3.0 Natural Gas Pipeline Siting Permit

3.1 Purpose of the Project

Basin Electric's primary mission is to provide electrical power to its member owners. The projection of future electrical requirements serves as one of the main planning tools in determining the cooperative's future operating strategy.

The purpose of the Deer Creek Station Project is to help serve the increased intermediate generation demand for electric power in the eastern portion of Basin Electric's nine-state service area as identified in the Power Supply Analysis (PSA) (Basin Electric 2007). The need for additional generating capacity is being driven by the increasing use of electricity given three factors:

- Industrial growth
- Energy-sector (coal, oil, and gas) development
- New rural residential development

As part of the proposed project, the proposed pipeline will deliver the necessary fuel that will help Basin Electric meet the need for additional generation capacity by ensuring the successful operation of the generation facility.

3.2 Estimated Project Costs

The estimated total construction cost of the proposed pipeline is $12 million.

3.3 Demand for the Project

3.3.1 Present and Estimated Consumer Demand

The purpose of the proposed pipeline is to meet the Deer Creek Station Project fuel requirements.

3.3.2 Consequences of Delay or Termination of Pipeline Facility

Without the delivery of fuel to the Deer Creek Station, the ability to generate electricity will be absent. Basin Electric will then need to purchase power to meet its member obligations. Purchasing power from another provider may result in an increased cost to Basin Electric member cooperative customers within the eastern service territory. Moreover, if not enough power is available for purchase, Basin Electric will be unable to meet expected demand for power.

3.4 Natural Gas Pipeline Site Description

The proposed pipeline will be located in Brookings and Deuel counties, which are located in east-central South Dakota near the Minnesota border. The Deer Creek Station Project is situated approximately 12 miles northeast of the city of Brookings and 60 miles northeast of Sioux Falls. The pipeline will originate 11.5 miles north of the energy conversion facility in Deuel County at Valve Site 42 on the existing Northern Border Pipeline (NBPL) interstate proposed pipeline. The pipeline is approximately 13.2 miles in length. Exhibit 3.4-1 shows the proposed project location within South Dakota. The proposed route generally parallels road ROWs, but in several locations

it traverses across private property to avoid road curves, reduce landowner and environmental impacts, and reduce the overall length of the alignment.

From its origination point at Valve Site 42 on the existing NBPL interstate pipeline located 1 mile east and 0.7 mile north of Astoria, South Dakota, the proposed route heads south for approximately 1.5 miles, paralleling 484th Avenue, near the Deuel County line. At 196th Street, the proposed route transects Sections 5 and 6 (T112N R47W), crossing private property in a southeast direction for 1.2 miles. It then parallels 197th for 0.25 mile. It then parallels 485th Avenue heading south for approximately 7.25 miles before heading west for approximately 1 mile on Section 18 (T111N R47 W) just south of 204th Street. The proposed route then parallels 484th Avenue, heading south for approximately 2 miles until it reaches its terminus at the energy conversion facility site. The energy conversion facility site is located in Brookings County, is accessible via 484th Avenue and is located in the NE Quarter of T111N R48W, Section 25 on property owned by Basin Electric. The town of White is located approximately 6 miles west and 2 miles north of the site.

One primary road will be crossed (South Dakota State Highway 30 [SD 30]) by the proposed route, but no railroads or foreign pipelines will be crossed. The existing Brookings-Deuel Rural Water System will be crossed 11 times (these include farm tap crossings). The pipeline has been designed and will be constructed to minimize the risk of damage to other utilities or disruption of service by those utilities. Basin Electric has notified the other utilities and will exercise caution during construction.

The proposed route traverses the following Sections: T111N R48W Sections 25, 24, 13; T 111N R47W Sections 18, 7, 6 and 5; T111N R47W Section 32, 29, 20, 19, 18, 7, 8,6 and 5; and T113N R47W Sections 31 and 30. The pipeline construction laydown and staging area is located within an inactive area of an operating sand and gravel quarry adjacent to the proposed route approximately 0.75 mile south of SD 30 in Brookings County. This site has been previously disturbed and other than grading to level existing disturbed surfaces, no new surface land disturbance and impacts are anticipated.

