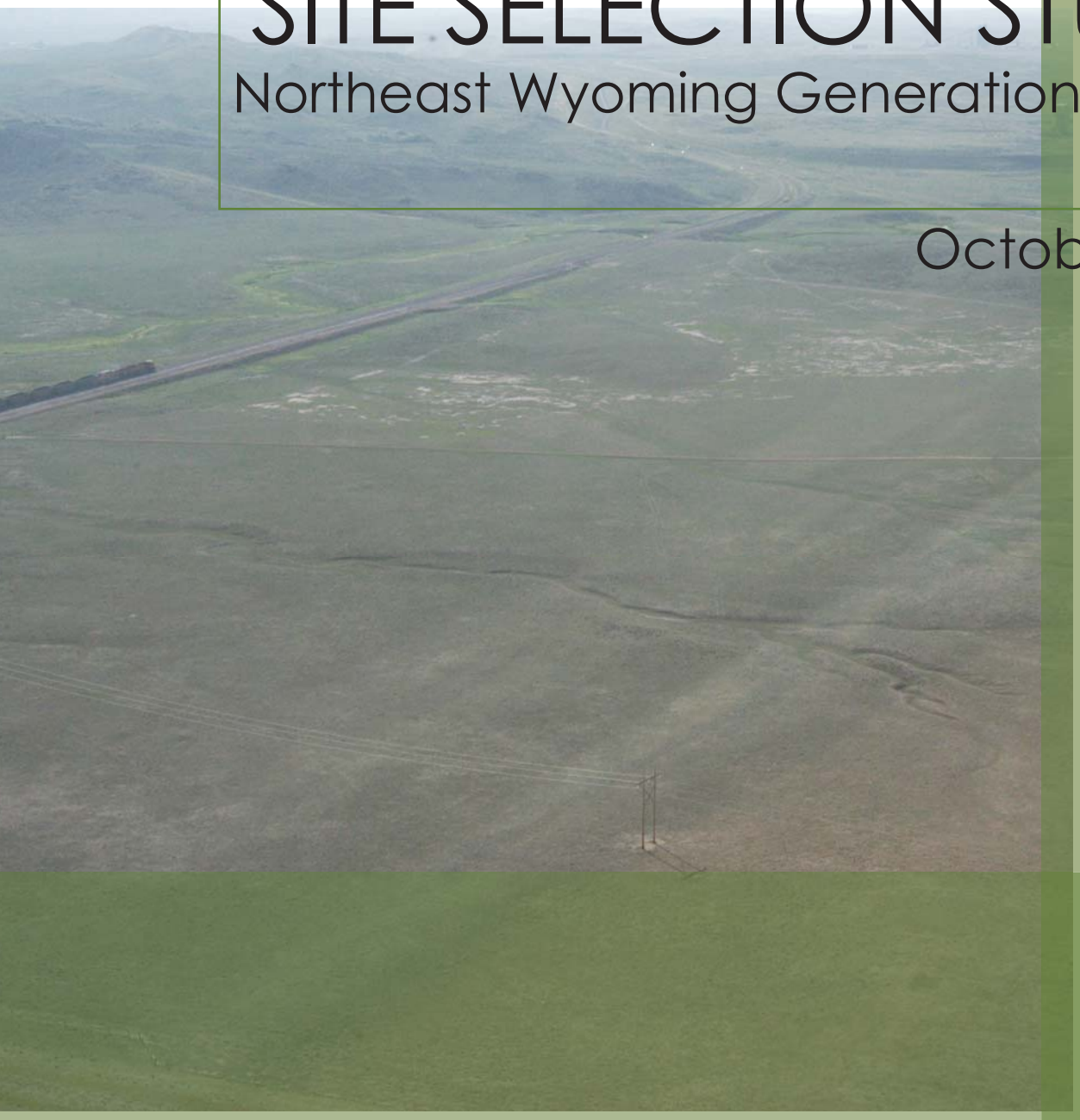

SITE SELECTION STUDY

Northeast Wyoming Generation Project

October 2005

Prepared For:

BASIN ELECTRIC POWER COOPERATIVE
Your Touchstone® Energy Cooperative

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List of Acronyms and Abbreviations

CBM	Coal bed methane
CFB	Circulating Fluidized Bed
EIS	Environmental Impact Statement
ºF	degrees Fahrenheit
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FGD	Flue Gas Desulfurization
FLM	Federal Land Manager
GIS	Geographic information system
HRSG	Heat recovery steam generator
IGCC	Integrated Gasification Combined Cycle
kV	Kilovolt
LFG	Landfill biogas
MSW	Municipal solid waste
MW	Megawatt
NEPA	National Environmental Policy Act
NPS	National Park Service
NPV	Net present value
PC	Pulverized Coal
PRB	Powder River Basin
PSD	Prevention of Significant Deterioration
RDF	Refuse derived fuel
RFP	Request for proposal
TES	Threatened, Endangered, and Special Status
USFWS	United States Fish and Wildlife Service
USGS	U.S. Geological Survey
WDEQ	Wyoming Department of Environmental Quality
$Wh/m^2/day$	watt-hours per square meter per day
WGFD	Wyoming Game and Fish Department
WYNDD	Wyoming Natural Diversity Database

Executive Summary

Introduction

This report documents the site selection study conducted between June and November, 2004. CH2M HILL and EDAW assisted Basin Electric Power Cooperative (Basin Electric) to conduct a site selection study for a maximum 422 gross megawatt (MW) coal-fired power plant in the Powder River Basin (PRB) near Gillette, Wyoming. This is referred to as the Northeast Wyoming Generation Project (Project). This report addresses four primary topics:

- The project purpose, description and benefit;
- The alternative fuel sources considered in the process; and
- The approach to site selection.

Section 1 Project Purpose and Need, Description, and Benefits

Basin Electric proposes to construct a maximum 422 gross MW baseload coal-fired power plant and transmission interconnection near Gillette, Wyoming. Basin Electric selected this area in order to locate the new power plant in proximity to the fuel source in the Powder River Basin (PRB) and delivery of the power to its membership.

The new power plant is needed to meet a growing demand for electricity by customers in the western portion of Basin Electric's nine state service areas. The Basin Electric system peak demand increased 28 percent, or 331 MW, from 1,195 MW to 1,526 MW between 1999 and 2003. The average annual increase was 83 MW.

The increasing use of electricity in the Basin Electric member service area is caused by several factors including industrial growth, energy sector (coal, oil, and gas) development, and new rural load development. New housing also has resulted in increased generation needs in Basin Electric's member areas due to population growth and the use of more air conditioners, computers, and other home appliances.

The proposed power plant will be a mine mouth facility using a coal combustion technology and dry cooling. The facility will likely cycle in early years, then operate as a baseload facility with a minimum 85 percent capacity factor. The power plant site will allow for the future expansion of a second maximum 422 gross MW unit as member electric loads increase.

The Project will improve Basin Electric's ability to provide low-cost, reliable electricity to all of their member systems and their rural consumers/members. In addition, communities near power plant projects realize many economic benefits, including:

- Job creation and stable employment;
- Increased sales tax revenues from temporary and permanent employees during construction and operation;
- Increased need for goods and services; and
- Increased property tax revenues.

Section 2 Alternatives to Meet Project Objectives

Basin Electric conducted an Alternative Evaluation Study to determine the most appropriate way to meet their need for additional generation capacity. The study consists of an evaluation of different generation technologies as well as alternatives to constructing a new generation facility. Alternatives analyzed included energy conservation, demand side management, and purchasing power from other utilities. The different generation technologies evaluated are described in Section 2 of this document. In summary, a new coal-fired power plant that uses Pulverized Coal (PC), Circulating Fluidized Bed (CFB), or Integrated Gasification Combined Cycle (IGCC) technology is the only alternative that meets all project objectives. None of the other alternatives can provide the required baseload generation as economically as coal-fired generation.

Electric generation from coal is more cost effective because of its stability and reliability as a fuel source and lower cost. While a power plant fueled by natural gas is less expensive to construct, the cost volatility over time makes the natural gas option less economical.

Section 3 Siting Process

The site selection study began with the delineation of a study area that included the northern and central PRB coal mines located to the northeast and southeast of Gillette.

The site selection study was conducted in three phases:

- Phase 1- Resource data collection and identification of opportunities and constraints;
- Phase 2- Suitability analysis to identify candidate sites
- Phase 3- Comparative analysis and site selection

Phase 1 Opportunity and Constraint Mapping

The approach to the site selection study was developed to identify site opportunities with the least overall land use and environmental impacts. This approach was taken in order to minimize the cost of implementation and construction of the new power plant and associated infrastructure.

The primary objective of the opportunity and constraint phase was to reduce the 883-square-mile Project Area to potential siting areas that would provide the highest level of compatibility with a comprehensive set of criteria. To achieve this objective, opportunity and constraint criteria were identified. These criteria were analyzed and composites prepared to identify areas of highest opportunity that identify specific sites in subsequent phases of the study.

Siting Considerations

Basin Electric undertook an open and comprehensive siting process that considered input from various aspects including:

- Electric system planning;
- Economics;
- Environment;
- Public involvement;
- Legal/permits;
- Power plant and transmission engineering; and
- Acquisition of land rights.

The process of considering these aspects is shown in **Figure 1 Approach to Siting and Permitting** and is described in the sections that follow.

Approach to Siting and Permitting

Electric System Planning

Basin Electric continually evaluates the performance of their electric system to identify the need and general location for new capacity or improved reliability. The analysis of alternatives includes consideration of reliability, timing, potential impacts to other system components, and the ability to maintain continuity of service under potential outage conditions.

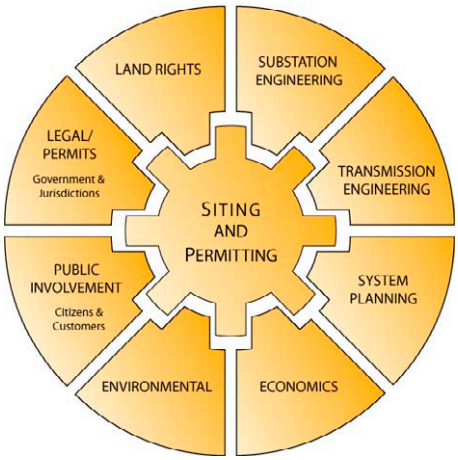

Figure 1 Approach to Siting and Permitting

Economics

Basin Electric has an obligation to its member consumers to operate in a financially responsible manner. Where a need for new infrastructure is identified, Basin Electric considers the relative cost of alternatives including initial capital costs and ongoing operational and maintenance costs.

Environmental

Basin Electric assesses in great detail potential environmental impacts of new electric facilities as part of the siting process. Basin Electric collects resource data and identifies the characteristics of the natural and human environment of a project area. They also identify environmental opportunities and constraints. Through this interactive process, they assess the relative impact of these criteria on the overall evaluation of alternatives and Project decision.

Public Involvement

Basin Electric involves the public in the siting process for any new electric facility. Public involvement helps to identify the values, concerns, and interests of the community. The value of public involvement is to facilitate understanding of the Project and the process that is undertaken to identify alternatives, assess impacts, and integrate and consider the other sources of input into the siting process.

Legal/Permits

Legal and permitting aspects are important to address necessary submittal requirements of reviewing jurisdictions to keep the Project on schedule and to meet in-service dates. Legal considerations are also important in acquiring necessary land rights. Permits may be required from local, state, or federal governments for the construction of new electric facilities. Submittal requirements and permit procedures also influence the identification of opportunities and constraints for Project alternatives and the Project schedule.

Engineering

Basin Electric engineers are responsible for the design of new facilities and ensuring that the Project requirements and objectives are met. The engineering input is vital to the siting process to ensure that construction and operation of a given alternative is reliable, safe, and able to be maintained effectively.

Land Rights

Siting new electric facilities requires Basin Electric to obtain necessary land rights for project facilities, including access, construction, operation, and maintenance. The power plant site would be purchased in fee. The costs associated with purchasing properties in fee or with obtaining new rights-of-way contribute to the economic input into the siting process.

Phase 2 Suitability – Analysis to Identify Candidate Sites

The highest opportunity siting areas from Phase 1 were analyzed in more detail in Phase 2. The objectives of Phase 2 were to identify specific sites for the generation site within the opportunity areas identified in Phase 1, compare the general site characteristics, conduct field reconnaissance of the alternative sites in order to “ground truth” the data used in the analysis, and develop a short-list of candidate sites to analyze in Phase 3. Thirty-three potential sites were identified prior to site reconnaissance. Three additional sites were identified during the site reconnaissance and based on the field observation and discussions with mine operators included in the analysis process. Ground truthing the resource information consisted of focusing on:

- Land area within a floodplain
- Surface water or drainage precluding a larger area of use
- Ecological sensitivities
- Potential for hazardous contamination
- Visual sensitivity based on elevation, topography, and/or viewpoints

- Current and adjacent land use compatibility, including structures within ½ mile
- Overall feasibility of a transmission interconnection, conveyor for fuel delivery, solid waste disposal (primarily fly ash), road access, and rail access
- Sites that can accommodate plant facilities without unreasonable engineering

Based on the site reconnaissance evaluations, eight sites were identified for more detailed analysis.

Phase 3: Comparative Analysis and Site Selection

Phase 3 of the site selection study consists of a detailed comparative analysis of the eight sites. During this process it was determined that three of the eight sites could actually support two different alternative layouts; Site A, Site D and Site G. Thus, Phase 3 refinement and comparative analysis consisted of sites A, A2, B, C, D, D2, E, F, G, G2, and H. These sites were then subjected to additional evaluation that included the quantification of the following site evaluation criteria:

- Land Use
- Environmental
- Site Layout and Operational Considerations
- Cost

Although each of the final alternative candidate sites are technically feasible, Basin Electric will likely pursue evaluation of a preferred site and one alternative that will meet project objectives. Based on the total score for each Phase 3 criterion, Site H was selected as the preferred site, mainly due to the relatively lower level of environmental, land use and economic impacts than the other sites. Site H was preferred due to its proximity to the Dry Fork mine.

Site A was selected as the alternative site because of its low cost to develop compared to other sites and its relatively lower level of environmental, operational, and land use impacts than the other sites. Like Site H, Site A was preferred due to its proximity to the Dry Fork mine.

Section 1 Project Purpose and Need, Description, and Benefits

Introduction

Basin Electric Power Cooperative (Basin Electric) proposes to construct a maximum 422 gross megawatt (MW) baseload coal-fired power plant and transmission line interconnection near Gillette, Wyoming. This is referred to as the Northeast Wyoming Generation Project (Project). Basin Electric selected this area so that the new power plant would be located in proximity to the fuel source in the Powder River Basin (PRB). CH2M HILL and EDAW assisted Basin Electric in the evaluation and identification of the most suitable site for the new power plant. This report documents the site selection study conducted between June and November 2004. **Appendix A** List of Preparers identifies the personnel and organizations that contributed to this report.

Basin Electric Power Cooperative

Basin Electric is a regional, consumer-owned wholesale power supplier with the mission to provide best-in-class, cost-effective wholesale energy along with products and services that support and unite rural America. One of the largest electric generation and transmission cooperatives in the United States, Basin Electric serves 120 member rural electric systems in nine states (Wyoming, Colorado, Iowa, Minnesota, Montana, Nebraska, New Mexico, North Dakota and South Dakota). These member systems distribute electricity to approximately 1.8 million member-customers.

Electric cooperatives in the nine-state region incorporated Basin Electric in 1961 to plan, design, construct, and operate generation and transmission facilities required to meet future electricity needs of member-owners. Basin Electric operates electric generating facilities in North Dakota, South Dakota, and Wyoming with a combined capacity of 3,412 MW. Basin Electric has seven subsidiaries. Basin Electric and its subsidiaries employ more than 1,700 employees.

Purpose and Need

Basin Electric prepares projections of its 120-member cooperatives' long-range power requirements to ensure that it has adequate generation resources to meet the needs of their customers. These electric system studies indicate that Basin Electric's member cooperatives will need additional electrical generation as early as 2011. The proposed Project is a direct result of Basin Electric's analysis and responsibility to serve its members.

The new power plant is needed to meet a growing demand for electricity by customers in the western portion of Basin Electric's nine state service area. Over the past 5 years, Basin Electric's power supply obligation to their member systems has grown by 28% percent, an increase of 331 MW. The increasing use of electricity in the Basin Electric member service area is caused by several factors including industrial growth, energy sector (coal, oil, and gas) development, and new rural load development. New housing also has resulted in increased generation needs in Basin Electric's member areas due to population growth and the use of more air conditioners, computers, and other home appliances. A significant portion of this growth is anticipated to occur in northeast Wyoming, mainly due to Coal Bed Methane (CBM) extraction.

