermittent, recurring, or sustained hydraulic connection between any portion of the base of the CCR unit had the uppermost aquifer due to normal fluctuations in groundwater elevations (including the seasonal high water table).”

The purpose of this technical memorandum is to summarize the data that demonstrates separation greater than five feet between the existing CCR surface impoundment known as the Whelan Energy Center (WEC) Temporary Ash Disposal Area.

Facility Background

The Whelan Energy Center consists of two fossil fuel combustion units. WEC Unit No. 1 (WEC1) is owned and operated by Hastings Utilities. WEC Unit No. 2 (WEC2) is owned by Public Power Generation Agency (PPGA) of which Hastings Utilities is a partner and operating agent for PPGA. Fossil fuel ash disposal at this site began in 1981, the same year when commercial operation of the WEC1 began. Commercial operation of WEC2 began on May 1, 2011. The WEC Temporary Ash Disposal Area is an existing CCR surface impoundment of approximately 23.2 acres that has historically received CCR for disposal/storage and is permitted with the State of Nebraska.

Uppermost Aquifer

The uppermost aquifer at the Site is represented by the Pliocene/Pleistocene alluvial deposits. These deposits are present at depths from approximately 90 feet to 220 to 255 feet below ground surface. Silty clay and poorly graded sand generally begins about 60 to 80 feet below ground surface and possibly represents the basal Loveland Formation. Boring log data from installation of monitoring wells indicate the groundwater surface was encountered in the wells at depths of 104 to 117 feet below ground surface. Reference the Hydrogeologic Characterization and Supplemental Hydrogeologic Characterization reports (HDR, 2001).

Groundwater measurements from 2001 to 2018 have shown groundwater elevations ranging from approximately 1779 to 1791 feet mean sea level with water table fluctuations within the individual wells of five to eight feet over the years. Generally, groundwater elevations have been lowering in the area over the past two decades.

Vertical Separation to Groundwater

The construction drawings for the original ash pond for the Whelan Energy Center show the maximum depth of the existing CCR surface impoundment was 10 feet below ground surface. The base of the WEC Temporary Ash Disposal Area is at elevation 1888.0 feet mean sea level.

Since the alluvial deposits start about 90 feet below ground surface, as obtained from the monitoring wells boring logs, the upper limit of the uppermost aquifer could be as close as 80 feet from the base. The distance between the base of the WEC Temporary Ash Disposal Area and the measured groundwater elevations of the uppermost aquifer has been 97 feet or greater.

The WEC Temporary Ash Disposal Area had been constructed with a base that is greater than five feet above the upper limit of the uppermost aquifer. Therefore, this satisfies the 40 CFR 257.60 requirement of the CCR Rule.

References

1. Hydrogeologic Characterization, WEC Temporary Ash Disposal Area, HDR, May 2001 and Supplemental Hydrogeologic Characterization, HDR, December 2001.
2. Title 132 Permit Renewal Application, WEC Temporary Ash Disposal Area, HDR, October 2016.
3. Groundwater elevations provided by Hastings Utilities, 2001 – 2018.
4. Figure 1 - Groundwater Monitoring Well Locations, HDR, November 2016.

Professional Engineer Certification

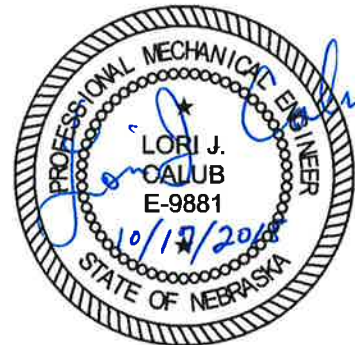
"I hereby certify that this Technical Memorandum for the existing WEC Temporary Ash Disposal Area at the Whelan Energy Center, operated by Hastings Utilities, meets the requirements of the Coal Combustion Residual Rule 40 CFR Section 257.60. I am a duly licensed Professional Engineer under the laws of the State of Nebraska."

Print Name: Lori J. Calub

Signature: 

Date: October 17, 2018

License #: E-9881



My license renewal date is December 31, 2019.