The project area has relatively flat and gently rolling terrain with elevations between approximately 1,800 to 1,900 feet above mean sea level. The setting is predominantly agricultural; crop production and livestock pasture are the major land uses. The climate in the proposed project area is characterized by pronounced daily and seasonal changes in temperature and variations in seasonal and annual rainfall. In winter, the average temperature is 14°F and the average daily minimum temperature is 3°F. In summer, the average temperature is 68°F.

Total annual precipitation is approximately 23 inches; about 78 percent of the total precipitation falls in April through September.

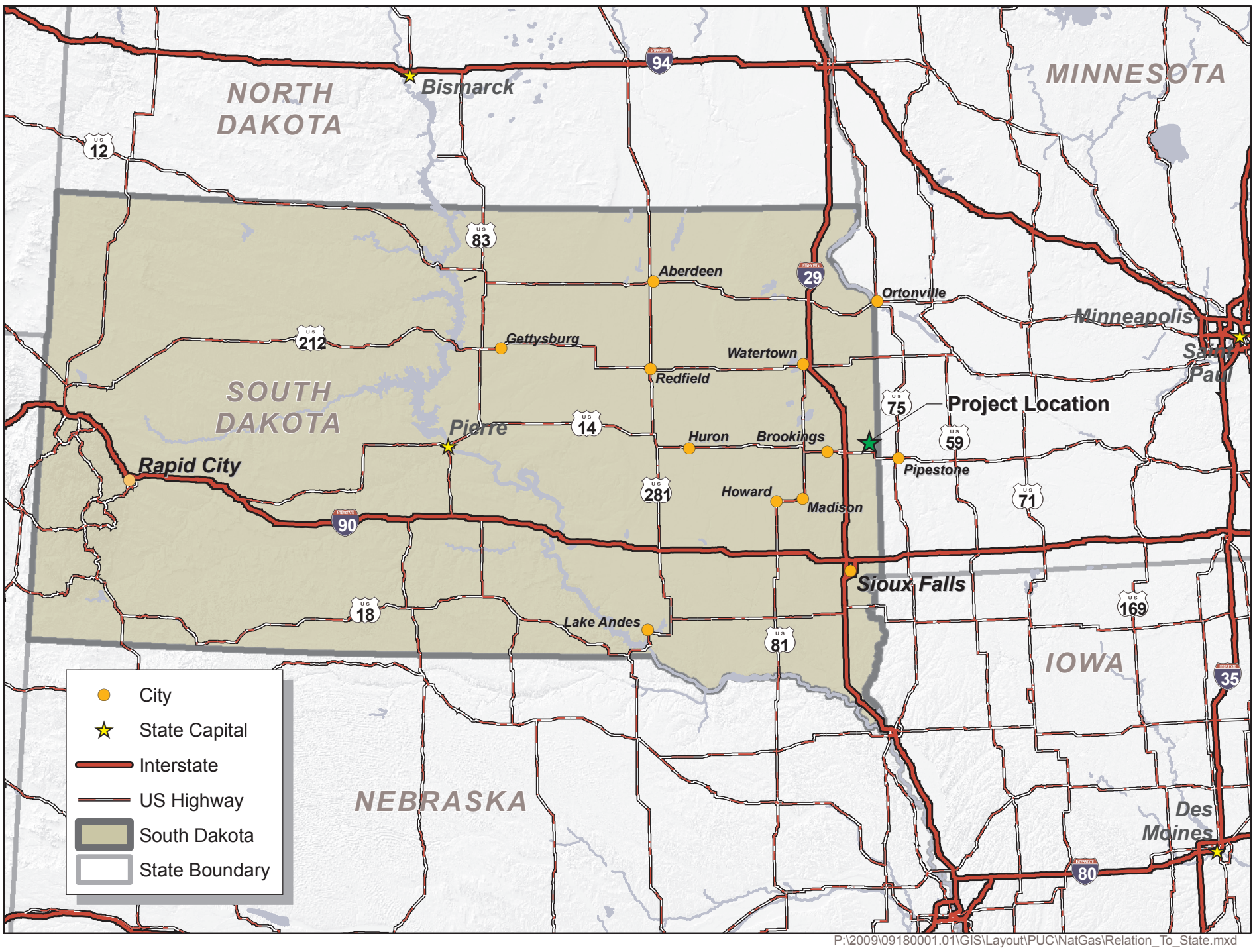

Exhibit 3.4-1: Project Location within State

Exhibit 3.4-2 shows the Affected Area for the proposed project as determined by the SD PUC. The Affected Area consists of a 12-mile radius from the energy conversion facility (i.e., Deer Creek Station) within South Dakota. Exhibits 3.4-3 through 3.4-8 provide aerial photo views and Exhibits 3.4-9 through 3.4-14 provide topographic mapping of the project vicinity and proposed route alignment. The operating pressure for the pipeline will range between 1,435 pound-force per square inch gauge (psig) (NBPL maximum allowable operating pressure) and 475 psig (maximum plant delivery pressure). The gas will be used for combined cycle electricity generation.

A branch will be made into existing piping at Northern Border Pipeline (NBPL) Company's Valve Station 42. NBPL's interconnection site will consist of block valves, flow control valve(s), metering equipment, and associated instrumentation. NBPL's site will end with a pipe flange, at which point Basin Electric's pipeline will begin. Additional pressure regulators and pipeline connection features will be situated immediately adjacent to NBPL's interconnection site and on the energy conversion facility site. Pipeline identification markers will be located along the pipeline alignment at road crossings and other areas as required; other aboveground appurtenance structures along the pipeline are not planned.

3.5 Alternative Sites and Routes

The location of the proposed route was determined based upon and following the siting selection for the energy conversion facility. Basin Electric completed preliminary mapping and preliminary biological, cultural, and investigative engineering field surveys to develop a proposed route that would minimize impacts to landowners and environmentally sensitive areas. Exhibit 3.5-1 shows routing alternatives considered for the proposed pipeline. During the route selection phase, alternate routes were analyzed and the proposed route was selected based on criteria such as paralleling existing road corridors, minimizing impacts to landowners and environmentally sensitive areas, length of route, and constructability. The Deer Creek Station site selection is described in detail in the PUC siting application for the Deer Creek Station.

3.5.1 Evaluation of Routes Considering Reliance upon Eminent Domain