Basin Electric's member energy sales and member peak demand between 1999 and 2003 increased from 1195 MW to 1,526 MW, which is an average annual increase of 83 MW. Basin Electric's member energy sales total demand between 1999 and 2003 increased from 6,538,312 MW hours (MWh) to 9,154,581 MWh, an average annual increase of 654,000 MWh. The average increase in system energy sales requires a 90 percent capacity factor from the average in peak demand. This indicates that Basin Electric is adding load at a capacity factor that is best served by baseload generation sources.

Project Description

The Project consists of building a new maximum 422 gross MW baseload coal-fired power plant and associated transmission interconnection in northeast Wyoming within the PRB. The site that best meets the electric system requirements is within approximately 10 miles of Gillette, Wyoming. Power plant construction is scheduled to begin in 2007, pending the result of the permitting activities. The Project is scheduled to be operational by 2011.

Power Plant

The proposed power plant will be a mine mouth facility using a coal combustion technology and dry cooling. The facility will likely cycle in early years, then operate as a base-loaded facility with a minimum 85 percent capacity factor. The power plant site will allow for the future expansion of a second maximum 422 gross MW unit as member electric loads increase.

The major components of a coal-fired power plant include a boiler, steam turbine, cooling system, exhaust stack, evaporation pond(s), switchyard, transmission line, office building(s), and several ancillary facilities for fuel handling and ash collection and disposal. The transmission interconnection proposed to connect the power plant with Basin Electric's transmission system is described below.

A well field for water will be constructed as part of the Project. The well field will consist of wells, piping, and pumps. It is anticipated that the well field will be located in proximity to the

proposed power plant site. Water from the well field will be required for the life of the power plant. The potential for an on-site landfill for ash disposal from the power plant was analyzed as part of the siting process and may be built. Otherwise, the ash will be returned to one of the coal mine sites that provide fuel for the Project.

Conveyors, railroad spurs, and new access roads may be constructed to move the coal from the mine to the power plant site. Rail could be used to deliver construction materials and equipment and may be used to transport lime or limestone. Depending on the location of the site selected, rail may also be used for delivery of coal from the mine. Other options for transporting coal include the use of conveyors or trucks. A cost comparison between rail, conveyors, and trucks has been completed for each alternative power plant site.

Associated Electric Transmission

The Project will include a transmission interconnection that will serve to transport electricity from the power plant to substations for distribution to consumers. Based on recent system studies conducted by Basin Electric, the power plant will tap into a proposed 230kV transmission line, referred to as the Hughes Transmission Project, at a substation on the Project site. Basin Electric has conducted a separate macro corridor study to determine suitable alternatives for the Hughes Transmission Project that is being funded in part by the Wyoming Infrastructure Authority (WIA).

Hughes Transmission Project

Basin Electric is planning the construction of the Hughes Transmission Project in Campbell and Sheridan counties in northeastern Wyoming. The Project consists of approximately 130 miles of 230kV transmission line that will connect the Hughes Substation east of Gillette, Wyoming, to the Carr Draw Substation west of Gillette and a proposed substation northeast of Sheridan, Wyoming. The Project is planned to be operational by the end of 2008. The Northeast Wyoming Generation Project is a separate project from the Hughes Transmission Project. The generation Project will need to be connected to the transmission grid when it becomes operational in 2011 and the intent is to tap the 230kV line that will be in service by 2008.

The Hughes Transmission Project will include substation modifications within the boundaries of the existing Hughes and Carr Draw substations, and a new substation is planned to be constructed northeast of Sheridan. The Hughes Substation is owned by Powder River Energy Corporation (PRECorp), and the Carr Draw Substation is jointly owned by PRECorp, Basin Electric and PacifiCorp.

The Hughes Transmission Project will allow Basin Electric to meet increased demand for electric power in northeastern Wyoming and western South Dakota; and to improve regional power grid stability. Based on system studies in this region, the Hughes Transmission Project

is necessary to meet current and forecasted demand, and will be constructed prior to and whether or not the generation Project is constructed.

Completion of the Hughes Transmission Project will enable Basin Electric's member Powder River Energy Corporation (PRECorp) to serve the additional power requirements of new rural housing and commercial development and production of coal bed methane (CBM) resources as well as other load growth in the region. Completion of the project will also enhance the regional transmission system, which will benefit cooperatives in western South Dakota.

Benefits

The Project will improve Basin Electric's ability to provide low-cost, reliable electricity to all of their member systems and their rural consumers/members. In addition, the Project will create jobs and increase state and local tax revenues.

Communities near power plant projects realize many economic benefits, including:

- Job creation and stable employment;
- Increased sales tax revenues from temporary and permanent employees during construction and operation;
- Increased need for goods and services; and
- Increased property tax revenues.

Employment

Basin Electric anticipates that 500-600 workers will be employed during the construction of the Project. Many of these workers will come from the Gillette area. Employment opportunities will consist of:

- Brick Layers/Cement Workers
- Boilermakers
- Carpenters
- Electricians
- Ironworkers
- Surveyors
- Laborers
- Millwrights
- Operating Engineers
- Painters
- Pipefitters
- Sheetmetal Workers
- Truck Drivers

Upon completion, operation of the Project will require approximately 75 full-time employees. Employment opportunities may include the following: Basin Electric anticipates that 500-600 workers will be employed during the construction of the Project. Many of these workers will come from the Gillette area. Employment opportunities will consist of:

- Managers
- Supervisors
- Project Managers
- Planner/Analyst
- Operations Manager
- Maintenance Manager
- Plant Engineers
- Control Systems Specialists
- Operations Shift Leaders
- Plant Operators
- Plant Operator Trainees
- Performance Technicians
- Maintenance Forepersons
- Mechanics
- Instrument Technicians
- Electricians
- Equipment Technicians
- Coal Handlers
- Truck Drivers

The long-term benefits of the Project come from permanent employees that will operate the power plant. These employees will add income to the local economy, and the taxes paid by these employees will contribute to the economic health of the region.

Basin Electric intends to use as many local workers as possible. The area around Gillette has a long history of energy production, so Basin Electric expects area residents to fill many of the positions. However, there will be a number of skilled crafts persons and specialized workers who will come from out of the area during the construction phase and possibly to fill the permanent positions.

Basin Electric estimates the existing public infrastructure in the Gillette area is adequate to support the permanent workforce of approximately 75 employees. During the permitting process of the Project, Basin Electric will conduct extensive research and work with county and local officials and agencies and other stakeholders to determine the public infrastructure needs associated with the temporary and permanent workers who will be employed during construction and operation of the Project.

Purchase of Goods and Services

The construction and operation of the power plant will result in the purchase of goods and services, both for the power plant itself and for the needs of workers. Goods and services during construction will be obtained from various local and national vendors. Construction materials such as concrete, aggregate and paint will likely be obtained locally, while major equipment such as the boiler and steam turbines will be obtained on a national basis.

Taxes

The property taxes that Basin Electric will pay for the Project will contribute to the economic health of the region. According to Campbell County Assessor information, industrial and commercial property in Campbell County is valued using replacement cost minus depreciation. The current percentage of actual value used in determining assessed value is 11.5 percent for industrial property. A mill levy is then multiplied by the assessed value to determine the property tax on an annual basis. The current mill levy in Campbell County ranges from 59.411 mills to 75.411 mills.

Example:	$500,000,000	Hypothetical Actual Value
	X 11.5%	Industrial property percentage
	= $57,500,000	Hypothetical Assessed Value
	X 0.059411	Mill Levy
	= $3,416,133	Hypothetical Property Taxes on Annual Basis

Section 2 Alternatives to Meet Project Objectives

Basin Electric conducted an Alternative Evaluation Study to determine the most appropriate way to meet their electric system needs for additional generation capacity. The study included an evaluation of different generation technologies as well as alternatives to constructing a new power plant site including energy conservation, demand side management, and purchasing power from other utilities. The different generation technologies evaluated are described below.

Wind

The greatest advantage of wind power is its potential for large-scale, though intermittent, electricity generation without emissions of any kind. Technological advances have improved the performance of wind turbines and driven down their cost. In locations where the wind blows steadily, wind power has been shown to compete favorably with coal and natural gas fired power plants based on receiving the federal Renewable Energy Production Incentive.

The development of wind power is increasing in many regions of the United States. Installed wind electric generating capacity expanded by 36 percent during 2003 in the United States to 6,370 MW. Through joint projects and purchase agreements, Basin Electric has added approximately 85 MW of wind energy to its generation portfolio over the past several years. In addition, Basin Electric has contracted to buy approximately 80 MW from two wind farms owned and operated by FPL Energy: the North Dakota I Wind Energy Center near Edgeley and Kulm, North Dakota, and the South Dakota Wind Energy Center near Highmore, South Dakota. In addition to the FPL Energy contracted capacity, Basin Electric directly owns and operates approximately 5 MW of capacity.

Solar (Photovoltaic and Thermal)

The sun is a direct source of energy. Renewable energy technologies can convert that solar energy into electricity. However, solar energy varies by location and by the time of year. Solar resources are expressed in watt-hours per square meter per day ($Wh/m^2/day$). This is roughly a measure of how much energy falls on a square meter over the course of an average day.

Collectors that focus the sun (like a magnifying glass) can reach high temperatures and efficiencies. These are called solar concentrators. Typically, these collectors are on a tracker, so they always face the sun directly. Because these collectors focus the sun's rays, they only use the direct rays coming straight from the sun.

Other solar collectors consist of simply flat panels that can be mounted on a roof or on the ground. Called flat-plate collectors, these are typically fixed in a tilted position correlated to

the latitude of the location. This allows the collector to best capture the sun. These collectors can use both the direct rays from the sun and reflected light that comes through a cloud or off the ground. Because they use all available sunlight, flat-plate collectors are the best choice for many northern states.

Solar resources are greatest in the middle of the day — the same time that utility customers have the highest demand, especially during the summer months.

Hydroelectric

Flowing water creates energy that can be captured and turned into electricity. This is called hydroelectric power or hydropower. The most common type of hydroelectric power plant uses a dam on a river to store water in a reservoir or a run of the river approach. The run of the river approach does not result in the construction of a large reservoir. Water released from the reservoir flows through a turbine, which in turn activates a generator to produce electricity. Another form of hydroelectric power does not necessarily require a large dam but instead uses a small canal to channel the river water through a turbine.

Another type of hydroelectric power plant, referred to as a pumped storage plant, has the capacity to store energy. During off-peak periods, usually at night, the generators turn the turbines backward to pump water from a river or lower reservoir to an upper reservoir, where the water is stored. The water is released from the upper reservoir back down into the river or lower reservoir. This turns the turbines forward, activating the generators to produce electricity.

Geothermal

Geothermal energy is contained in underground reservoirs of steam, hot water, and hot dry rocks. Electric generating facilities utilize hot water or steam extracted from geothermal reservoirs in the Earth’s crust to drive steam turbine generators to produce electricity. Moderate-to-low temperature geothermal resources are used for direct-use applications such as district and space heating. Lower temperature, shallow ground, geothermal resources are used by geothermal heat pumps to heat and cool buildings. Basin Electric currently provides incentives to install geothermal heat pumps. Hence, the only geothermal resources that may be considered to generate power are the high temperature sources.

Biomass

For heating applications or electricity generation, biomass can be directly burned in its solid form, or first converted into liquid or gaseous fuels by off-stoichiometric thermal decomposition. Biomass power technologies convert renewable biomass fuels into heat and electricity using modern boilers, gasifiers, turbines, generators, fuel cells, and other methods.

Biomass resource supply includes the use of five general categories of biomass: urban residues, mill residues, forest residues, agricultural residues, and energy crops. Of these potential biomass supplies, most forest residues, agricultural residues, and energy crops are not presently economic for energy use. New tax credits or incentives, increased monetary valuation of environmental benefits, or sustained high prices for fossil fuels could make these fuel sources more economic in the future. Forest fires in the past several years in western states have generated increased stimulus to initiate forest thinning programs, and several biomass plants are being proposed in the west to use forest thinning as a major fuel source.

Biogas

The same types of anaerobic bacteria that produced natural gas also produce methane rich biogas today. Anaerobic bacteria break down, or digest, organic material in the absence of oxygen and produce biogas as a waste product. (Aerobic decomposition, or composting, requires large amounts of oxygen and produces heat.) Anaerobic processes can be managed in a digester (an airtight tank) or a covered lagoon (a pond used to store manure) for waste treatment. The primary benefits of anaerobic digestion are nutrient recycling, waste treatment, and odor control. Except in very large systems, biogas production is a highly useful but secondary benefit.

Digester biogas produced in anaerobic digesters consists of methane (50% to 80%), carbon dioxide (20% to 50%), and trace levels of other gases such as hydrogen, carbon monoxide, nitrogen, oxygen, and hydrogen sulfide. The relative percentage of these gases in biogas depends on the feed material and management of the process. Anaerobic digesters are used in municipal wastewater treatment plants and on large farm, dairy, and ranch operations for disposal of animal waste.

Landfill biogas (LFG) is created when organic waste in a landfill naturally decomposes. This gas consists of about 50% methane, about 50% carbon dioxide, and a small amount of non-methane organic compounds. Instead of allowing LFG to escape into the air, it can be captured, converted, and used as an energy source. Using LFG helps to reduce odors and other hazards associated with LFG emissions, and it helps prevent methane from migrating into the atmosphere and contributing to local smog and global climate change.

The various types of biogas can be collected and used as a fuel source to generate electricity using conventional generating technology.

Municipal Solid Waste

Municipal solid waste (MSW) typically uses a refuse derived fuel (RDF) technology in waste-to-energy facilities to combust trash, garbage, and other combustible refuse. The material is received in its as-discarded form and subjected to segregation of some of the recyclables and shredding prior to being fed into the boilers for combustion. MSW provides energy for power

production and at the same time provides waste volume reduction. The plants range upward to 90 MW in size using multiple boilers to provide steam to a single condensing steam turbine generator. There are also a number of mass burn units in operation that burn the MSW directly in its as-discarded form with only the larger non-combustibles removed. Mass burn technology has largely given way to RDF in response to pressure to recycle materials and because the boilers designed to handle RDF is more economical to build.

Natural Gas Combined Cycle

Combustion turbine generators are used for simple cycle and combined cycle applications. In simple cycle operation, gas turbines are operated alone, without any recovery of the energy in the hot exhaust gases. Simple cycle gas turbine generators are typically used for peaking or reserve utility power applications, which primarily are operated during the peak summer months (June through September) at less than a total of 2,000 hours per year. Simple cycle applications are rarely used in baseload applications because of the lower heat rate efficiencies compared to a combined cycle configuration.

Combined cycle operation consists of one or more combustion turbine generators exhausting to one or more heat recovery steam generators (HRSGs). The resulting steam generated by the HRSGs is then used to power a steam turbine generator.

There is a wide range of gas turbine sizes ranging from approximately 1 MW output up to “G” and “H” class machines which are rated at 240 MW and higher. Gas turbines for electric utility services generally range from a minimum of 20 MW for peaking service up to the largest machines for use in combined cycle mode.

Microturbines

Microturbines are small electricity generators that burn gaseous and liquid fuels to create high-speed rotation that turns an electrical generator. Current microturbine technology is the result of development work in small stationary and automotive gas turbines, auxiliary power equipment, and turbochargers, much of which was pursued by the automotive industry beginning in the 1950’s. Microturbines entered field testing around 1997 and began initial commercial service in 2000.

The size range for microturbines commercially proven and currently available is from 30 to 70 kW, compared to conventional gas turbine sizes that range from approximately 1 to 240 MW. Microturbines operate at high speeds and may be used in simple cycle or cogeneration systems. They are able to operate on a variety of fuels, including natural gas, sour gas, landfill gas, anaerobic digester gas, and diesel fuel/distillate heating oil. In resource recovery applications, they burn waste gases that would otherwise be flared.

Microturbines are ideally suited for distributed generation applications due to their small power output and space requirement, flexibility in connection methods, ability to be stacked in parallel to serve larger loads, ability to provide stable and reliable power, and low emissions. Types of applications include stand-alone primary power, backup/standby power, peak shaving and primary power (grid parallel), primary power with grid as backup, resource recovery and cogeneration.

Pulverized Coal

Pulverized coal (PC) plants represent the most mature of technologies considered in this analysis. Coal plants, although having a high capital cost relative to some alternatives, have an advantage over other nonrenewable combustible energy source technologies due to the relative low and stable cost of coal.

Modern PC plants generally range in size from 80 MW to 1,300 MW and can use coal from various sources. Coal is most often delivered by unit train to the site, although barges or trucks are also used. Many plants are situated adjacent to the coal source where coal can be delivered by conveyor. Coal can have various characteristics with varying heating values, sulfur content, and ash constituents. The source of coal and coal characteristics can have a significant effect on the plant design in terms of coal handling facilities and types of pollution control equipment required.

