DRAFT
ENVIRONMENTAL IMPACT STATEMENT
FOR THE
BASIN ELECTRIC POWER COOPERATIVE
DRY FORK STATION AND HUGHES TRANSMISSION LINE

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Prepared For:

United States Department of Agriculture - Rural Utilities Service

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AQRV's are resources, as identified by the Federal Land Managers (FLMs) for one or more federal mandatory Class I areas, which may be adversely affected by a change in air quality. AQRVs that must be evaluated for the federal mandatory Class I areas within a 250-kilometer (155-mile) radius of the proposed site include:

- Visibility – Visual Plume;
- Visibility – Regional Haze; and
- Acid Deposition.

Visibility can be affected by plume impairment or regional haze. Plume impairment results from a contrast or color difference between a plume and a viewed background such as the sky or a terrain feature. Regional haze occurs at distances where the plume has become evenly dispersed in the atmosphere and is not definable. The primary causes of regional haze are sulfates and nitrates, which are formed from SO_2 and NO_X through chemical reactions in the atmosphere.

3.5.5 Mercury in the Environment

Mercury is a naturally occurring element that is found in air, water, and soil. It exists in several forms: elemental or metallic mercury, inorganic mercury compounds, and organic mercury compounds.

3.5.5.1 *Sources and Transport of Mercury*

Mercury is an element in the earth's crust. Pure mercury is a liquid metal that volatilizes readily. It has traditionally been used to make products such as thermometers, switches, and some light bulbs. Mercury is found in many minerals including coal. When coal is burned, mercury is released into the environment. Mercury is also released by burning hazardous wastes, producing chlorine, breaking mercury products, spilling mercury, and improperly treating and disposing of products or wastes containing mercury.

Coal-burning power plants are the largest human-caused source of mercury emissions to the air in the United States, accounting for over 40 percent of all domestic human-caused mercury emissions. The EPA, however, has estimated that about one quarter of US emissions from coal-burning power plants are deposited within the contiguous states and the remainder enters the global cycle (EPA 2007).

Combustion of coal produces mercury emissions in three main forms: elemental, reactive gases, and as a particulate. The elemental form has a low solubility and is removed slowly from the atmosphere by wet and dry deposition and thus has a long atmospheric lifetime. A large portion of the elemental mercury emissions will therefore join the global ambient mercury pool with long range deposition impacts. The particulate and reactive gas forms of mercury are rapidly removed from the atmosphere because of their high solubility and reactivity with surfaces. These forms therefore tend to deposit at nearby or intermediate distances from the source. It is difficult to quantify how much mercury will be deposited over short, intermediate, and long range distances, and the dynamics are very complex. The transport behaviors depend on many factors, such as the stack parameters of the source, the rate of mercury emissions, the meteorology and

topography of the region, and other factors including the concentration of mercury in the coal (RSAS 2007). The proposed power plant would use sub-bituminous PRB coal with a typical mercury content of 0.05 to 0.08 µg/g .This is on the low end for U.S. coals, which have a median mercury content of about 0.17 µg/g.

3.5.5.2 *Exposure to Mercury*

Mercury in the air eventually settles into water or onto land where it can be washed into water. Once mercury is deposited, certain microorganisms can change it into methylmercury, a highly toxic form that builds up in fish, shellfish, and animals that eat fish. Fish and shellfish are the main sources of methylmercury exposure to humans. Methylmercury builds up more in some types of fish and shellfish than others, depending on what they eat, how long they live and how high they are in the food chain.

Another less common exposure to mercury that can be a concern is breathing mercury vapor. This can occur when elemental mercury or products that contain elemental mercury break and release mercury to the air, particularly in warm or poorly-ventilated indoor spaces.

3.5.5.3 *Health Effects of Mercury*

As mentioned above, ingestion of contaminated fish and shellfish is the primary source of methylmercury to humans. Research shows that most people's fish consumption does not cause a health concern, and federal and state agencies issue fish consumption advisories for specific waterbodies and species when appropriate. High levels of methylmercury in humans are usually related to long-term exposure to low levels of methylmercury; these low levels build up in the body over time. If high levels are present in the bloodstream of unborn babies and young children, it has been demonstrated to harm the developing nervous system, making the child less able to think and learn.

3.5.5.4 *Ecological Effects of Mercury*

Birds and mammals that eat fish are more exposed to mercury than other animals in water ecosystems. Similarly, predators that eat fish-eating animals may be more exposed. At high levels of exposure, methylmercury's harmful effects on these animals include death, reduced reproduction, slower growth and development, and abnormal behavior.

3.5.5.5 *Controlling Mercury Emissions*

On March 15, 2005, the EPA issued the Clean Air Mercury Rule (CAMR) to reduce mercury emissions from coal-fired power plants. This is the nation's first rule to regulate utility emissions of mercury and will use a proven cap-and-trade approach to reduce mercury emission in two phases. The Clean Air Mercury Rule builds on the EPA's Clean Air Interstate Rule to reduce mercury emissions by 33 tons per year (nearly 70 percent) when fully implemented by 2018.