Basin Electric representatives gathered valuable information from landowners during informational meetings held regarding the proposed project and through individual landowner discussions. Easements for the pipeline right-of-way (ROW), as well as extra temporary workspace, are being negotiated with landowners and a mutually agreed upon dollar amount will be paid to landowners for use of this land. Basin Electric representatives will work with the landowners to minimize impacts to their operations, and will reimburse landowners for crop damages. During construction, landowners may be occasionally inconvenienced by equipment transport along roads within the proposed project vicinity and near field approaches. Every effort will be made during construction to minimize inconveniences to landowners.

Basin Electric will attempt to acquire ROW easements associated with the proposed project and provide payment to landowners based on fair market value of the property. The reliance on eminent domain powers and displacement of people or homes is not anticipated for the proposed project.

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3.6 Environmental Information and Effect on Physical Environment

This section describes the existing environment along the proposed route and the anticipated effect on the physical environment. Basin Electric has evaluated, and in some cases is finalizing, evaluations of environmental impact to be supplied to SD PUC and has designed its proposed project to minimize those impacts to the extent practicable.

Basin Electric has applied to Western Area Power Administration (Western) for transmission interconnection of the project. Interconnection to Western transmission systems requires Western to implement Department of Energy and County in Environmental Quality National Environmental Policy Act (NEPA). Western will prepare an Environmental Impact Statement according to NEPA procedures as lead federal agency for the Deer Creek Station Project. All requirements of the EIS will be followed. A copy of the EIS will be provided to SD PUC upon completion and in accordance with South Dakota Codified Law (SDCL) 34A-9-9 as follows:

> *The environmental impact statement, prepared pursuant to SDCL 34A-9-4, together with the comments of public and federal agencies and members of the public, shall be filed with the office of the secretary and made available to the public at least thirty days prior to taking agency action on the proposal which is the subject of the environmental impact statement. Such a statement shall also include copies or a summary of the substantive comments received by the agency pursuant to SDCL 34A- 9-8, and the agency response to such comments.*

3.6.1 Other Major Industrial Facilities under Regulation

Table 3.6-1 provides a summary of major industrial facilities under regulation in South Dakota. Table 3.6-2 lists the proposed industrial projects in South Dakota that are planned to be under construction by 2013. The Buffalo Ridge I and MinnDakota Wind Farms are existing energy conversion facilities in Brookings County; White Wind Farm is under construction and Buffalo Ridge II has been approved by SD PUC for Brookings County.