Regardless of the source, the plant coal-handling system unloads the coal, stacks out the coal, reclaims the coal as required, and crushes the coal for storage in silos. Then the coal is fed from the silos to the pulverizers and blown into the steam generator. The steam generator mixes the pulverized coal with air, which is combusted, and in the process produces heat to generate steam. Steam is conveyed to the steam turbine generator, which converts the steam thermal energy into mechanical energy. The turbine then drives the generator to produce electricity.

Coal plants produce several forms of liquid and solid waste. Liquid wastes include cooling tower blowdown, coal pile runoff, chemicals associated with water treatment, ash conveying water and wastewater. Solid wastes include bottom and fly ash and FGD solid wastes. Disposal of these wastes is a major factor in plant design and cost considerations.

Circulating Fluidized Bed Coal

In the mid 1980s, an alternative to the standard PC fired plant emerged called Circulating fluidized bed (CFB) combustion. The fuel delivery system is similar, but somewhat simplified, to that of a PC unit but with a greater fuel cost advantage in that a wider range of fuels and a lesser quality of fuel can be used (coal, coke, biomass, etc.). The bed material is composed of fuel, ash, sand, and sorbent (typically limestone). CFB units compete in the marketplace in sizes up to 300 MW with larger sizes expected in the future.

CFB combustion temperatures are significantly lower than a conventional boiler at 1,500 to 1,600 degrees Fahrenheit (ºF) vs. 3,000ºF which results in lower NO_x emissions and reduction of slagging and fouling characteristic of pulverized coal units. In contrast to a pulverized coal plant, sulfur dioxide can be partially removed during the combustion process by adding limestone to the fluidized bed.

Integrated Gasification Combined Cycle Coal

Coal gasification for use in power generation reacts coal with steam and oxygen under high pressure and at high temperature to produce a gaseous mixture consisting primarily of hydrogen and carbon monoxide. The gaseous mixture requires cooling and cleanup to remove contaminants and pollutants to produce a synthesis gas suitable for use in the combustion turbine portion of a combined cycle unit. The combined cycle portion of the plant is similar to a conventional combined cycle. The most significant differences in the combined cycle are modifications to the combustion turbine to allow use of a 250 to 300 Btu/SCF gas and steam production via heat recovery from the raw gas in addition to the combustion turbine exhaust (HRSG). Specifics of a plant design are influenced by the gasification process, degree of heat recovery, and methods to clean up the gas.

Summary

Table 1 Alternative Technology Comparison summarizes the results of the Alternative Evaluation Study in terms of the ability for the different technologies described above to meet Basin Electric's project objectives. This table indicates that a new coal-fired power plant that uses PC, CFB or IGCC technology is the only alternative that meets all Project objectives. None of the other alternatives can provide the required baseload generation as economically as coal-based generation.

Coal-fired generating units provide the most economical baseload generation solution as well as the most reliable fuel supply. Electric generation from coal is more cost effective because of lower and more stable fuel costs. While a power plant fueled by natural gas is less expensive to construct, the cost volatility over time makes the natural gas option less economical.

In addition, air emissions have been significantly reduced from coal plants during the past 30 years. The air emissions equipment installed at the proposed power plant will remove as much as 99 percent of the particulate matter as well as significant amounts of sulfur dioxide and nitrogen oxides.

Table 1 Alternative Technology Comparison

Alternative Technology	422MW in 2011	Baseload operation	Environmentally permittable	Cost-effective	Fuel cost stability	High reliability	Commercially available	Meets all criteria
Wind	Yes	No	Yes	Yes	Yes	Yes	Yes	No
Solar – Photovoltaic	No	No	Yes	No	Yes	Yes	Yes	No
Solar – Thermal	No	No	Yes	No	Yes	No	Yes	No
Hydroelectric	No	No	Difficult	Yes	Yes	Yes	Yes	No
Geothermal	No	Yes	Yes	N/A	Yes	Yes	No	No
Biomass	No	Yes	Yes	No	Yes	Yes	Yes	No
Biogas	No	Yes	Yes	Yes	Yes	Yes	Yes	No
Municipal Solid Waste	No	Yes	Difficult	No	Yes	No	Yes	No
Natural Gas Combined Cycle	Yes	Yes	Yes	Yes	No	Yes	Yes	No
Microturbines	No	No	Yes	No	No	Yes	Yes	No
Pulverized Coal (PC)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Circulating Fluidized Bed Coal (CFB)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Integrated Gasification Combined Cycle Coal (IGCC)	Yes	Yes	Yes	Possibly	Yes	No	Yes	Possibly

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Section 3 Site Selection

Site Selection Study Approach

Basin Electric established and conducted the site selection study for the power plant site under a central guiding principal and objective:

- Identify the site of least overall land use and environmental impact at a reasonable economic cost.

To meet this objective, the site selection study needed to be comprehensive, both geographically and with respect to the types of information gathered and considered throughout the course of the study.

Power Plant Siting

Basin Electric developed a three-phase approach to conduct the site selection study for the power plant site.

- Phase 1 - Resource data collection and identification of opportunities and constraints-this phase required the use of available land use and environmental data to identify suitable areas and areas to avoid.
- Phase 2 - Suitability analysis to identify candidate sites - this phase required the use of more refined criteria and data to identify candidate sites within the opportunity areas.
- Phase 3 - Comparative analysis and site selection- this phase required a quantitative comparative analysis of the sites and the use of a range of detailed land use, environmental, engineering, operations, and cost criteria to identify the preferred site.

The site selection study involved extensive use of Geographic Information Systems (GIS) to facilitate the iterative approach needed to quickly and comprehensively review the results of various suitability analyses covering the extensive Project Area. This also provided the ability to investigate increasingly smaller areas and site details as the study progressed from one phase to another.

The data, criteria, process, and results of each of the three phases of the siting study are described in detail in the remainder of this section of the report.

Project Area

The Project Area for generation siting was determined based on proximity to coal mines that responded to Basin Electric's request for coal (described below). As a result, the Project Area consists of a region extending up to 10 miles around 7 coal mine sites. This 883-square-mile Project Area is shown in **Figure 2 Project Area**.

Fuel/Coal Supply

Basin Electric solicited proposals to purchase coal from mines operating in the north and central PRB areas, northeast and southeast and within approximately 10 miles of Gillette. Seven mines responded to the request for proposals (RFP) to provide 1.5 million tons per year of coal. A summary of the coal proposals is provided in **Appendix B Coal Proposal Summary Report.**

The seven companies providing responses and their associated mines include:

- Arch Coal, Inc. – Coal Creek Mine
- Dry Fork Coal Company (Western Fuels-Wyoming, Inc.) – Dry Fork Mine
- Kennecott Energy Company – Cordero Rojo Mine
- Peabody Energy Company (Peabody Coal Sales Company) – Caballo Mine
- RAG American Coal Holding, Inc. – Eagle Butte Mine
- Triton Coal Company, LLC – Buckskin Mine
- Wyodak Resources (Black Hills Generation, Inc.) – Clovis Point Mine

Basin Electric determined that only one mine would be selected as the primary fuel source, as it is economically prudent to lock in a long-term, relatively stable fuel supply contract to ensure that rural consumers get the most affordable electricity. By negotiating for larger volume contracts, Basin Electric ensures the viability of the coal mine supplying their fuel and enables the mine to make the necessary investments in equipment and facilities that are required given this long-term contract.

Figure 2 Project Area

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All of the proposals are for coal mines with federal coal leases. Under current federal regulations, all federal coal leases are covered by requirements for Logical Mining Units, which must be mined within 40 years. Therefore, none of the mines that submitted proposals could guarantee a coal supply for the power plant site for the 60-year period stated in the RFP. However, additional federal coal leases may be made available through lease-by-request for coal resources adjoining some of the coal mines.

Phase 1: Opportunity and Constraint Mapping

Opportunities and constraints are non-weighted attributes that Basin Electric identified as favorable or unfavorable to the development and operation of the Project. The degree of opportunity or constraint is based on the proximity of the facility to the resource and the degree of potential adverse or beneficial impact that could occur as a result of the Project. Depending on the extent of adverse impact, constraints were categorized as avoidance or exclusion areas.

In general, areas of higher opportunity tend to have greater compatibility and lower costs and impacts. It is Basin Electric's goal, through the site selection study, to maximize the use of areas of opportunity while minimizing proximity of the site to constraint criteria. The site selection criteria associated with opportunity, avoidance, and exclusion areas are defined in **Table 2 Opportunity and Constraint Criteria**. This table lists the resources that exist within the Project Area and the criteria that define them as opportunity, avoidance, or exclusion.

The opportunity and constraint criteria are different for the power plant site and transmission line interconnection because of the site specific and linear nature of the different facilities.

Opportunity

The most important opportunities that meet the Project objective include proximity to the fuel source, proximity to rail, 0 to 6 percent slope, compatible land use, and suitable access for Project construction and operation.

Avoidance

Avoidance areas include sensitive resources that would likely incur impacts if adversely affected by the Project. It is preferable to avoid these areas if there are other opportunities for locating the Project. If avoidance is not possible, minimization of impacts should be accomplished to the degree feasible through construction and operation methods or applying appropriate mitigation measures.

Table 2 Opportunity and Constraint Criteria

Resource	Opportunity	Avoidance	Exclusion
Human Resources			
Land Ownership	Areas within undesignated State of Wyoming Lands and private land.		Formally designated state lands, such as state parks, wildlife areas, and similar land types. Federally managed lands (BLM, USFS, USFWS, etc)
Land Use			Areas of Low & High Intensity Residential
Cities			Areas within city (Gillette) corporate limits
Coal Mines and Mineral Ownership	Areas within 0-1 miles of coal mine for highest opportunity. Areas greater than 1 mile to 5 miles of coal mine (medium opportunity); Areas greater than 5 miles to 10 miles of coal mine (less opportunity)	Areas over CBM wells (200 ft. buffer).	
Recreation		Areas within ½ mile of recreation areas. Areas within ¼ mile of tourist visitation spots	
Railroads	Areas within 0-1 (greatest opportunity), 1-2 ½, and 2 ½ - 5 (least opportunity) miles of a railroad line or spur.		
Airports		Areas within 10,000 feet of public airports and 5,000 feet of private airports. Horizontal surface	Areas within glide slopes to airports (approach surface)
Cultural/Historical		Section with medium to high density cultural/historic sites	Areas within 100 feet of federal, state or local listed or eligible sites
Earth Resources			
Air			Specific Minor Source Baseline Areas*
Soils		Areas with highly erosive or difficult to reclaim soils.	
Surficial Geology (including Clinkers)		Clinker	
Geologic Hazards		Areas within 1 mile of fault lines.	Areas within ¼ mile of fault lines
Slope	Areas of 0-6% slope.	Areas of 6-10% slope.	Areas where slope is equal to or greater than 10%.
Surface Water		Areas within 1/8 mile of streams, rivers, and lakes (except intermittent) to avoid drainages	
Floodplains		Areas within 100-year floodplain	
Wetlands		Areas within wetland boundaries	
Biological Resources			
Threatened, Endangered and Sensitive Species		Areas 0.125-1 mile buffer on all State and Federal Sensitive Species. Range buffer was species specific.	Areas with known TES locations

* Specific Minor Source Baseline Areas were not incorporated into the GIS model, but were considered an exclusion during siting.

Exclusion

Exclusion areas include areas with the highest level of sensitivity, including those areas with legal, regulatory, or legislative designations, or extreme physical constraints not compatible with the Project construction and/or operation. Locating a power plant site in these areas generally results in more environmental impacts, higher costs, and additional regulatory approvals.

Data Acquisition

Data acquisition consisted of contacting mining companies and municipal, county, and state agencies and utilities to obtain electronic GIS data for environmental and physical resources (e.g., land use, land ownership, land cover, wildlife, water resources, wetlands, coal seams, geology, soils, topography, etc.). The database is based on existing data and did not include acquisition of new field data. Database development was limited to the Project Area.

Site Evaluation Methodology

Candidate sites in proximity to coal mines were evaluated based on the opportunities and constraints that each possesses.

The primary objective of this opportunity and constraint study was to reduce the 883-square-mile Project Area to a limited number of potential siting areas that could be analyzed in more detail in later phases. To achieve this objective, fundamental opportunity and constraint criteria, listed in **Table 2 Opportunity and Constraint Criteria**, were identified. These criteria were analyzed and composites prepared to identify siting areas of highest opportunity that could be carried forward to identify specific sites in subsequent phases of the site selection study.

Opportunity and Constraint Areas by Resource

This section describes the opportunities and constraints of each resource evaluated at each potential location. All potential locations are adjacent to existing and active coal mines, including Buckskin Mine, Eagle Butte Mine, Dry Fork Mine, Clovis Point Mine, Caballo Mine, Cordero Mine, and Coal Creek Mine. The resource discussion below is grouped by human resources, earth resources, and biological resources.

Human Resources

Surface Ownership

Surface ownership data was obtained from the Bureau of Land Management and the State of Wyoming's Gap Analysis Program (1994) and is shown on **Figure 2 Project Area**. Parcel data was digitized from plats obtained from the Campbell County Assessor in June of 2004.

The proposed power plant will be a mine mouth facility on the east side of an active mine to avoid conflicts with access to un-mined coal reserves. Federal lands and formally designated state lands were identified as constraint areas. All potential mine locations, except the Coal Creek Mine, are not located on federally-owned or formally designated state land and thus provide opportunities for siting the power plant. Segments of the Coal Creek Mine's northern and southern borders are contiguous to federally-owned land and the mine's eastern border overlays non-designated state land. While opportunities for the power plant site exist on the mine's east and west borders, these opportunities are in the path of future mining operations.

Land Use/Cover

Land cover describes land uses in general rather than in specific delineations. For instance, the term *developed* is used to describe residential and commercial uses. **Figure 3 Land Use/Cover** shows the distribution of land cover in the Project Area. All the mines, except the Caballo Mine, are surrounded by shrubland. Agricultural use exists along the northeast segment of the Caballo Mine's perimeter. The location of a power plant near the Caballo Mine could avoid placement within agricultural land use.

Cities

No potential sites are located within the borders of any town or city.

Coal Mines and Mineral Ownership

Coal mine data was obtained from the State of Wyoming and the Bureau of Land Management (BLM). Wyoming's Gap Analysis Program (1994) was used to identify mineral ownership across the Project Area.

Coal mine locations were determined by analyzing aerial photographs flown in various years and digitizing areas of surface disturbance. Federal and state coal lease information was obtained from the Wyoming BLM in AutoCAD format (last updated May 2004). All potential power plant sites are adjacent to existing and active coal mines.

As shown on **Figure 4 Coal Mines and Mineral Ownership**, all the mines in the Project Area are located on federal or state minerals.

Figure 3 Land Use/Cover

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Figure 4 Coal Mines and Mineral Ownership

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Recreation

Information from the 2002 Digital Wyoming Atlas (University of Wyoming Department of Geography) was reviewed to determine the location of recreation areas. Five recreation areas exist within the Project Area.

A Comprehensive Planning Program that the City of Gillette and Campbell County jointly prepared (last updated March 1994) was also reviewed. The program identifies parks and recreation planning as an essential element determining the character and quality of an environment. Existing facilities are located primarily within or near the cities of Gillette and Wright. The closest recreation area is approximately three miles from any candidate mine (see **Figure 5 Recreation**).

Opportunities for dispersed recreation exist on federal and state lands throughout the Project Area. Dispersed recreational opportunities include hunting, fishing, sightseeing, off-road vehicle use, and camping. Various coal mines offer tours between June and August.

Railroads

Information on railroad locations was obtained from U.S. Bureau of Transportation Statistics (current as of 2003). All railroads within the Project Area are owned by Burlington Northern Santa Fe. All potential locations for the power plant site, except near the Coal Creek Mine, are served by a spur rail line. The trunk line to the Coal Creek Mine is located two miles west of the mine. This could be problematic if mining operations need to be extended to the west.

Airports

Airports within the Project Area were identified by searching Airport Summary and Activity Data (http://www.gcr1.com/5010web/). Four airports are within the Project Area (see **Figure 6 Airports**). Gillette-Campbell County Airport is the only public airport within the Project Area. Madsen and Green Park are private airports and Campbell County Memorial Hospital has a helipad.

Gillette-Campbell County Airport glide slopes were modeled based on the Airport Master Record Federal Aviation Administration (FAA) 77 Category. Madsen has no FAA 77 Categories in its Airport Master Record. Madsen was modeled as a utility runway with a visual approach, FAA 77 Category: A(V). The glide slope of the Gillette-Campbell County Airport would not be broken by any part of the power plant site. The vertical plane of the southwest segment of the Eagle Butte Mine is in proximity to the glide slope; however, the two do not intersect. Basin Electric requires the power plant site to be on the east side of the candidate mine, which eliminates the possibility of interference with the glide slope of the Gillette-Campbell County Airport.

