

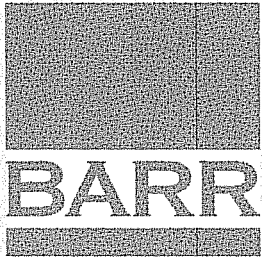
# BIG STONE *II*

PARTNERS IN GENERATION

## Background – John Lee, P.E.

- BSCE from Iowa State University, 1979
- Vice President, Barr Engineering Co.
- Over 26 years experience providing engineering and environmental services to the power industry
- Site Permitting for seven plants in Minnesota and South Dakota since 1998





# Barr Engineering Co.

- Provides engineering, environmental, and information technology services to clients across the nation and around the world
- Incorporated as an employee-owned firm in 1966 and trace our origins to the early 1900s.
- Over 300 engineers, scientists, and technical support staff
- Offices in Minnesota (3), Michigan, and Missouri
- Serving clients in power, mining, refining, and other natural resource industries, as well as at all levels of government





# Role of Barr Engineering

- Assistance with Application preparation
- John Lee
  - Barr's Project Manager and Principal-in-Charge
- Other key staff
  - Daniel Jones, environmental scientist
  - Tina Pint, geologist
  - Andrew Skoglund, acoustical engineer



# Role of Barr Engineering-

## Data collection and analysis

- Terrain (topography)
- Soils
- Geology
- Hydrogeology
- Surface Waters
- Wetlands
- Vegetation
- Wildlife
- Land Use
- Transportation Infrastructure
- Traffic
- National, State, Regional and Local parks, scenic areas, management areas and similar designated significant resources
- Population and demographic information
- Archaeological, historical and architectural resources



## Role of Barr Engineering- Site Reconnaissance

- Identify wetlands
- Verify surface water drainage patterns,
- Review and photo-document resources identified in the vicinity of the plant through our inquiry to the South Dakota Historical Society,
- Perform a general field survey of natural resources present at the plant site.





# Other Sources of Information

Barr reviewed information and work product prepared by:

- The seven project Applicants
- Burns and McDonnell, Inc.
- The 106 Group, Ltd.
- Stuefen Research and Business Research Bureau
- The First District Association of Regional Governments



# Summary of Testimony – John Lee

- Existing and potential impact issues have been adequately addressed with regard to:
  - Environment
  - Hydrology
  - Community
- No material adverse effects will be occur by constructing and operating Big Stone II





# Water Use and Sources

- Up to Additional 10,000 AF per Year from Big Stone Lake
- Added to Current Authorized Maximum Withdrawal of 8,000 AF per Year
- Current restriction prohibit summertime withdrawals when Big Stone Lake level drops below Elevation 967 feet above sea level



# Water Use Modeling

- Evaluated effects of additional Big Stone II appropriation over 70-year period
- Model assumed current diversion restrictions will be maintained
- Model input also included
  - Current pond storage of 8,000 AF
  - Proposed New Water Makeup Pond with additional 10,070 AF of storage



# Big Stone Lake Level Impacts

- Model shows lake levels depend mainly on precipitation amounts
- Big Stone Plant appropriations are not the primary influence on lake levels because of the diversion restrictions that will be maintained
- Additional Big Stone II appropriations will result in an average 2-1/2 inch decrease in Big Stone Lake levels over the 70 year study period





# Effect on Minnesota River Flows

- Diversion restrictions limit appropriation impacts on river flows
- No significant effect on Minnesota River flows from additional Big Stone II appropriations over 70-year study period



# Community Impacts Evaluated

- Roadways
- Parking
- Railroad Traffic
- Health Services and Facilities
- Recreation
- Public Safety
- Schools
- Population and Demographics



# Community Impacts

- Based on surveys of area governmental agencies and businesses
- Surveys completed by First District Association of Regional Governments
- Conclusion: Impacts to the community are expected to be insignificant or positive