Table 3.6-1:
Major Industrial Facilities in South Dakota

Project Name	Fuel	Owner	Capacity (MW)	Location
Spirit Mound	Fuel Oil	Basin Electric	67.5	Clay County
Chamberlain	Wind	Basin Electric	1.3	Brule County
City of Fort Pierre	Fuel Oil	City of Fort Pierre	2	Stanley County
Watertown Power Plant	Diesel	Missouri Basin Municipal Power Agency	67.5	Codington County
Pathfinder	Natural Gas	Northern States Power Company	75	Minnehaha County
Angus Anson	Natural Gas	Northern States Power Company	105	Minnehaha County
Aberdeen CT	Fuel Oil	Northwestern Energy	28.8	Brown County
Clark	Fuel Oil	Northwestern Energy	2.7	Clark County
Faulkton	Fuel Oil	Northwestern Energy	2.7	Faulk County

Project Name	Fuel	Owner	Capacity (MW)	Location
Highmore	Fuel Oil	Northwestern Energy	0.6	Hyde County
Huron	Natural Gas	Northwestern Energy	15	Beadle County
Mobile Unit	Fuel Oil	Northwestern Energy	0.5	Beadle County
Redfield	Natural Gas	Northwestern Energy	1.3	Spink County
Webster	Fuel Oil	Northwestern Energy	0.7	Day County
Yankton	Natural Gas	Northwestern Energy	2.2	Yankton County
Lake Preston	Fuel Oil	Otter Tail Power Company	24.1	Kingsbury County
Big Stone	Sub-Bituminous Coal	Otter Tail Power Company	456	Grant County
Ben French	Fuel Oil	Black Hills Corporation	2.0	Pennington County
Lange Gas Turbines	Natural Gas	Black Hills Corporation	40	Pennington County
Oahe	Water	USACE	782	Hughes County
Fort Randall	Water	USACE	320	Charles Mix
Big Bend	Water	USACE	488	Buffalo County
South Dakota Wind Energy Center	Wind	FPL Energy South Dakota Wind LLC	40.5	Hyde County
Valley Queen Cheese	Fuel Oil	Valley Queen Cheese Factory, Inc.	1.5	Grant County
State Auto Insurance	Fuel Oil	State Auto Insurance, Inc.	1.7	Grant County
Highmore	Wind	FPL Energy	40.5	Hyde County
Gavins Point	Water	USACE	132	Yankton County
Groton Generation Station I & II	Natural Gas	Basin Electric	93.5	Brown County
MinnDakota Wind Farm	Wind	Iberdrola Renewables	54	Brookings County
Buffalo Ridge I Wind Farm	Wind	Iberdrola Renewables	50.4	Brookings County
Tatanka Wind Farm	Wind	Acciona S.A.	88.5	McPherson County
Wessington Springs Wind Project	Wind	Babcock and Brown	51	Jerauld County

Source: South Dakota Public Utilities Commission (2009)

Table 3.6-2:
Planned or Industrial Projects under Construction in South Dakota by 2013

Plant Name	Fuel	Owner	Status	Capacity (MW)	Location
Big Stone II Generation Station	Coal	Otter Tail Power Company	Construction begins 2010	650	Grant County
Hyperion-Elk Point Refinery	Oil Refinery	Hyperion Resources	Construction begins 2013	N/A	Hyperion-Elk Point Refinery, Union County
Keystone Pipeline Project	Crude Oil Pipeline	TransCanada	Under construction	N/A	Keystone Pipeline Project, Eastern South Dakota
White Wind Farm	Wind	Navitas Energy, Inc.	Construction begins 2013	200 MW	Brookings County
Buffalo Ridge II Wind Farm	Wind	Iberdrola Renewables	Construction begins 2009	306	Brookings County

Source: South Dakota Public Utilities Commission (2009)

3.6.2 Summary of Environmental Impacts

Project impacts are predominantly short-term and are associated with the construction phase of the proposed project. Table 3.6-3 provides a summary of impacts that are expected to remain after implementation of mitigation measures and best management practices (BMPs), the Storm Water Pollution Prevention Plan (SWPPP), and the Erosion and Sediment Control Plan (ESCP) measures. These impacts include short-term uses of renewable resources, such as water withdrawn for hydrostatic testing and then discharged back to the land. These impacts also include long-term changes in land use, such as the prohibition of residential structures on the permanent pipeline ROW.