Neither Green Park nor Campbell County Memorial Hospital is visible on aerial photography. Green Park is southwest of Gillette, Wyoming on the western edge of the Project Area. Campbell County Memorial Hospital helipad is located within the corporate limits of Gillette, which is already an exclusion area. No potential siting areas are within 5,000 feet of the point locations of Green Park or Campbell County Memorial Hospital. No impact to the operation of these facilities is expected.

Cultural/Historic Sites

The objective of the cultural/historic site assessment was to identify cultural and historic sites so that direct physical impacts to the sites could be avoided and the integrity of their setting protected. A search of the National Register of Historic Places database was conducted to locate any listed national historic sites within the Project Area. None were found.

A database obtained from the Wyoming State Historic Preservation Office was used to identify the density of cultural sites by Public Land Survey System sections. The review of information from the Wyoming State Historic Preservation Office revealed a range in density of 0 to 28 cultural sites per section. The exact location of each site will be investigated in later analysis depending on the site chosen for the power plant. The vast majority of sections that contain cultural sites have only a few sites. There does not seem to be a pattern to high density or low density sections, however, most of the site surveys occurred near mine operations. Despite the existence of cultural sites near the mines, each mine site has some opportunity areas for the power plant site (see **Figure 7 Cultural Resources**).

Buckskin Mine

A high density section exists near the southeast segment of the perimeter. The remainder of the east perimeter has either a low density or no recorded sites.

Eagle Butte Mine

The mine is entirely surrounded by low density sections.

Dry Fork Mine

The mine is entirely surrounded by low density sections.

Clovis Point Mine

The east segment of the perimeter is bordered by a low density section. The remainder of the perimeter is bordered by sections that have no recorded sites.

Figure 5 Recreation

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Figure 6 Airports

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Figure 7 Cultural/Historical Resources

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Caballo Mine

The mine is entirely surrounded by low density sections.

Cordero Rojo Complex

The north mine is entirely surrounded by low density sections. The south mine is bordered by a medium density section on the east perimeter segment. The remainder of the perimeter is bordered by low density sections.

Coal Creek Mine

The mine is entirely surrounded by low density sections or sections without recorded sites.

Earth Resources

Air

Non - Attainment and Class 1 airsheds were evaluated and are discussed in **Appendix C Air and Water Resources – Supplemental Information**, which contains a fatal flaw-type analysis associated with air and water. Non-attainment and Class 1 airsheds were examined early in the Project. A summary of the initial findings is provided below.

Non Attainment Areas: Campbell County is in attainment with all National Ambient Air Quality Standards. Sheridan County, in the northern part of the state, is the only non-attainment area in Wyoming. It is a moderate non-attainment area for PM_{10} (particles having a diameter of 10 microns or less).

Class 1 Areas: As part of the air permitting analysis, Basin Electric will conduct long range (greater than 50 kilometers) visibility modeling for the power plant site stack emissions and compare to visibility threshold guidance standards set by the Federal Land Manager (FLM) for Class I protected areas. The FLM is the National Park Service for the Wind Cave and Badlands National Parks in South Dakota. The FLM is the Environmental Protection Agency for the Northern Cheyenne Indian Reservation in Montana.

Minor Source Baseline Area: The entire Project Area is within a minor source baseline area, as shown on **Figure 8 Air**.

Specific Source Baseline Area: Three separate areas delineating the minor source baseline area throughout the Project Area are shown on **Figure 8 Air**. These areas are identified as follows:

- Pacific Power and Light Specific Source Baseline Area (near the Wyodak Generation Project)
- Hampshire Energy Baseline Area (northeast of the Caballo Mine)
- Proposed Kennecott/Puron Prevention of Significant Deterioration (PSD) Baseline Area (southeastern portion of the Cordero Rojo Complex)

Since the 2001 minor source baseline date, CBM development has flourished in the PRB, particularly north of Gillette. Wyoming Department of Environmental Quality (WDEQ) has been analyzing the emission inventory in the PRB and is concerned with increment consumption especially related to fine particulate (PM_{10}). Given this, WDEQ will demand that fugitive sources be well controlled. This would include closed conveyors, paved roads, and limited open storage. It is expected that the primary air quality permitting issue will be with the near field impacts at fenceline related to PM_{10} from material handling operations.

Soils

The State Soil Geographic (STATSGO) database was used to determine the location and types of soils in the Project Area and to analyze certain important characteristics, including erodibility, prime farmlands, bedrock hardness, and corrosiveness, associated with these soils.

Erodibility

K-factor is used in the Universal Soil Loss Equation, wherein K represents the susceptibility of bare cultivated soil to erosion from rainfall. A K-factor greater than 0.37 has been used in existing soil interpretations by the Natural Resources Conservation Service (NRCS) as a limiting factor or erosion hazard. All soils in the Project Area have a K-factor less than 0.37 (see **Figure 9 Soils**).

Prime Farmland

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. Prime farmland could be cropland, pastureland, rangeland, forest land, or other land, but not urban built-up land or water. There is no occurrence of prime farmlands in the Project Area.

Bedrock Hardness

Bedrock hardness concerns the degree of hardness of the underlying rock. The ratings are as follows:

Figure 8 Air

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Figure 9 Soils

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Hard – excavation requires blasting or special equipment.

Soft – excavation can be made with trenching machines, backhoes, or small rippers.

All bedrock in the Project Area is rated soft or not rated.

Corrosiveness

Corrosiveness is an interpretation rating of the susceptibility of concrete or uncoated steel to corrosion when in contact with the soil. All soils in the Project Area are rated low for concrete corrosion and high for steel corrosion.

Surficial Geology

Information from the James C. Case, Christopher S. Arneson, and Laura L. Hallbe, 1998, Wyoming Surficial Geology: Spatial Data and Visualization Center, Laramie, Wyoming (Website: www.sdvs.uwyo.edu/24k/surfgeol.html) was used to analyze surficial geology.

Several geologic materials occur in the Project Area and are shown on **Figure 10 Surficial Geology**. One of the surficial geology materials is Clinker. The natural burning of coal beds in the PRB over the past few million years has consumed billions of tons of coal and has baked and melted the overlying bedrock. Clinker, also referred to as “scoria,” is rock that has been baked by subsurface coal fires and has migrated to the surface. Clinker now abuts the east side of the majority of the mines in the north and south portions of the Project Area.

This baked rock is highly resistant to erosion and, as a result, is often found atop plateaus and ridges in the Powder River Basin. Clinker consists of fractured rock on a base of porous ash. Semi permeable clay frequently underlies Clinker formations. This structure allows Clinker to absorb, store, and transfer large amounts of water. It is a resource of concern because of the potential engineering that would be required to site the power plant site on this porous material.

Geologic Hazards

Basin Electric used Information from the Wyoming Oil and Gas Conservation Committee database (2004) and the U.S. Geological Survey (USGS) (1994) to map the locations of CBM wells and faults, respectively.

The primary geologic constraint in the Project Area includes CBM wells. CBM wells are typically 400 – 2,000 feet deep and have a diameter of approximately 18 inches in the Powder River Basin. Identification of these facilities, whether active or inactive, is important to prevent a power plant site from being constructed in such proximity that the stability of the soil could be compromised. There are no faults in the Project Area.

With respect to geologic hazards, opportunity areas exist at every mine location in the Project Area. All of the identified CBM wells exist west of the individual mines, except the Buckskin Mine. CBM wells are located within the Buckskin Mine boundary. In addition, faults closest to the Project Area are approximately three miles from the Buckskin Mine, just beyond the northwest border of the Project Area (see **Figure 11 Geologic Hazards**).

Slope

The USGS 10 meter National Elevation Dataset (1999) was used to determine slopes in the Project Area.

The mine mouths in this area are typically mined from east to west, based on the geology of the area. Basin Electric requires the power plant site to be on the east side of an existing mine, so that the facility will not interfere with expansion of the mine. Therefore, slope evaluation was limited to the east, northeast, and southeast portions of the mines' perimeters. Slopes between 0 percent and 6 percent are opportunity areas. Slopes of 6 percent through 10 percent are avoidance areas. Slopes greater than 10 percent are exclusion areas. **Figure 12 Slope** shows slope values in the Project Area.

Buckskin Mine

Avoidance areas and exclusion areas intermittently exist along the northeast segment of the perimeter. Opportunity areas exist near the rail spur.

Eagle Butte Mine

Opportunity and avoidance areas exist along the north and east segments of the perimeter. The largest opportunity area exists along the north segment of the perimeter adjacent to the rail spur. Intermittent opportunity and avoidance areas exist along the east segment of the perimeter.

Dry Fork Mine

Opportunity and avoidance areas exist along the eastern segment of the perimeter. A few exclusion areas also exist but they should not be problematic in facility siting. The area immediately south of the rail spur presents a large, uninterrupted opportunity area.

Clovis Point Mine

Opportunity and exclusion areas exist along the eastern segment of the perimeter. Opportunity areas are uninterrupted along the southern part of the east perimeter segment.

Figure 10 Surficial Geology

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Figure 11 Geologic Hazards

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Figure 12 Slope

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Caballo Mine

Opportunity and avoidance areas exist along the eastern segment of the perimeter, with the majority being opportunity areas. Opportunity areas exist near the rail service.

Cordero Rojo Complex

Opportunity areas exist along the eastern segments of the perimeters of both mines within the complex. Uninterrupted opportunity areas exist along the perimeter segment adjacent to the rail spur.

Coal Creek Mine

Opportunity areas exist along the eastern segment of the perimeter. One relatively small avoidance area also exists along this segment.

Surface Water

Surface water information was obtained through the U.S. Bureau of the Census (2000). A fatal flaw analysis associated with air and water is provided in **Appendix C Air and Water Resources – Supplemental Information.**

Surface water will not be used for cooling at the proposed facility. The analysis of surface water as an opportunity or constraint identified areas that are least likely to require a Section 404(a) permit during construction of the proposed facility. Specific characteristics of the potential water sources include whether the source was an intermittent or perennial stream and whether it was a standing water body. **Figure 13 Surface Water** identifies streams, rivers, and lakes in the Project Area. Areas within 1/8 mile of streams, rivers, and lakes are avoidance areas.

The nearby extraction of CBM produces water that could be used for the Project. However the Project would still need a backup water supply, as steady supply of CBM water could not be assured. The CBM production area will be steadily moving west and a variety of independent operators are working in the area. Some operators are just now moving into the "Big George" coal seam, which is approximately 30 miles west of Gillette. Using water from CBM production at the “Big George” coal seam would require an approximate 40 mile pipeline, which Basin Electric would construct. CBM operators would build a manifold to connect various sites to the pipeline, and as production moved west the manifold would be expanded as opposed to Basin Electric's pipeline being extended.

Because of the uncertainty in the CBM water supply, Basin Electric determined that they would use groundwater for cooling. CBM water may only represent an improvement to

project economics, or may represent a political concession. Costs of CBM supply likely cannot be accurately predicted at this time.

Buckskin Mine

The eastern perimeter is intersected by one intermittent stream at the southern loop of the rail spur and transmission. Opportunity areas exist along the remainder of the east segment of the perimeter. No avoidance or exclusion areas exist along the east segment of the perimeter.

Eagle Butte Mine

Intermittent streams intersect the west and north segments of the perimeter. No perennial streams or standing water bodies exist within proximity to this location. No avoidance or exclusion areas exist along the east segment of the perimeter.

Dry Fork Mine

The east segment of the perimeter is intersected by two streams; however, adequate opportunity areas exist along the east segment of the perimeter.

Clovis Point Mine

No avoidance or exclusion areas intersect the east segment of the perimeter. An intermittent stream runs nearly tangent to the southeast corner of the mine, but this should not be problematic in siting the facility.

Caballo Mine

The east segment of the perimeter is intersected three times by avoidance areas; however, adequate opportunity areas exist along the east segment of the perimeter.

Cordero Rojo Complex

A small portion of the mine's south perimeter is intersected in several places by avoidance areas. The intersections are in proximity to each other and should not be problematic in siting the facility.

Coal Creek Mine

The perimeter is intersected by intermittent streams at two points; however, adequate opportunity areas exist along the east segment of the perimeter.

Figure 13 Surface Water

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Floodplains

Federal Emergency Management Agency (FEMA) floodplain maps were digitized and evaluated to determine the amount (if any) of each site that was within a 100-year floodplain and are shown on **Figure 13 Surface Water**.

A flood prone site would need to be protected from floodwaters in some way, either through filling, or the construction of a levee. Flood mitigation works are likely to cause some environmental impact, may worsen downstream flooding, and may be expensive. A flood prone site would not alone prohibit the siting of a power plant site, but the presence of a floodplain on a site will make it less desirable.

Buckskin Mine

The 100-year floodplain intersects the east segment of the perimeter near the point of rail service. There is adequate land above the floodplain for the location of the proposed facility.

Eagle Butte Mine

Two 100-year floodplains are located in the northwest segment of the perimeter. There is adequate land above the floodplain for the location of the proposed facility.

Dry Fork Mine

The 100-year floodplains at this location intersect the perimeter at the north and south segments. The north floodplain is near the rail service. There is adequate land above the floodplain for the location of the proposed facility.

Clovis Point Mine

The 100-year floodplain does not intersect any segment of the perimeter and is not in proximity to the mine's east perimeter segment.

Caballo Mine

The 100-year floodplain intersects or is in proximity to the entire southeast segment of the perimeter near the rail service. There is adequate land above the floodplain along the northeast segment for the power plant site.

Cordero Rojo Complex

The 100-year floodplain does not intersect any segment of the perimeter and is not in proximity to the complex's east perimeter segments.

Coal Creek Mine

The 100-year floodplain does not intersect any segment of the perimeter and is not in proximity to the mine's east perimeter.

Wetlands

The National Wetlands Inventory (1997) was reviewed to determine the location of wetlands in the Project Area.

It is preferable to locate the power plant site on the east side of an existing mine, therefore the location of wetlands was evaluated along the east, northeast, and southeast segments of the perimeters of each mine. **Figure 13 Surface Water** shows wetlands in the Project Area.

Buckskin Mine

A few wetlands exist near the southeast segment of the perimeter, south of an existing 69kV transmission line. The location of a power plant site could avoid placement within wetlands.

Eagle Butte Mine

A few wetlands exist near the southeast segment of the perimeter. The location of a power plant site could avoid placement within wetlands.

Dry Fork Mine

Three wetlands exist near the northeast segment of the perimeter. The location of a power plant site could avoid placement within wetlands.

Clovis Point Mine

A few wetlands exist near the east and northeast segments of the perimeter. The location of a power plant site could avoid placement within wetlands.

Caballo Mine

Several wetlands exist near the mine's northeast, east, and southeast perimeter.

Cordero Rojo Complex

A few wetlands exist near the mine complex's east and northeast segments of the perimeter. The location of a power plant site could avoid placement within wetlands.

Coal Creek Mine

A few wetlands exist near the mine's east and southeast segments of the perimeter. The location of a power plant site could avoid placement within wetlands.

Biological Resources

Vegetation

Vegetation communities of concern such as riparian areas and wetlands were evaluated when considering power plant sites. Riparian and wetland communities will be avoided or otherwise mitigated.

Wildlife

The Wyoming Game and Fish Department (WGFD) were consulted to identify wildlife concerns within the Project Area. WGFD data identified important habitat areas for big game species such as pronghorn, mule deer, and elk. WGFD data also identified locations of sage grouse leks (strutting grounds). The Wyoming Natural Diversity Database (WYNDD) provided other occurrence data for both common wildlife species and species of state and federal concern that exist within the Project Area. These data sets were obtained in June 2004.

The WGFD is responsible for managing all wildlife in Wyoming and has the responsibility to protect species of special concern on public lands. The State of Wyoming does not have their own state threatened or endangered species list apart from those species that are federally listed by the United States Fish and Wildlife Service (USFWS).

Federally Listed and other Species of Concern

Those species classified as threatened or endangered are protected under the Endangered Species Act, which is enforced by USFWS. Threatened or endangered species are considered "Federally-listed" or "listed" once a final rule has been published in the Federal Register.

Endangered species are those plant and animal species, subspecies, or varieties that are in danger of extinction throughout all or a significant portion of their range. The threatened category comprises plant and animal species, subspecies, or varieties likely to become endangered within the foreseeable future throughout all or a significant portion of their range.

Federal candidate species, subspecies, or varieties are those plant and animal species being considered for listing as endangered or threatened, but for which a proposed regulation has not yet been published in the Federal Register.

