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CEDAR RAPIDS, IOWA

James R. Deutsch
Director, Reclamation Division
North Dakota Public Service Commission
600 E. Boulevard Ave. Dept. 408
Bismarck, ND 58505-0480

May 5, 2011

Re: South Heart Lignite Mine Application Alluvial Valley Floor Data

Dear Jim:

Following up on our conversation last week about alluvial valley floor data for the proposed South Heart Mine site, I have more detail for you about the specific information we'd like to see.

An Office of Surface Mining report (OSM, 1985) preliminarily identified the Heart River and the South Branch Heart River as containing areas of potential alluvial valley floors (AVFs) on the basis of the presence of either flood irrigation or subirrigation of the stream valleys. The applicants submitted an Alluvial Valley Floor Study (Golder, 2008) that presented results of further characterization of the stream in the proposed mine site to assess the possible presence of AVFs. Methods of characterizing potential AVFs cited in the 2008 report included Remote Sensing, and Ground Water and Surface Water Interaction evaluations for which we are seeking additional information.

The 1985 OSM report utilized a series of near-infrared color and black and white Landsat images taken during the moisture-stress period of the late growing season in 1975, 1976, 1978, 1979 and 1980 to identify the potential presence of subirrigated valleys. In the 2008 report, Golder cited June 2006 color and infrared aerial photos noting no significant difference between upland and valley vegetative production. Golder did note that differences may have been difficult to determine since the photos reviewed were taken in June rather than later in the summer when differences are more readily identified. The photos reviewed by Golder were not included in the materials made available for our review. We are requesting a copy of the photos referenced in the Golder (2008) report and any additional color

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infrared photos of the area that may have been reviewed by PSC staff in making the determination that AVFs are not present in the proposed mine area.

The Golder (2008) report also reported the results of hourly water level measurements collected via a pressure transducer in each well completed in alluvium to assess diurnal water level fluctuations. The report contains nine graphs that show changes in water levels, corrected for changes in barometric pressure, during the period from June 26 through November 7, 2007. Based on these graphs, Golder concluded that no significant diurnal fluctuations were identified and that subirrigation is not present. Unfortunately the scale of the graphs makes it impossible to determine the validity of this conclusion. We are requesting the raw hourly water elevation data from each location, the raw hourly barometric pressure, and a description of the correction methodology used to prepare each of the graphs.

Thank you very much for your help in this matter. Please call me at 406-696-8700 if there are any questions.

Sincerely yours,

Carrie La Seur