Table 3.6-3
Summary of Impacts

Environmental Resource	Potential Impact Summary Table
Physical Environment	Landforms and topographic conditions would not be affected as a result of gas pipeline construction since surface disturbance areas would be reclaimed to approximate pre-disturbance conditions (e.g., slopes, contours, vegetative cover).
	Landforms and topographic conditions would not be affected during gas pipeline operations.
Geology and Paleontology	No unique geological or paleontological resources will be affected during construction and operation of the gas pipeline.
	Any Pleistocene-era mammalian fossils excavated during construction would not be studied or retrieved.
Economic Mineral Deposits	Construction and operation of the pipeline system would limit access to underlying minerals (sand and gravel) for the project life. This limitation will be confined to the width of the permanent pipeline ROW that overlies glacial deposits.
Soils	The total area potentially affected by construction of the gas pipeline would be approximately120 acres.
	A small fraction of the excavated soils in areas with moderately erodible soils will be potentially lost to increased water and wind erosion acting on disturbed soil surfaces until grass and other herbaceous vegetation is restored.
Erosion or Sedimentation	The total acreage potentially affected by construction of the gas pipeline would be approximately120 acres.

Environmental Resource	Potential Impact Summary Table
	Soil disturbance from construction activities of the gas pipeline may result in accelerated erosion, compaction, and/or reduced agricultural productivity.
Seismic, Subsidence, and Slope Instability Risks	There are no concerns regarding seismicity or subsidence for gas pipeline.
Hydrology	**Surface Water Drainage**
	Perennial and intermittent flowing surface waters within the pipeline ROW will be directionally drilled to avoid and minimize direct and indirect impacts to surface waters. If directional drilling is not feasible in some locations, the pipeline will be trenched. If trenching is required; the surface topography and drainage along the pipeline ROW would be returned to pre-construction conditions. Construction will occur to the greatest extent feasible, during drier periods. There should be no long-term alteration to existing drainage features, direction or rates.
	Construction in and around wetland communities would be similar to that described above for surface waters. Directionally drilling the pipeline in these locations would avoid direct impacts to wetland communities. If trenching were required, the ROW would be restored post-construction. No permanent loss of wetlands would occur as a result of this project. All required USACE permits would be obtained prior to any construction in wetland communities that may be considered jurisdictional “waters of the U.S.”.
	Water quality degradation from construction of the gas pipeline is not anticipated to occur in streams and other water bodies from spills or leaks of fuel, lubricants, or hazardous materials.
	Runoff and the resulting erosion of lands adjacent to water bodies can lead to the introduction of solids into suspension and the deposition of sediment in-stream.
	Floodplains
	Temporary impacts from construction may affect drainage and flow in the floodplains in the project construction area.
	Groundwater
	Reductions in groundwater quality from spills, leaks, or disposal practices are not anticipated during construction of the gas pipeline.
	It is possible, though unlikely, that activities such as trenching, drilling, dewatering and backfilling could impact shallow aquifers and create minor and short-term effects on groundwater levels and quality,
	Water Use and Sources
	Hydrostatic test water would be discharged to an unnamed tributary to Deer Creek located in the northeastern portion of the plant site.
Terrestrial Ecosystems	**Vegetation Communities**
	Possible noxious weed infestations may occur in areas where ground disturbance occurs, but these would be minimized by implementation of a revegetation plan (included as part of the ESCP).
	Fugitive dust would pose a potential short-term impact to local plant communities during project construction and future maintenance resulting from dust collecting on plants and reducing their photosynthetic efficiency.
	Impacts to vegetation communities may also result in indirect adverse impacts to terrestrial and aquatic species that rely on these communities for forage, cover, and nesting habitats.
	Construction of the gas pipeline would directly affect vegetation within the ROW. Impacts from the gas pipeline would be short term in nature because the ROW vegetation would be restored once the pipeline had been buried.
	General impacts from the gas pipeline to vegetation would be trampling, fugitive dust, soil compaction, erosion, sedimentation, and the spread of noxious weeds. The vegetation and soil (if native or wetland community is present) within the gas pipeline ROW would be restored, so no long-term impacts are expected.