The USFWS was consulted regarding listed species within the Project Area. The USFWS identified the bald eagle, black-footed ferret, and Ute ladies'-tresses orchid as the only federally listed threatened and endangered species within the Project Area. Known historic and recent occurrence data for these species was used in the evaluation of suitable locations for proposed facilities and infrastructure within the Project Area. Black-footed ferrets may potentially occur in prairie dog towns larger than 200 acres.

Greater sage grouse have been identified within the Project Area. The greater sage grouse is a species that the WGFD closely monitors due to recent declines in suitable habitat and populations. The WGFD recommends that active leks be avoided whenever possible.

The WYNDD was consulted regarding historic and known occurrences of other species of special concern within the Project Area. The WYNDD is a service and research unit of the University of Wyoming that maintains a comprehensive database on the distribution and ecology of rare plants, rare animals, and important plant communities in Wyoming. Species of special concern are "rare, endemic, disjunct, threatened, or otherwise biologically sensitive." Plants and animals are considered for inclusion on this list if they are vulnerable to extirpation at the global or state level (WYNDD 2004). WYNDD species of special concern may or may not be federally listed. As mentioned above, the habitat and occurrences of federally listed species was considered during the site selection study; other species of special concern will be avoided when possible.

The following recommendations are suggested as means to protect some of the above species. When combined with other more detailed mitigation measures that will be developed later, these actions would minimize negative impacts to bald eagle, other raptors, and the black-footed ferret.

- It is recommended that a buffer, as determined by WGFD, be maintained around active bald eagle nests during construction. If this is not possible, construction activity should be restricted to August through October in order to avoid disturbance during nesting and prior to fledging of young.
- Other active raptor nests should be buffered by a ½ mile disturbance free zone.
- Campbell County recommends that a survey for black-footed ferrets be conducted if any part of a black-tailed prairie dog town larger than 200 acres will be disturbed.

Buckskin Mine

No threatened or endangered species are known to exist within 1 mile of this mine.

Eagle Butte Mine

A raptor occurrence is known to exist approximately 1 mile north of this mine.

Dry Fork Mine

A raptor occurrence is known to exist approximately 1 mile south of this mine.

Clovis Point Mine

No threatened or endangered species are known to exist within 1 mile of this mine.

Caballo Mine

A raptor occurrence is known to exist less than 1 mile east of this mine. Several other occurrences are known to exist less than 2 miles southeast of the mine along the Belle Fourche River.

Cordero Rojo Complex

No threatened or endangered species are known to exist within 1 mile of this mine.

Coal Creek Mine

No threatened or endangered species are known to exist within 1 mile of this mine.

Summary

Areas of opportunity were determined by overlaying data associated with the opportunity criteria on **Table 2 Opportunity and Constraint Criteria**. Areas where multiple criteria overlapped were considered higher opportunities than areas with fewer overlapping criteria. Avoidance and exclusion layers were also overlaid on the opportunity analysis. The results of overlaying the suitability values for each criterion are shown in the composite suitability map (**Figure 14 Opportunity, Avoidance, and Exclusion Areas**).

Opportunity Summary

Overlaying the suitability values for each criterion resulted in six different levels of suitability, including exclusion. The darkest shade of green signifies the most opportune areas. Each candidate mine has medium opportunity areas along their east perimeter. Five mines, Buckskin, Dry Fork, Clovis Point, Cordero Rojo, and Coal Creek, have contiguous medium-high opportunity areas adjacent to their eastern borders. State land, existing transmission corridors, and railroads consist of the most opportune siting areas within the Project Area.

Avoidance and Exclusion Summary

The avoidance and exclusion areas are shown as avoidance-Clinker, avoidance – other (all other avoidance criteria other than Clinker), and exclusion. The avoidance areas throughout the Project Area generally consist of cultural and historic resources that have sections with medium to high density cultural/historic sites, Clinker, and areas within 10,000 feet of public airports and 5,000 feet of private airports. The exclusion areas throughout the Project Area generally consist of slopes over 10 percent slope, federal lands, and airport glide slopes.

Phase 2: Suitability – Identification of Candidate Sites

Site Evaluation Methodology

The highest opportunity siting areas from Phase 1 were analyzed in more detail in Phase 2. The objectives of Phase 2 were to identify specific sites for the generation site within the opportunity areas identified in Phase 1, compare the general site characteristics, conduct field reconnaissance of the alternative sites in order to "ground truth" the data used in the analysis, and develop a short-list of candidate sites to analyze in Phase 3. A total of 33 potential sites were identified prior to site reconnaissance and are shown on **Figure 15 Candidate Sites**. Three additional sites were identified during the site reconnaissance and based on the field observation and discussions with mine operators included in the analysis process. Ground truthing the resource information consisted of focusing on:

- Land area within floodplain
- Surface water or drainage precluding a larger area of use
- Ecological sensitivities
- Potential for hazardous contamination
- Visual sensitivity based on elevation, topography, and/or viewpoints
- Current and adjacent land use compatibility, including structures within ½ mile
- Overall feasibility of transmission line, conveyor for fuel delivery, solid waste disposal (primarily fly ash), road access, and rail access
- Site that can accommodate plant facilities without unreasonable civil work

Based on the site reconnaissance evaluations, eight sites were identified for more detailed analysis.

Figure 14 Opportunity, Avoidance, and Exclusion Areas

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Figure 15 Candidate Sites

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Sites were discussed in terms of their geographic location within the Project Area. The sites in the north PRB area were generally compared to the sites in the south PRB area. Overall, sites in the north appeared more favorable due to their proximity to the Dry Fork Mine, which offered the most competitive coal price. There still may be siting opportunities in the middle PRB that were not taken forward for analysis; depending on the price of coal in the future, some of the sites warrant more extensive analysis.

Site comparison resulted in a ranking of the most preferred candidate sites to the least preferred candidate sites. In accomplishing this, a greater number of criteria conditions were inventoried and mapped. In all, nine criteria categories were used in the pre-site reconnaissance assessment and are compared in a matrix on **Table 3 Candidate Sites Comparison**. The nine categories include the following:

- Area of Site
- Distance from Rail/Length of New Rail
- Distance from Coal/Length of Conveyor
- Distance from State or County Road Access
- Number of Road Crossings for New Rail
- Number of River/Stream/Creek Crossings for New Rail
- Number of Road Crossings for Conveyor
- Number of River/Stream/Creek Crossings for Conveyor
- Distance to the Three Closest Coal Load Out Sources

Each criterion is described below in more detail.

Area of Site

For the purpose of this analysis, it was assumed that approximately 1 square mile would be required.

Distance from Rail/Length of New Rail

The Project requires lime and limestone for use in stack emission scrubbers and water treatment facilities. Lime/limestone will likely be delivered by rail to the site location from the Frannie Lime Plant, a limestone processing plant owned by Basin Electric near Frannie, WY.

Sites that require less construction of new rail were ranked higher than sites requiring construction of new rail.

Distance from Coal/Length of Conveyor

The Project requires coal to be delivered to the power plant site. Coal will be delivered by either truck or conveyor, depending on the most economical alternative. For the purpose of this analysis, conveyor locations were estimated so that miles of conveyor could be calculated and compared against one another. Sites that resulted in coal delivery flexibility to multiple mines (such as the Dry Fork, Eagle Butte and Clovis mines) were considered more desirable. Conveyor locations were identified along existing railroads and along new railroad spurs required for lime/limestone delivery. Sites that would require the least construction of conveyor were ranked higher than sites requiring more rail.

Distance from Public Road Access

Public access is required in order to provide construction and operation access to the site. Basin Electric will consider constructing new access; sites that require considerable new access, however, were ranked lower than sites that require limited access. Distance from public road access also provided a preliminary screening for site reconnaissance.

Number of Road Crossings for Rail

As described above, existing and new rail will be used for delivery of lime/limestone. Where new or existing rail crosses a public road, issues such as safety, traffic, and engineering were evaluated.

Number of River/Stream/Creek Crossings for New Rail

Where new rail crosses rivers, streams, or creeks, the rail will need to be constructed in a manner to ensure environmental compliance. Design and construction of these crossings may require additional federal, state, and local permits as well as additional engineering.

Number of Road Crossings for Conveyor

As described above, existing and new rail will be used as the primary siting corridor for the construction of conveyors, if they are selected over trucking. Where new conveyors cross roads, whether they are public or private, considerable engineering will be required in order to construct the conveyor in a way that reduces environmental, land use, and economic impacts.

Table 3 Candidate Sites Comparison

Criteria / Score / Rank	Site 01	Site 02	Site 03	Site 04	Site 05	Site 06	Site 07	Site 08	Site 09	Site 10	Site 11	Site 12	Site 13	Site 14	Site 15	Site 16	Site 17
Area of Site (Acres)	654	1283	645	690	1020	523	325	474	694	686	251	776	366	500	265	297	920
Distance from Rail / Length of New Rail (Miles)	3.8	2.8	1.8	0.5	0	0	0	0	2.4	1.2	0	0	0	0.5	2.2	3	0
Score (1 - 11)	11	9	5	2	1	1	1	1	8	3	1	1	1	2	7	10	1
Distance from Coal / Length of Conveyor* (Miles)	8.9	4.6	3.6	2.3	1.7	0	0	2	7.6	9.4	5.1	3.7	4.3	8.2	10	10.8	12.5
Score (1 - 32)	21	14	9	7	4	1	1	5	18	23	15	10	12	19	24	26	28
Distance from State or County Roads (Miles)	1.1	1.1	0	0	0	0	0.3	0	2.5	0	2.5	1.2	0.5	0.3	0	0.5	0
Score (1 - 9)	5	5	1	1	1	1	2	1	9	1	9	6	3	2	1	3	1
Number of Public Road Crossings for New Rail	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Score (1 - 3)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Number of River/Stream/Creek Crossings for New Rail	2	2	2	0	0	0	0	0	2	1	0	0	0	1	2	3	0
Score (1 - 4)	3	3	3	1	1	1	1	1	3	2	1	1	1	2	3	4	1
Number of Road Crossings for Conveyor	1	0	0	0	1	0	0	1	1	2	1	1	1	1	2	2	3
Score (1 - 8)	2	1	1	1	2	1	1	2	2	3	2	2	2	2	3	3	4
Number of River/Stream/Creek Crossings for Conveyor	5	3	30	0	0	0	0	0	5	7	3	2	1	5	6	7	6
Score (1 - 9)	6	4	4	1	1	1	1	1	6	8	4	3	2	6	7	8	7
Total Score	49	37	24	14	11	7	8	12	47	41	33	24	22	34	46	55	43
Northern Sites Rank	16	10	7	5	3	1	2	4	14	11	8	7	6	9	13	17	12
Southern Sites Rank	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Overall Rank	**25**	**18**	**12**	**7**	**5**	**1**	**2**	**6**	**23**	**20**	**15**	**12**	**10**	**16**	**22**	**26**	**21**

*Distances were taken from Dry Fork Mine for northern sites (sites 1-21) and from Cordero-Rojo Complex for southern sites (sites 22-33)

Color Key

Tier 1 Sites
Tier 2 Sites
Tier 3 Sites

Criteria / Score / Rank	Site 18	Site 19	Site 20	Site 21	Site 22	Site 23	Site 24	Site 25	Site 26	Site 27	Site 28	Site 29	Site 30	Site 31	Site 32	Site 33
Area of Site (Acres)	657	715	646	4410	1202	1783	645	692	497	643	570	457	678	549	1018	628
Distance from Rail / Length of New Rail (Miles)	0	1.4	2	0	0	0	0	0	0	0	0	0	0	1.2	0	0
Score (1 - 11)	1	4	6	1	1	1	1	1	1	1	1	1	1	3	1	1
Distance from Coal / Length of Conveyor* (Miles)	14.9	17.4	20.4	16	12.3	10.3	9.25	6.6	5.5	4.5	2.3	0.6	0.3	2.6	4.3	8.9
Score (1 - 32)	29	31	32	30	27	25	22	17	16	13	6	3	2	8	11	20
Distance from State or County Roads (Miles)	0	0	0	0	0.8	0	0.5	0	0	0	1.7	0	0	0	0	1.6
Score (1 - 9)	1	1	1	1	4	1	3	1	1	1	8	1	1	1	1	7
Number of Public Road Crossings for New Rail	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Score (1 - 3)	1	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1
Number of River/Stream/Creek Crossings for New Rail	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0
Score (1 - 4)	1	2	1	1	1	1	1	1	1	1	1	1	1	3	1	1
Number of Road Crossings for Conveyor	4	6	7	5	1	1	1	1	1	1	1	1	1	1	1	1
Score (1 - 8)	5	7	8	6	2	2	2	2	2	2	2	2	2	2	2	2
Number of River/Stream/Creek Crossings for Conveyor	7	8	8	7	6	6	5	4	4	3	1	0	0	3	1	1
Score (1 - 9)	8	9	9	8	7	7	6	5	5	4	2	1	1	4	2	2
Total Score	46	56	60	48	43	38	36	28	27	23	21	10	9	22	19	34
Northern Sites Rank	13	18	19	15	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Southern Sites Rank	-----	-----	-----	-----	12	11	10	8	7	6	4	2	1	5	3	9
Overall Rank	**22**	**27**	**28**	**24**	**21**	**19**	**17**	**14**	**13**	**11**	**9**	**4**	**3**	**10**	**8**	**16**

*Distances were taken from Dry Fork Mine for northern sites (sites 1-21) and from Cordero-Rojo Complex for southern sites (sites 22-33)

Color Key

Tier 1 Sites
Tier 2 Sites
Tier 3 Sites

Number of River/Stream/Creek Crossings for Conveyor

As described above, the existing and new rail will be used as the primary siting corridor for the construction of conveyors. Where conveyors cross rivers, streams, or creeks, extensive engineering will be necessary. In some instances the conveyor may span over the water source, whereas in other instances, boring may be required. Design and construction of these crossings may require additional federal, state, and local permits as well as additional engineering in order to reduce environmental, land use, and economic impacts.

Distance to the Closest Coal Load Out Sources

For each site, the distance to the three closest coal load outs were calculated, averaged, and ranked. Sites with the lowest averaged distance to coal load outs ranked the highest. For the purpose of this analysis, the coal load outs were based on information provided in the coal supply proposals and the distance was based on existing and assumed new rail routes.

Summary of Pre-Site Reconnaissance Comparison of Sites

Table 3 Candidate Sites Comparison illustrates the comparative analysis and resulting ranking of the 33 sites. Several sites showed few impacts with respect to the criteria above.

Site Reconnaissance

During August 16 - 18, 2004, a site reconnaissance team comprised of Basin Electric, CH2M HILL, and EDAW representatives evaluated 36 potential power plant sites, including the 33 sites that were identified prior to site reconnaissance and 3 additional sites that were identified after meeting with mine operations personnel. The site reconnaissance team evaluated sites from a helicopter and on the ground by driving to the sites where access was available. The site reconnaissance team based the site evaluation process on a number of criteria in order to ground truth the mapped data that was previously acquired. Ground truthing the resource information consisted of focusing on the following criteria:

- Land area within floodplain
- Surface water or drainage precluding a larger area of use
- Existing ecological sensitivities
- Potential for hazardous contamination
- Visual sensitivity based on elevation, topography, and/or viewpoints
- Current and adjacent land use compatibility, including structures within ½ mile

- Overall feasibility of transmission line, conveyor supply, solid waste disposal (primarily fly ash), road access, and rail access
- Site that can accommodate plant facilities without unreasonable civil work

The site reconnaissance team categorized the sites into three levels of consideration. These levels of consideration included Tier 1, Tier 2, and Tier 3 sites. Tier 1 sites were identified as feasible sites and selected for further analysis, Tier 2 sites would only be considered if air permitting issues arose at Tier 1 sites, and Tier 3 sites were eliminated from further consideration.

Tier 1 consists of sites that present the best opportunities for a power plant site. The boundaries of many of these sites were reconfigured from the initial site identification process; the general location of the power plant site remained the same, however. The Tier 1 sites included a new Dry Fork Site (near Silo), a new Dry Fork Site (close to Garner Lake Road), a new Ft. Union Site, as well as sites 6, 11, 12, 13 and 14 and are shown on **Figure 16 Preferred Candidate Sites**. The preferred candidate sites, some of which were previously labeled with numbers, were renamed with the letters A through H. The following information identifies the Tier 1 sites and the rationale associated with their preferred status.