Environmental Resource	Potential Impact Summary Table
	Pipeline construction would disturb a total of approximately 120 acres plus additional acreage required for expanded work spaces in directional drilling activity areas. The majority of the pipeline ROW is cultivated cropland and pasture/hay land. The ROW could also span native and native/non-native grassland, forested communities (shelterbelts), and wetlands. Trees would not be permitted to grow on approximately 1.5 acres of currently forested woodlands during pipeline operations to allow for aerial surveillance of the proposed pipeline.
	Wildlife
	Most wildlife species would temporarily avoid areas under construction, which would alter movement patterns during the construction period.
	Construction would result in both short-term and long-term loss of foraging and cover habitats within the site boundaries.
	Possible indirect effects to wildlife habitat from ground-disturbing activities include the risk of further propagation of noxious weeds. Noxious weeds can adversely affect wildlife habitats by reducing foraging opportunities for terrestrial wildlife and game species.
	Wildlife would be displaced within the construction ROW for the gas pipeline and mortality may occur for smaller, less mobile, and ground-dwelling species. Because the gas pipeline is located adjacent to some existing road ROWs, impacts to wildlife are expected to be short term and not adverse.
	The gas pipeline would be buried, so operation of the gas pipeline is not expected to result in any impacts to wildlife within the ROW.
	If maintenance is required on the gas pipeline, short-term impacts to vegetation are expected, and wildlife in the area may avoid the ROW until maintenance is completed.
	Any habitat (vegetation) disturbance from the gas pipeline would be restored and re-contoured to mitigate disturbance to habitats within the pipeline ROW.
	Raptors and other avian species may be found nesting in the project area. If construction occurs during the avian breeding season as defined by USFWS (March 15–September 1), surveys would be conducted prior to construction to ensure the project does not "take" a nest or bird protected under the Migratory Bird Treaty Act.
	Threatened and Endangered Terrestrial Species
	Surveys for the federally listed Western prairie fringed orchid and the Dakota skipper (a candidate species) were conducted in summer 2009. A Biological Assessment (BA) will be prepared.
Aquatic Ecosystems	**Wetlands**
	The majority of jurisdictional wetlands and surface waters within the gas pipeline ROW will be directionally drilled to avoid sensitive resources and the species associated with them. Trenching, along with appropriate mitigation measures, may also be used. Trenching would occur during the fall and winter months to minimize impacts to surface waters, wetlands, and the species associated with these areas. If trenching is conducted, construction may result in short- or long-term impacts to wetlands from erosion of exposed sediments, during construction or accidental hazardous spills from construction equipment. Trenching would result in the removal of wetland vegetation, short-term alteration of surface hydrology, increased risk for spread of noxious weeds, and may result in the loss or degradation of aquatic habitats used by amphibians, fish, and other aquatic species.
	Construction could result in the direct loss or degradation (from sedimentation) of some ephemeral aquatic habitats used by breeding amphibians.
	Operation of the gas pipeline is not expected to have long-term impacts on wetland and riparian communities.
	It is expected that if aquatic habitats are disturbed, they would recover from any disturbance caused by construction and operation of the gas pipeline and return to their original condition.
	Operation of the gas pipeline is not expected to have any adverse effects on aquatic habitats or associated aquatic organisms.