Tier 1 Level of Consideration

Site A (newly identified Dry Fork – Near Silo Site)

Site A was identified during site reconnaissance and discussions with Dry Fork Mine operations personnel. The terrain of Site A is flat and ash could be disposed of at the mine. A limited length of conveyor, if any, would be required. The site contains very small acreage and the existing rail loop and mine allow for a smaller area to be needed for the power plant. A separate rail loop would likely have to be developed and the Dry Fork access road would need to be relocated. The area east of the “BLM burn line,”, is a line delineating the coal deposits able to be mined, was the westerly boundary of the site. According to the BLM and the research they have conducted regarding the coal seam boundary, the geology west of the BLM burn line will likely have the most opportunity for coal and therefore, the area east of the BLM burn line is of higher opportunity since it will not likely be mined.

Site B (newly identified Dry Fork – Garner Road Site)

Site B was added during site reconnaissance. The terrain of the Site B is flat to the south and a bit hilly south of the Dry Fork access road and west of Garner Lake Road. Ash could be placed at the mine and a limited length of conveyor, if any, would be required. The Dry Fork Burn line limits the site on the west, and the existing rail loop and mine allow for a smaller area to be needed for the power plant. The proximity of Site B to Garner Lake Road may result in air permitting issues. The area east of the “BLM burn line” a line delineating the coal

Figure 16 Preferred Candidate Sites

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deposits able to be mined, was the westerly boundary of the site. According to the BLM and the research they have conducted regarding the coal seam boundary, the geology west of the BLM burn line will likely have the most opportunity for coal and therefore, the area east of the BLM burn line is of higher opportunity since it will not likely be mined.

Site C (formerly Site 5)

Agricultural land use covers Site C and there are only a few residences in the area. The size of the site would accommodate the Project, however a dry lake bed associated with Garner Lake and ridges onsite would constrain the development footprint of the Project to the east side of the site. Because of the dry lakebed, there were concerns that the recharge in this area could potentially be higher in this area. Due to the power plant operations and ash land filling, recharge areas should be avoided. For this reason, the site was constrained on the north by the dry lakebed. Railroad access would enter the site from the south, between the ridges. Storage of existing processing equipment adjacent to the site would require further research and the 69kV line crossing the site would need to be relocated.

Site D (newly identified Ft. Union Site)

Site D was added during site reconnaissance. The terrain of Site D is generally flat, and ash disposal could potentially be placed at the adjacent Fort Union Mine. A railroad is adjacent to the site on the south and west. A 69kV line crossing the site would need to be relocated.

Site E (formerly Sites 13 and 14)

Site E combines Sites 13 and 14 to result in sufficient acreage for the Project. A dry pond area located in a floodplain would require mitigation.

Site G (formerly Sites 11 and 12)

Site G combines Sites 11 and 12, because Site 11 was too small by itself and expanding the site boundary to include Site 12 would provide sufficient acreage for the power plant. The relatively flat terrain of the site would accommodate road access, rail, and conveyor. There are oil wells onsite and a 69kV line crossing the site may need to be relocated. Pock holes onsite would require additional research to determine the geologic conditions.

Site H (formerly Site 6)

Site H had initially been eliminated from consideration during Phase 2 because the parcel was too small to accommodate ash disposal. After further evaluation, it was determined that Site H had adequate space for the power plant site if ash were disposed off-site at the Dry Fork mine. For this reason, the site was included for further analysis in Phase 3.

Tier 2 and Tier 3 Sites Level of Consideration

Tier 2 level of consideration consists of two sites that have the potential to be feasible locations, yet they are less desirable than Tier 1 sites. The Tier 2 sites, Sites 17 and 28 would present alternatives to Tier 1 sites if air permitting issues arise at Tier 1 sites. However, construction on Tier 2 sites would be costly due to distance to the mine, resulting in increased length of conveyor (e.g., Site 17) and/or civil work that would be required to make the sites feasible for construction.

The remaining 26 Tier 3 sites were eliminated from consideration due to the distance to the north mines, which had the lowest cost and terrain. The level of consideration and more specific rationale associated with this determination is provided in **Appendix D Siting Rationale for Elimination of Candidate Sites.**

Phase 3: Site Refinement, Comparative Analysis and Site Selection

Site Refinement

In an effort to accurately measure the impacts of the eight power plant sites, Sites A through H as identified in Phase 2, general arrangements were prepared using parcel boundaries, contours, wind roses, and proximity to existing and proposed infrastructure such as railroads, conveyors, and access.

For Sites A, D, and G, alternative general arrangements were developed within the original site boundaries, creating Sites A2, D2, and G2, which were included for further analysis. For Site E, the site boundary was expanded to create an alternative general arrangement for Site F. The following summarizes how the alternative general arrangements differ from the originals.

- Site A2 is different than Site A in that the entire power plant is rotated approximately 45 degrees in order to accommodate the topography.
- Site D2 is different than Site D in that the entire power plant and ash-storage layout is located due east and southeast of the Fort Union Mine; whereas, Site D had the entire plant and ash-storage layout located north and east of the Fort Union Mine.
- Site F has ash-disposal and a rail loop due east of the power plant site, whereas Site E has the on-site ash disposal and rail loop northeast of the power plant site. Site F also includes an additional parcel south and east of Site E.
- Site G2 does not include an area for on-site ash disposal, whereas Site G has on-site ash storage. It is assumed that ash will be disposed of at the Dry Fork or Clovis Mine.

A set of maps showing each of the eleven sites is provided on **Figures 16-1** through **16-11.**

Prior to quantifying impacts, a number of assumptions were considered. Site by site assumptions are listed in **Table 4 General Arrangement Infrastructure Assumptions**, but generally the following global assumptions were applied:

- Garner Lake Road will be relocated to the east due to mining activities.
- Coal will primarily be delivered from Dry Fork Mine. If coal cannot be delivered from Dry Fork Mine, coal will be delivered from the Clovis Mine.
- The Dry Fork Mine operations will move to the east. By 2012, a newly mined area will be directly west of the proposed sites E, F, G, and G2.

Site Evaluation Methodology (Criteria)

This portion of Phase 3 of the siting study will consist of a detailed comparative analysis of possible siting areas. The 11 alternative sites (A, A2, B, C, D, D2, E, F, G, G2, and H) resulting from the Phase 2 and site refinement phase of Phase 3 were subjected to additional evaluation using even more refined and detailed criteria in Phase 3.

The comparative evaluation included the quantification of the following site evaluation criteria:

- Land Use
- Environmental
- Operational Considerations
- Cost

For each comparative evaluation criterion, sub criteria were created. For example, under the land use criterion, land use sub criteria such as proximity to residences and aesthetics were evaluated. More detailed descriptions of these criteria are identified below and are quantified in **Table 5 Preferred Sites Comparison Siting Matrix.**

Ranking of Sites

Score Ranking

A rank and weight score was generated for each of the sub criteria. The rank score is a result of comparing each site to another and ranking the site in order of suitability.

For example, “Proximity to Residences” was compiled using GIS. The sites with the least number of homes in proximity ranked as being the relatively best site. The rank totals were then compared between sites. The sites with the lowest scores were regarded as the most suitable.

Score Weighting

For the purposes of this analysis, each criterion was weighted based on its overall importance to the siting evaluation. Applying weights was necessary in order to accurately compare and evaluate impacts on the sites. Weighting different criteria allows for decision-making of which alternatives are more suitable than others. Different criteria can be given different weights based on their importance or severity of their impacts. The weighting factors assumed the following:

- Criteria identified for the application to site selection would be initially established by team consensus,
- Each criterion in the selection process would, by their nature, have unequal weight (a criterion such as air quality can render a site unusable while the presence of a wetland may be subject to reasonable mitigation); and
- The criteria for each site, where present, would be valued on a numeric scale of 1 through 5 with one (1) being the best score (most desirable) and five (5) being the worst score (least desirable) for the criteria. The lowest total score would be the most desirable for development. A description of the weighting factors 1 through 5 are described in detail below.

Weighting Factor 5: A weighting factor of 5 represents a major economic and/or physical factor, or combination of factors, that constitute a "fatal flaw" or long term onerous economic impact to development or future operations to render the project unfeasible on that site.

Weighting Factor 4: A weighting factor of 4 signifies the presence of a major economic or physical factor, or combination of factors, of which do not isolate a "fatal flaw," yet represents long term unfavorable economic impact to the viability of the site development.

Weighting Factor 3: A weighting factor of 3 represents a major economic or physical factor, or combination of factors. These factors present risks and/or economic impacts that are unavoidable in the normal course of development. This includes elements that may be necessary to satisfy future operational flexibility and/or regulatory constraints for the power plant site, which do not by themselves, constitute a "fatal flaw," but represent long term unfavorable economic impact to the viability of site development.

Figure 16-1 Site A Detail

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Figure 16-2 Site A2 Detail

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Figure 16-3 Site B Detail

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Figure 16-4 Site C Detail

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Figure 16-5 Site D Detail

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Figure 16-6 Site D2 Detail

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Figure 16-7 Site E Detail

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Figure 16-8 Site F Detail

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Figure 16-9 Site G Detail

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Figure 16-10 Site G2 Detail

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Figure 16-11 Site H Detail

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Table 4 General Arrangement Infrastructure Assumptions

Site	Coal Delivery Point	Fly Ash Disposal	Coal Storage/ Conveyor	Rail	New Access	Improved/Existing Access	Transmission Line Relocation	Natural Gas Pipeline
A	Primary = Silos at northeast side of Dry Fork Secondary = Clovis Barn	Dry Fork- future mined area west of plant	Dry Fork	New rail loop will be constructed north/northeast of the plant, west of Garner Lake Road.	None	Garner Lake Road will primarily serve the plant. The Dry Fork access road will need to go above or underneath the railroad tracks.	NA	Natural Gas pipeline will be tapped at the metering station southwest of plant along parcel boundary between Burkhardt and Wyodak properties. Confirmation is needed for feasibility (volume/pressure).
A2	Primary = Silos at northeast side of Dry Fork Secondary = Clovis Barn	Dry Fork- future mined area west of plant	Dry Fork	New rail loop will be constructed north/northeast of the plant, west of Garner Lake Road.	None	Garner Lake Road will primarily serve the plant. The Dry Fork access road will need to go above or underneath the railroad tracks.	NA	Natural Gas pipeline will be tapped at the metering station southwest of plant along parcel boundary between Burkhardt and Wyodak properties. Confirmation is needed for feasibility (volume/pressure).
B	Primary = Silos at northeast side of Dry Fork Secondary = Clovis Barn	Dry Fork- future mined area west of plant	Dry Fork	New rail loop will be constructed north of the plant, connecting with the main line rail west of Garner Lake Road.	None	Garner Lake Road will primarily serve the plant. The Dry Fork access road will need to be rerouted and may have to cross the new rail loop.	NA	Natural Gas pipeline will be tapped at the metering station southwest of plant along parcel boundary between Burkhardt and Wyodak properties. Confirmation is needed for feasibility (volume/pressure).
C	Primary = Silos at northeast side of Dry Fork Secondary = Clovis Barn	Ft. Union Mine	Coal storage inside rail loop. Conveyor would cross Garner Lake Road and main line rail.	New rail loop would access main line and head east. Due to elevation change, fill, trestle and/or culverts will be needed.	Approximately 800 feet of new access required from private road to plant.	Plant will use a private road on Total Construction property. The road will be routed under the railroad tracks. Plans need to be developed to determine access for adjacent residences.	A section of existing 69kV transmission line would need to be relocated to the west side of the proposed power plant.	Natural Gas pipeline will be tapped at the metering station southwest of plant along parcel boundary between Burkhardt and Wyodak properties. Confirmation is needed for feasibility (volume/pressure).

Site	Coal Delivery Point	Fly Ash Disposal	Coal Storage/ Conveyor	Rail	New Access	Improved/Existing Access	Transmission Line Relocation	Natural Gas Pipeline
D	Primary = Silos at northeast side of Dry Fork Secondary = Clovis Barn	Ft. Union Mine	Coal storage inside rail loop. Conveyor would cross Garner Lake Road and main line rail.	New rail loop would access main line and head north and west.	Approximately 1400 feet of new access required from private road to plant.	Use a private road on Total Construction property. The road will be routed under the railroad tracks. Plans need to be developed to determine access for adjacent residences.	A section of existing 69kV transmission line would need to be relocated to the east side of the proposed power plant.	Natural Gas pipeline will be tapped at the metering station southwest of plant along parcel boundary between Burkhardt and Wyodak properties. Confirmation is needed for feasibility (volume/pressure).
D2	Primary = Silos at northeast side of Dry Fork Secondary = Clovis Barn	Ft. Union Mine	Inside rail loop- Conveyor would cross at Garner Lake Road and at main line rail.	New rail would access north and east of the main line.	Less than 1000 feet of new access required from private road to plant.	Use a private road on Total Construction property. The road will be rerouted under the railroad tracks. Plans need to be developed to determine access for adjacent residences.		Natural Gas pipeline will be tapped at the metering station southwest of plant along parcel boundary between Burkhardt and Wyodak properties. Confirmation is needed for feasibility (volume/pressure).
E	Primary = Future Dry Fork Mine operation near current Burkardt property. Secondary = Clovis Barn	Dry Fork- future mined area (completed in 2012) west of Garner Lake Road. On-site or at Clovis Point Mine	Coal storage inside rail loop. Conveyor would cross rerouted Garner Lake Road.	New rail loop would access main line and head west.	New access constructed east off rerouted Garner Lake Road.	Reroute Garner Lake Road	NA	Natural Gas pipeline will be tapped at the metering station southwest of plant along parcel boundary between Burkhardt and Wyodak properties. Confirmation is needed for feasibility (volume/pressure).
F	Primary = Future Dry Fork Mine operation near current Burkardt property. Secondary = Clovis Barn	Dry Fork- future mined area (completed in 2012) west of Garner Lake Road, On-site or at Clovis Point Mine	Coal storage inside rail loop. Conveyor would cross rerouted Garner Lake Road.	New rail loop would access main line and head west.	New access constructed east off rerouted Garner Lake Road.	Reroute Garner Lake Road	NA	Natural Gas pipeline will be tapped at the metering station southwest of plant along parcel boundary between Burkhardt and Wyodak properties. Confirmation is needed for feasibility (volume/pressure).

Site	Coal Delivery Point	Fly Ash Disposal	Coal Storage/ Conveyor	Rail	New Access	Improved/Existing Access	Transmission Line Relocation	Natural Gas Pipeline
G	Primary = Future Dry Fork Mine operation near current Burkardt property. Secondary = Clovis Barn	Clovis Point Mine and Dry Fork- future mined area (completed in 2012) west of Garner Lake Road or On-site	Coal storage inside rail loop. Conveyor would cross rerouted Garner Lake Road.	New rail loop would access main line and head west. Rail would parallel the Clovis Point Mine road.	New access constructed east off rerouted Garner Lake Road, north of the existing Clovis Point Mine road.	Reroute Garner Lake Road	NA	Natural Gas pipeline will be tapped at the metering station southwest of plant along parcel boundary between Burkhardt and Wyodak properties. Confirmation is needed for feasibility (volume/pressure).
G2	Primary = Future Dry Fork Mine operation near current Burkardt property. Secondary = Clovis Barn	Clovis Point Mine and Dry Fork- future mined area (completed in 2012) west of Garner Lake Road	Coal storage inside rail loop. Conveyor would cross rerouted Garner Lake Road.	No rail loop for coal delivery. Coal would be directly conveyed from Clovis Barn	New access constructed east off rerouted Garner Lake Road, north of the existing Clovis Point Mine road.	Reroute Garner Lake Road	NA	Natural Gas pipeline will be tapped at the metering station southwest of plant along parcel boundary between Burkhardt and Wyodak properties. Confirmation is needed for feasibility (volume/pressure).
H	Primary = Dry Fork Mine - South Pit Secondary = Clovis Barn	Dry Fork	Dry Fork	New rail loop will be constructed north/northwest of existing Dry Fork Loop.	Access from Highway 59	State Highway 59	NA	Natural Gas pipeline will be tapped at the metering station southwest of plant along parcel boundary between Burkhardt and Wyodak properties. Confirmation is needed for feasibility (volume/pressure).

* All assumptions are based on most likely scenarios

Table 5 Preferred Sites Comparison Siting Matrix

Weighting Factor	Site	A	A2	B	C	D	D2	E	F	G	G2	H
Land Use												
	Area of Site (Acres)	205	205	330	1780	1393	1393	555	717	1207	1207	353
3	Rank	10	10	9	1	1	1	7	6	1	1	8
	Score	30	30	27	3	3	3	21	18	3	3	24
	Residences / Structures (Not Associated With Mine) Within 0.5 Mile of Site	3	3	3	4	5	5	4	4	1	1	1
2	Rank	4	4	4	7	10	10	7	7	1	1	1
	Score	8	8	8	14	20	20	14	14	2	2	2
	Traffic & Safety Impacts	Garner Lake Road is primarily used by coal trucks	Garner Lake Road is primarily used by coal trucks	Garner Lake Road is primarily used by coal trucks	Garner Lake Road is primarily used by coal trucks	Garner Lake Road is primarily used by coal trucks	Garner Lake Road is primarily used by coal trucks	Garner Lake Road is primarily used by coal trucks	Garner Lake Road is primarily used by coal trucks	Garner Lake Road is primarily used by coal trucks	Garner Lake Road is primarily used by coal trucks	Heavy use of Hwy 59 by construction and operations
1	Rank	1	1	1	4	10	9	4	4	4	4	10
	Score	1	1	1	4	10	9	4	4	4	4	10
	Impact from New Transmission Line to Hughes Substation (Parcels Crossed)	22	22	22	20	20	20	26	26	23	23	23
1	Rank	4	4	4	1	1	1	10	10	7	7	7
	Score	4	4	4	1	1	1	10	10	7	7	7
	Impact from New Transmission Line to Carr Draw Substation (Parcels Crossed)	11	11	11	13	13	13	16	16	13	13	19
1	Rank	1	1	1	4	4	4	9	9	4	4	11
	Score	1	1	1	1	4	4	9	9	4	4	11
	Impact to Visual Aesthetics from public roadways	Moderate	Moderate	High	Moderate	Low	Low	Moderate	High	Low	Low	High
2	Rank	5	5	9	5	1	1	5	9	1	1	9
	Score	10	10	18	10	2	2	10	18	2	2	18

Weighting Factor	Site	A	A2	B	C	D	D2	E	F	G	G2	H
	Impact from Construction of New Rail (Parcels Crossed)	1	1	1	6	3	3	5	5	1	1	1
2	Rank	1	1	1	11	7	7	9	9	1	1	1
	Score	2	2	2	22	14	14	18	18	2	2	2
	Land Use Score Total	**56**	**56**	**61**	**55**	**54**	**53**	**86**	**91**	**24**	**24**	**74**
	Land Use Overall Rank	**6**	**6**	**8**	**5**	**4**	**3**	**10**	**11**	**1**	**1**	**9**

Environmental

	Area in Floodplain (Acres)	7	7	12	11	12	12	6	6	10	10	6
1	Rank	4	5	9	8	10	10	1	1	6	6	3
	Score	4	5	9	8	10	10	1	1	6	6	3
	Ash Disposal - off site options	Dry Fork	Dry Fork	Dry Fork	Truck to Dry Fork	Truck to Dry Fork	Truck to Dry Fork	Truck to Dry Fork/Clovis	Truck to Dry Fork/Clovis	Clovis	Clovis	Dry Fork
2	Rank	1	1	1	7	7	7	7	7	5	5	1
	Score	2	2	2	14	14	14	14	14	10	10	2
	Impact to Wetland/Riparian Areas	NWI data indicates 1 isolated wetland in areas of low elevation *Dry Fork indicated there may be wetlands issues here in addition to NWI data.	NWI data indicates 1 isolated wetland in areas of low elevation *Dry Fork indicated there may be wetlands issues here in addition to NWI data.	NWI data indicates 2 isolated wetlands in areas of low elevation	NWI data indicates wetlands in area of Garner Lake and along drainage in center of site and drainage in eastern portion of site	NWI data indicates 5 larger isolated wetlands in areas of low elevation through center of site	NWI data indicates 5 larger isolated wetlands in areas of low elevation through center of site	NWI data indicates 2 larger isolated wetlands in areas of low elevation	NWI data indicates 2 small and 2 larger isolated wetlands in areas of low elevation	NWI data indicates 5 small isolated wetlands in areas of low elevation	NWI data indicates 5 small isolated wetlands in areas of low elevation	NWI data indicates 0 wetlands. Aerial imagery indicates that there may be wetlands in SE corner of the site
1	Rank	1	1	4	11	7	7	6	4	7	7	3
	Score	1	1	4	11	7	7	6	4	7	7	3
	Proximity to Known Threatened, Endangered & Sensitive Species	No known T&E species locations, no known Sage Grouse Leks on site	No known T&E species locations, no known Sage Grouse Leks on site	No known T&E species locations, no known Sage Grouse Leks on site	No known T&E species locations, no known Sage Grouse Leks on site	No known T&E species locations, no known Sage Grouse Leks on site	No known T&E species locations, no known Sage Grouse Leks on site	No known T&E species locations, no known Sage Grouse Leks on site	No known T&E species locations, no known Sage Grouse Leks on site	No known T&E species locations, no known Sage Grouse Leks on site	No known T&E species locations, no known Sage Grouse Leks on site	No known T&E species locations, no known Sage Grouse Leks on site

Weighting Factor	Site	A	A2	B	C	D	D2	E	F	G	G2	H
1	Rank	1	1	1	1	1	1	1	1	1	1	1
	Score	1	1	1	1	1	1	1	1	1	1	1
	Air Permitting (High, Medium, Low Risk)	High - Close to Dry Fork; possible impact to Mine permit	High - Close to Dry Fork; possible impact to Mine permit	High- Close to Dry Fork and Next to Garner Lake Road	Moderate - Next to Garner Lake Road and near Dry Fork	Low	Low	High - Next to Clovis/ Garner Lake Road	High - next to Clovis/Garner Lake Road	Low	Low	High-Next to Hwy/ RR/ and Dry Fork
5	Rank	9	9	9	5	1	1	6	6	1	1	6
	Score	45	45	45	25	5	5	30	30	5	5	30
	Environmental Score Total	**52**	**54**	**61**	**59**	**37**	**37**	**52**	**50**	**29**	**29**	**39**
	Environmental Overall Rank	**7**	**9**	**11**	**10**	**3**	**3**	**7**	**6**	**1**	**1**	**5**

Operational Considerations (Flexibility/Independence)

	Land Ownership/Land Availability (Cost); potential to delay startup date	Western Fuels	Western Fuels	Western Fuels	Total Construction	Landrica, Total Construction	Landrica, Total Construction	Burkhardt, State, WY Coal Resources	Burkhardt, State, Wyodak, WY Coal Resources	Wyodak, Vella Allen, Landrica	Wyodak, Vella Allen, Landrica	Western Fuels
5	Rank	1	1	1	5	6	6	8	8	8	8	1
	Score	5	5	5	25	30	30	40	40	40	40	5
	Fuel supply security	Dry Fork	Dry Fork	Dry Fork	Moderate conveyor risk	High conveyor risk	High conveyor risk	Moderate conveyor risk/Clovis backup	Moderate conveyor risk/Clovis backup	Clovis	Clovis	Dry Fork/ Rawhide/ Buckskin
4	Rank	2	2	2	9	10	10	7	7	2	2	1
	Score	8	8	8	36	40	40	28	28	8	8	4
	Rail independence	Dry Fork Spur	Dry Fork Spur	Dry Fork Spur	BN	BN	BN	BN or Kfx	BN or Kfx	Clovis Spur	Clovis Spur	Rawhide/ Buckskin Spur
1	Rank	1	1	1	4	4	4	8	8	8	8	4
	Score	1	1	1	4	4	4	8	8	8	8	4
	Site development expediency once permitted	Major site prep required	Major site prep required	Good access; moderate site prep	Minimal site prep/good access	Difficult access; moderate site prep	Difficult access; moderate site prep	Good access minimal site prep	Good access; minimal site prep	Fair access; major site prep	Fair access; major site prep	Minimal site prep; good access
3	Rank	10	10	5	1	6	6	1	1	8	8	1
	Score	30	30	15	3	18	18	3	3	24	24	3

Weighting Factor	Site	A	A2	B	C	D	D2	E	F	G	G2	H
	Operational Considerations Score Total	**44**	**44**	**29**	**68**	**92**	**92**	**79**	**79**	**80**	**80**	**16**
	Operational Considerations Overall Rank	**3**	**3**	**2**	**5**	**10**	**10**	**6**	**6**	**8**	**8**	**1**

Cost

	42 Year NPV ($ Million)	$1,172	$1,180	$1,179	$1,193	$1,206	$1,204	$1,182	$1,184	$1,191	$1,185	$1,180
3	Rank	1	3	1	8	10	10	3	3	8	3	3
	Score	3	9	3	24	30	30	9	9	24	9	9
	Score Total	**155**	**163**	**154**	**206**	**213**	**212**	**226**	**229**	**157**	**142**	**138**
	Overall Rank	**4**	**6**	**3**	**7**	**9**	**8**	**10**	**11**	**5**	**2**	**1**

Weighting Factor	Scoring System*
	Weighting Factor Criteria
5	A major economic or physical factor, or combination of factor attributes that, where present, constitute a "fatal flaw" or long term onerous economic impact to development or future operations to render the project unfeasible on that site.
4	Presence of a major economic or physical factor, or combination of the two attributes, the impacts of which does not isolate a "fatal flaw" to the project, yet represents long term unfavorable economic impact to the viability of the site development.
3	A major economic or physical factor, or combination of attributes that present risks and or economic impacts that are unavoidable in the normal course of development. Elements that may be necessary to satisfy future operational flexibility and or regulatory constraints for the particular site yet do not by themselves constitute a "fatal flaw" to the project, yet represents long term unfavorable economic impact to the viability of site development.
2	Possibly a physical factor of some less significant economic value that has a measured potential for negatively impacting the project development schedule or time line yet would not constitute a "fatal flaw" or render the site economically unfeasible or unsuitable for development.
1	Usually any factor of little consequence or one that has a strong potential for economically reasonable and acceptable mitigation when viewed from the perspective of the overall economic feasibility of the project development of that particular site.

* See Site Comparison Matrix: Factor Weighting for more detailed information on this scoring system

Weighting Factor 2: A weighting factor of 2 signifies a physical factor of less significant economic value that has a measured potential for negatively impacting the Project development schedule, yet would not constitute a "fatal flaw" or render the site economically unfeasible or unsuitable for development.

Weighting Factor 1: A weighting factor of 1 usually represents any factor of little consequence or one that has a strong potential for economically reasonable and acceptable mitigation when viewed from the perspective of the overall economic feasibility of the Project development in regard to a particular power plant site.

The total score resulting from the Phase 3 scoring analysis is intended to be a way of efficiently summarizing data collected for each alternative site and to be a guide in eliminating some sites and selecting the overall best sites for further analysis. The result was a measure of relative suitability between alternative sites, not an absolute quantitative assessment of the suitability of any one site. The scores from this process are shown **Table 5 Preferred Sites Comparison Siting Matrix.**

Comparative Analysis

For each of the four major comparative analysis criterion (land use, environmental, operational considerations and cost), sub criteria were identified and evaluated. These sub criteria were evaluated by potential power plant site and collectively totaled and ranked by each major comparative analysis criterion. A description of each criterion follows.

- Total Area of Site
- Topography
- Minimum Distance to Competitive Rail
- Minimum Distance to Transmission Injection
- Water Supply Feasibility
- Agriculture on Site
- Residences within Site Boundary and or within 0.5 Mile of Site
- Air Permitting Qualitative Assessment
- Local Government Permitting Qualitative Assessment
- Ecological Impacts

Land Use

Land use criteria consisted of an evaluation of the site for:

- Residences/Structures;

- Traffic and safety impacts;
- Impact of transmission interconnection
- Impact to visual aesthetics from Garner Lake Road;
- Highway 59 (for Site H only); and
- Impact of newly constructed rail.

Area of Site

The area of the site required for the general arrangement and related facilities was quantified based on the higher the acreage, the better the site. This sub criterion had a weighting factor of 3. A number of the sites exceeded 1,000 acres and therefore were given a score of 1, whereas smaller sites were given lower rankings.

Residences / Structures (Not associated within 0.5 mile of the Mine)

The number of residences/structures within 0.5 mile of each alternative site was used as an indicator of likely immediate impacts to the local community. Residences/structures within this distance were counted using aerial photography, and therefore may include an unoccupied barn or historic structures. In general, the entire Project Area is secluded from dense residential development.

This sub criterion had a weighting factor of 2. Scores of between 1 and 11 were applied, with the highest suitability values being applied to the sites with the lowest number of nearby houses. The sites with the highest number of nearby residences were sites D and D2.

Sites G, G2, and H had one structure within 0.5 mile and received the maximum suitability score for this criterion. The remaining sites had three or four structures within 0.5 mile.

Traffic and Safety Impacts

Suitability values were evaluated and applied to each of the proposed power plant sites on the basis of traffic and safety impacts. Generally, all potential sites have similar traffic impacts since most of them will use Garner Lake Road or Highway 59 for access and therefore, were all given a score of 1. This sub criterion had a weighting factor of 1.

Impact of Transmission Interconnection

For the purpose of this analysis, the number of parcels crossed as a result of constructing new transmission from each proposed power plant site to both the Hughes and Carr Draw Substation was calculated. Scores of between one and eleven were applied, with the highest suitability values being applied to the sites with the lowest number of parcels crossed.

This sub criterion had a weighting factor of 1. Depending on the power plant site selected, for construction of a transmission line to the Hughes Substation, between 20 and 26 parcels would be crossed. Sites C, D, and D2 would result in the least number of parcels crossed for new construction of a transmission line to the Hughes Substation. Depending on the power plant site selected for construction of a transmission line to the Carr Draw Substation, between 11 and 19 parcels would be crossed. Sites A and B would result in a fewer number of parcels crossed for new construction of a transmission line to the Carr Draw Substation. A transmission line from Site H to the Carr Draw Substation would cross the most parcels, a total of 19.

Impact to Visual Aesthetics from Public Roadways

Basin Electric analyzed and quantified the overall impact to visual aesthetics from Garner Lake Road (as assumed in 2012) and Highway 59 (for Site H only), as these are the primary public viewing points in the area. Basin Electric applied suitability values to power plant sites on the basis of the proximity of each power plant site to the public roadways, and on the topography between Garner Lake Road or Highway 59 and each power plant site.

This sub criterion had a weighting factor of 2. Sites D, D2, G, and G2 ranked the best, with low visual impact, whereas the remaining sites ranked low, with moderate or high visual impact.

Impacts from Construction of New Rail (Parcels Crossed)

For each potential power plant site, construction of new rail was assumed. Basin Electric applied suitability values to power plant sites on the basis of the number of new parcels that new rail would cross.

This sub criterion had a weighting factor of 2. New rail associated with Sites A, A2, B, C, G, G2, and H would cross the least number of parcels, as rail would be constructed from the mine parcel, Dry Fork, Dry Fork and Clovis, respectively.

Environmental

Environmental criteria consisted of the evaluation of the area in the 100 year floodplain, sites requiring new ash disposal, impacts to wetlands/riparian areas, Threatened, Endangered, and Special Status (TES) species and air permitting considerations.

Area in Floodplain

Aside from potential flooding damage, a power plant inundated by floodwaters would in most cases need to be shut down for safety reasons because of the inability of operational staff to access the power plant. A flood prone power plant site would need to be protected from

floodwaters in some way, either through filling, or the construction of a levee. Flood mitigation works are likely to cause some environmental impact, may worsen downstream flooding, and may be expensive. While this factor alone would not prohibit the siting of a power plant, the presence of a floodplain on a power plant site does make it less desirable. Basin Electric evaluated Federal Emergency Management Agency (FEMA) floodplain maps to determine how much (if any) of each power plant site was within a 100 year floodplain.

This sub criterion had a weighting factor of 1. Suitability scores reflect the extent to which floodplains are likely to impact on the feasibility of the Project at each alternative site. As shown in **Table 5 Preferred Sites Comparison Siting Matrix**, acreage of 100 year floodplains ranges from 6 acres on Site E and F to 12 acres on Sites D and D2.

Ash Disposal – Off Site Options

Coal-fired power plants produce ash that can be either disposed of in a landfill or recycled as an additive to cement or other products. The ash that the Project will produce will need to be placed in a landfill (due to blending with the FGD byproduct).

Ash disposal is a significant environmental consideration in the siting of a new coal fired power plant. Therefore, Basin Electric developed a siting criterion to assess the distance from the potential power plant sites to the nearest existing landfill that accepts ash, whether there is adequate space for an on-site ash disposal facility, and whether a mined out pit could be used for ash storage. Basin Electric estimated that the Project will generate approximately 120,000 tons of ash/FGD byproduct per year for a single net 385 MW coal-fired unit.

This sub criterion had a weighting factor of 2. Scores of between 1 and 11 were applied to the alternative sites, applying the highest suitability values to the sites that required the least new land disturbance for ash disposal. Sites that did not require a new landfill and could make use of an existing area mined out by 2012 ranked the highest. Lower values were applied to sites where ash would need to be landfilled on-site.

Impact to Wetland/Riparian Areas

Impacts to ecologically sensitive areas, critical vegetation, and wildlife habitats comprise another site selection study criterion. The ecological sensitivity of the alternative sites were evaluated and ranked based on the presence or absence of wetlands. Aerial photography and national and state wetland inventories were used to determine the amount and type of wetlands present on the power plant sites.

This sub criterion had a weighting factor of 1. If no wetlands were present, the power plant site was deemed to be highly suitable. The presence or absence of wetlands cannot be verified by aerial imagery or national wetland inventory maps alone. The presence of wetlands must be confirmed in the field in accordance with applicable state and federal guidelines.

Proximity to Known Locations of Threatened, Endangered and Special Status Species

The likelihood that TES species would be present on or adjacent to the site is typically dependant on the terrestrial vegetative habitat on or adjacent to the site and the type of habitat on or adjacent to the site that may be critical or of high value to wildlife. As previously stated, there are a number of TES species in the Project Area that are federally threatened, endangered, or listed candidate. These species consist of the bald eagle, the black-footed ferret, the Canada lynx and the greater sage grouse.

Of these species, point data was available for the greater sage-grouse, a candidate species in 2004. Later in 2004, it was determined that although the sage-grouse is a sensitive species, and is of concern to the WGFD, it is not threatened or endangered. The greater sage-grouse is an inhabitant of sagebrush dominated communities. There are crucial habitat areas mapped for this grouse with a number of “leks” (breeding display grounds) identified within the Project Area. There are known occurrences of sage-grouse leks in the area. Both existing and historic data acquired indicates that there are not sage-grouse leks located on any of the potential power plant sites. The presence of sage-grouse leks must be confirmed in the field in accordance with applicable state and federal guidelines. For this reason, this sub criterion had a weighting factor of 1.

Air Permitting

There are no major air issues that appear to differentiate the various site locations. However, generally speaking, there are some minor air issues that may separate the sites somewhat when it comes to air permitting for $PM_{10.}$ It is expected that the primary air quality permitting issue will be with the near field impacts at fence line related to PM_{10} from material handling operations.

Generally, the closer the potential power plant site is to a public road or coal mine operation and the smaller the site acreage, the greater the potential for PM_{10} permitting issues. For this reason, suitability was based on the scores one through nine with the highest suitability values being applied to the sites that had lowest air permitting concerns.

This sub criterion had a weighting factor of 5. Sites D, D2, G and G2 have the lowest risk, whereas sites A, A2, B, C, E, F, and H have higher risk due to their proximity to roads and coal mine operations and/or small site acreage.

Based on knowledge acquired from the adjacent mines and after meeting with the State of Wyoming representatives on air issues, it is believed that permits can be successfully acquired for any potential sites in the Project Area. However, certain sites may require additional controls on material handling operations or ancillary emission sources.

Operational Considerations (Flexibility/Independence)

Operational considerations include the evaluation of power plant operations over the long term. Operational considerations often include political issues and economic risks that cannot be calculated. Most of the sub criteria below were identified in order to quantify the economic or political risk a potential power plant site may have based on its dependency on one particular mine. For example, if the mine were to cease to exist, the following sub criteria evaluate the political and economical impacts to acquire coal from another source.

Operational considerations should not be confused with operations that provide the least infrastructure/least cost. The importance of least infrastructure and least cost is incorporated into the cost criterion.

Land Ownership/Land Availability (Cost)/Potential to Delay Startup Date

Land ownership and the feasibility of acquiring parcels for each alternative site were evaluated. Basin Electric has good relations with Western Fuels-Wyoming, Inc. and has had discussions with Wyodak Resources. Basin Electric believed that potential sites that consist of parcels owned by these landowners can be acquired for a reasonable price. On other potential sites, where discussions have not occurred, it was assumed that the feasibility of acquiring these parcels would be lower.

This sub criterion had a weighting factor of 5. Suitability scores reflect the extent to which landowners are likely to sell land at a reasonable price. Sites A, A2, B, and H have the best scores, because of the favorable relationship between Basin Electric and Western Fuels-Wyoming, Inc.

Fuel Supply Security

Coal will be delivered by conveyor to the selected power plant site. The cost of constructing a conveyor increases over distance, and therefore, alternative sites that are in proximity to multiple fuel sources provide the most fuel supply security. Alternative sites that are located farther from the fuel supply provide less fuel supply security.

This sub criterion had a weighting factor of 4. Suitability scores reflect to what extent Basin Electric would risk selecting a fuel source that is far from the power plant site, which would require additional conveyor length, or the ability to access multiple fuel sources. Site H would be located very close to the Dry Fork, Rawhide, and Buckskin mines and therefore, the fuel supply could potentially be acquired from multiple mines, thus increasing security of fuel supply. Sites A, A2, B, G, and G2 are relatively close to Dry Fork or Clovis mines, and therefore, reduce the risk of constructing a long distance of conveyor. Sites C, D, and D2 would result in moderate or high conveyor risk, and therefore, lower the fuel supply security. Contrary to this concept of independence and flexibility, the efficiencies of utilizing coal mine property for coal storage are factored into the cost.

Rail Independence

A railroad loop will be required at the selected power plant site in order to deliver materials and equipment, and as a back-up to the conveyor for fuel supply. Some of the alternative sites could use an existing rail loop that is already on the coal mine property, whereas other sites would have rail loops independent of the coal mine.

Suitability scores reflect the extent that Basin Electric would be politically and economically tied to a rail operation. Power plant sites that have existing rail loops owned by a coal mine rank higher than power plant sites where the rail loop is either owned by the railroad or by more than one party. Due to a business interest in selling coal, it is advantageous to operate with existing rail owned by a coal mine company because the coal mines will be more likely to work with Basin Electric on cost. Rail loops owned by the railroad or by multiple parties are less desirable because they present limited options for Basin Electric and can result in a higher price for the use of the rail.

This sub criterion had a weighting factor of 1. Sites A, A2, and B would utilize existing rail loops owned by the adjacent coal mine, increasing the ease of which lime/limestone or coal could be delivered to the power plant site.

Site Development Expediency Once Permitted

Basin Electric also considered the speed at which the power plant site could be constructed once it is permitted. Some of the power plant sites, including Sites A, A2, G, and G2, have fair access and will require major site work preparation, primarily due to the amount of earth that will need to be reshaped. Other sites, including Sites C, E, F, and H, are located on relatively flat terrain, and will accommodate the power plant and ancillary facilities with less earthwork. Sites B, D, and D2 may require moderate site preparation for easy to difficult access. This sub criterion had a weighting factor of 3.

Cost

An analysis was prepared for each of the eleven alternative sites to evaluate the capital and operational costs of constructing and operating a nominal net 385 MW coal-fired power plant. Costs were developed for PC, CFB, and IGCC technologies. In addition to the power plant base cost, which was constant regardless of the site selected, Basin Electric based cost analysis on characteristics including the cost of the conveyor, construction rail spur, transmission interconnection, ash disposal, natural gas pipeline, and the access road to the power plant site. The objective of the cost analysis was to identify the relative differences in both the capital costs and net present value for each of the eleven power plant sites. The cost analysis is included in **Appendix E Pulverized Coal and Circulating Fluidized Bed Coal Pro Forma and a summary of the Pro Forma is included in Table 6 Pro Forma**

Summary. A description of the approach used for the cost analysis and the results is provided below.

Table 6 Pro Forma Summary

	A	A2	B	C	D	D2	E	F	G	G2	H
Net Cost ($ Million)	1,171.8	1,180.1	1,178.8	1,192.6	1,206.1	1,203.6	1,181.7	1,184.4	1,191.3	1,184.6	1,179.9
Score	1	4	2	9	11	10	5	6	8	7	3

Fuel Costs

A mine mouth coal price of $0.35 MM/Btu was used based on an 8,045 Btu/Lb heating value for PRB coal. The basis for this price was the Dry Fork Proposal. The cost of transporting the PRB coal from the mine mouth to the potential power plant sites was obtained by estimating locations of conveyor routes and multiplying the cost per mile by the unit cost for conveyor construction.

Non-Fuel Operating & Maintenance Costs

The annual non-fuel operating and maintenance costs were calculated separately for fixed and variable cost components for each technology, PC, CFB, and IGCC. These values were based on coal-fired power plant operating experience and discussions with power plant engineering firms. **Table 7 Annual Operating and Maintenance Costs** shows the unit rates for each technology.

Table 7 Annual Operating and Maintenance Costs

Annual Costs	PC Unit	CFB Unit
Fixed O&M	$38.33/kW-Yr	$34.50/kW-Yr
Non-Fuel Variable O&M	$2.7/MW-Hr	$2.5/MW-Hr

Debt Service

The annual debt service cost was calculated based on financing 100 percent of the power plant capital cost at a 6.0 percent annual interest rate.

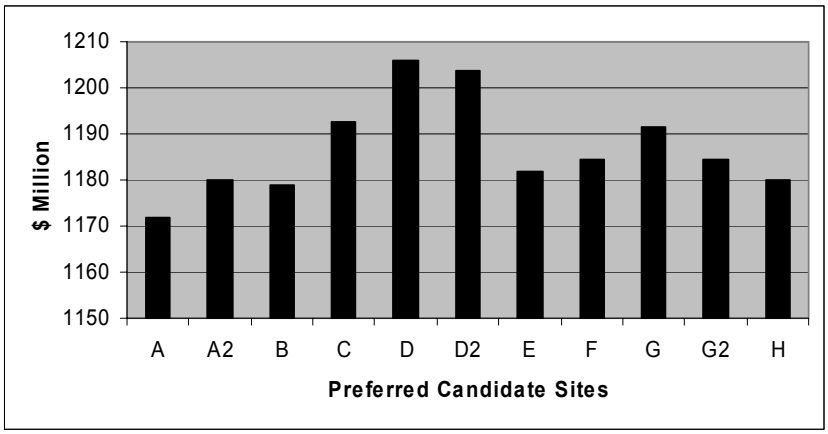
Net Present Value

The net present value (NPV) was calculated for each power plant site based on a 6.0 percent discount rate and annual cash flows for a power plant economic life of 42 years.

Results

The results of the cost analysis are presented in **Appendix E Pulverized Coal and Circulating Fluidized Bed Coal Pro Forma**. **Graph 1 Economic Comparison of Sites A-H** compares the costs of the preferred candidate sites. Assuming PC, Site A was found to have the lowest overall cost on an NPV basis. The power plant sites in increasing NPV order are A, B, H, A2, E, F, G2, G, C, D2, and D. The costs for the on-site landfill, conveyors, and site work were the most dominant capital cost drivers. Least significant was the impact of constructing a rail spur, natural gas pipeline, and access to the power plant sites. The cost criterion had a weighting factor of 3.

Graph 1 Economic Comparison of Sites A-H (42-year NPV)



Site Selection

Although each of the preferred candidate sites are technically feasible, Basin Electric will likely pursue evaluation of one preferred site and prioritize others that still meet project objectives as backup sites. Based on the total score for each Phase 3 criterion, Site H was selected as the preferred site, mainly due to the relatively lower level of environmental, land use, and economic impacts than the other sites.

Site A was selected as the alternative site because of its low cost to develop compared to other sites and its relatively lower level of environmental, operational, and land use impacts than the other sites. Like Site H, Site A was preferred due to its proximity to the Dry Fork mine.

Site H

Site H ranked first among the eleven power plant sites when considering all the evaluation criteria of land use, environmental, operational considerations, and cost. This overall positive rank was mostly attributed to the operational considerations and cost.

From a land use perspective, the site ranked ninth among the eleven power plant sites. The score was primarily impacted by the area of site, traffic and safety impacts, and visual impacts. Many of these land use impacts can be reasonably mitigated. For example, although the site is relatively small in acreage compared to other power plant sites in the study, ash disposal could be located off-site at the Dry Fork Mine, which decreases the need for acreage. Also, a coal delivery rail spur is not required since the site is adjacent to the Dry Fork mine.

Environmentally, the site ranked fifth among the eleven power plant sites. The overall score for this category was primarily impacted by the air resources impacts. Based on initial air modeling, Site H may be challenged to meet the PM_{10} permitting requirements due to the proximity to public access and to the mines in the area. In these terms, Site H is at a disadvantage to power plant sites that are located further from public sources and mines.

From an operational considerations perspective, the site ranked first among the eleven power plant sites. The main advantage of Site H is that the land is currently owned by Western Fuels-Wyoming, Inc, which is adjacent to the Dry Fork Mine and provides for favorable land acquisition.

According to the pro formas generated for this Project, assuming PC or CFB, Site H is the third least expensive among the eleven power plant sites. Cost savings are shared by the length of conveyor, estimated land costs, and the construction of a rail spur. A new power plant at Site H is estimated to cost $1,179.9 million, which is $8.1 million more than the cheapest alternative over 42 years in NPV terms.

Site A

The selection of Site A as the alternative site is mostly attributable to its low cost and minimal impact to land and operational considerations.

From a land use perspective, the site ranked first among the eleven power plant sites evaluated. The site ranked first due mainly to minimal impact to traffic and safety and parcels crossed for construction of transmission lines and impact of new rail construction. Other impacts can be reasonably mitigated. For example, although the site is relatively small in acreage compared to other power plant sites in the study, ash disposal could be located off-site at the Dry Fork Mine, which decreases the need for acreage.

Environmentally, the site ranked sixth among the eleven power plant sites. The overall score for this category was primarily impacted by the air resources impacts. Like Site H, Site A is at a disadvantage to power plant sites that are located further from public sources and mines.

From an operational considerations perspective, the site ranked third among the eleven power plant sites. The main advantage of Site H is that the land is currently owned by Western Fuels-Wyoming, Inc, which is adjacent to the Dry Fork Mine and provides for favorable land acquisition.

According to the pro formas generated for this Project, assuming PC or CFB, Site A is the least expensive among the eleven power plant sites. A new power plant at Site A is estimated to cost $1,171.8 million, over 42 years in NPV terms.

Section 4 Public Involvement Program and Permitting

Public Involvement

Basin Electric believes strongly in working with the communities and area landowners to understand their concerns and resolve any issues. Basin Electric will follow all applicable state and federal siting regulations and inform the public at large of their proposals. Basin Electric is planning to conduct public scoping meetings in late 2005. At these meetings, Basin Electric will provide information and receive input so that the public can share their support or concerns. In addition to the public meetings, Basin Electric will work with landowners and agencies as they go forward with the Project. The public is welcome to contact Basin Electric representatives in order to obtain information or share concerns. These representatives include:

- Floyd Robb, VP, Communications and Marketing Support (Email: frobb@bepc.com)
- Daryl Hill, Media Relations Coordinator (Email: dhill@bepc.com)
- Curt Pearson, Marketing Coordinator (Email: cpearson@bepc.com)

All representatives can be contacted at:

Basin Electric Power Cooperative
1717 East Interstate Avenue
Bismarck, ND 58503
Office: 701-223-0441
Fax: 701-255-5129

Permitting

There are a number of permits that must be obtained before a power plant can be built. Based on a preliminary assessment of the Project, the following permits or approvals may be required:

- PSD air permit; air quality impact analysis from WDEQ.
- A Wyoming Industrial Development Information and Siting Act permit.
- A water appropriation permit from the Wyoming State Engineer.
- A construction storm water discharge permit with associated storm water pollution prevention plan and best management practices plan.

- A “permit to construct” from the WDEQ Water/Wastewater Division for solar evaporation ponds or other surface impoundments, and for septic systems. Based on an initial consultation with the WDEQ, this permit will likely require membrane liners for the ponds with installation of monitoring wells surrounding the ponds.

- A spill prevention, control, and countermeasures plan for onsite storage of fuels for backup generators or fire water pumps, transformer oil, or antifreeze fluid.

- Registration with WDEQ of any underground storage tanks.

- Compliance with the National Historic Preservation Act Section 106 can be triggered by the federal action required to review and approve a PSD air permit. However, regardless of the Wyoming Historic Preservation Officer’s views on this issue, an archaeological survey is likely required under the Wyoming Industrial Development Information and Siting Act.

- Federal Aviation Administration review of stack lighting and marking may be required depending on stack height and proximity to airport glide paths.

- A Clean Water Act Section 404 permit for dredge and fill activities in “waters of the U. S.” and wetland delineations may be required depending on the proximity of the power plant site, transmission line towers, and water pipelines to the existing wetlands.

Basin Electric is seeking financial support from the USDA Rural Utilities Service (RUS) for the proposed Project. The RUS will be the approval authority for compliance with National Environmental Policy Act (NEPA). RUS Bulletin 1794.25 requires an Environmental Impact Statement (EIS) be prepared for new electric generating facilities of more than 50 MW other than diesel generators or combustion turbines.

As required by the Wyoming Industrial Siting Act, a permit will be filed with the Wyoming Industrial Siting Council that will analyze the socio-economic and environmental impacts of the Project. The Wyoming Industrial Siting Council must approve the Project before they will issue a permit for construction. It is anticipated that an Industrial Siting Act permit application will be submitted in January 2006.