Environmental Resource	Potential Impact Summary Table
	Fisheries
	Aquatic habitats would be directionally drilled to avoid impacts to fish and other aquatic resources. If it is not feasible to directionally drill, trenching would be the preferred method of construction. If trenching is required, construction may result in short- or long-term impacts to surface waters and/or groundwater from erosion of exposed sediments during construction or accidental hazardous spills from construction equipment.
	Operation of the gas pipeline is not expected to have any adverse effects on fisheries.
	Threatened and Endangered Aquatic Species
	The USFWS has requested that Basin Electric move forward with the proposed project with the assumption that Topeka shiners do occur in the proposed project area. Mitigation requirements that are required by USFWS as part of the Biological Assessment will be implemented.
Land Use	Gas pipeline construction would have a short-term effect on the current, mainly agricultural land use within the pipeline ROW during construction. This may result in the seasonal loss of crop productivity within the ROW. While the gas pipeline will temporarily disturb agricultural lands, there would be no long-term impacts to agriculture after construction. Agricultural uses (cropland) will be allowed to continue after construction has been completed. Maintenance and monitoring will occur during the operational phase and may cause minimal disruption to agricultural practices located adjacent or within the ROW.
	Public facilities would not be adversely affected by the gas pipeline operations.
	Installation of the gas pipeline would create short-term effects including short-term visual, noise, and dust impacts resulting from vegetation removal, soil disturbance, and the use of equipment at the construction site, including equipment exhaust.
	Approximately 120 acres would not be permitted to be occupied by residential or other structures within the permanent gas pipeline ROW over the life of the pipeline.
Air Quality	Construction of the gas pipeline has the potential for short-term, temporary adverse effects on air quality from fugitive dust and vehicle exhaust emissions in the immediate area around the construction sites.
	Emissions from construction activities of the gas pipeline would include exhaust from construction vehicles and fugitive dust from trenching and construction and would not affect regional air quality.
	Impacts from construction of the gas pipeline would be limited to the local area and would end once construction had been completed.
Community Impacts	**Economic Impacts**
	There would be short term economic benefits to the service industries such as hotels, restaurants, and gas stations. It is expected that any impacts would be positive to the local community.
	Purchases, equipment rental leases, equipment maintenance and repairs, storage areas, fuel for construction vehicles and associated equipment, licensing and permitting fees would all provide additional economic prosperity to the state during pipeline construction.
	Commercial and Industrial Sectors
	No impacts to the industrial sector are anticipated.
	Taxes
	Property taxes would be of greater economic significance to state and local revenues. Based on current tax rates and prior to the application of the discretionary formula, the gas pipeline is estimated to generate $109K in property taxes in the first taxable year after operation."
	Housing
	It is expected that most non-local workers would use temporary housing, such as hotels/motels, recreational vehicle parks, and campgrounds.

Environmental Resource	Potential Impact Summary Table
	Land Values
	Pipeline ROW easements would be obtained with monetary compensation for the conveyance of those easements. Construction activities would create the potential for damage to property, including drainage tiles, irrigation systems and fences.
	Certain existing land uses would be converted to long-term utility use for the duration of the pipeline's operation. The conversion represents a long-term future constraint on development of private land because dwellings cannot be placed on the permanent pipeline ROW for the duration of the easement.
	It is anticipated that property values would not be affected by the installation or presence of the pipeline.
	Agriculture
	Approximately 56 acres of agricultural lands are located within the pipeline ROW. Agricultural lands would be temporarily impacted during construction. Long term impacts on agricultural production are not expected since the pipeline would be buried deep enough to allow for agricultural practices to resume after construction.
	Employment/Labor Market
	The gas pipeline would be built between July and September 2010 and the construction crew would consist of 70 workers (Basin Electric 2009).
	The large percentage of the temporary workforce would consist of non-local personnel. A small portion is expected to be from local communities where possible. No permanent workforce is anticipated for the operation of the gas pipeline.
	Because no permanent employees are associated with the pipeline, no long-term impacts on public services are anticipated.
Infrastructure Impacts	**Energy**
	No new electrical service requirements are anticipated for operation of the natural gas pipeline.
	Temporary short term use of power during the construction phase is expected to be minimal.
	Long-term power supply to support the Deer Creek Station project is expected to be provided by existing utility providers, utilizing existing power generation capacity.
	Sewer and Water
	There would be increased utilization of water and sewage facilities due to the pipeline construction offices and influx of temporary construction workers utilizing local lodging. There should not be any significant impacts from workers on local communities' water, sewage or other public utilities.
	Solid Waste Management
	There would be a minor increased utilization of solid waste management facilities due to the pipeline construction offices and temporary construction workers utilizing local lodging and services and solid waste facilities from pipeline construction (stumps, rock, spacer ropes, end caps, welding rods, pipe shavings, and other trash/debris).
	Transportation
	In general, all major paved roads, including highways and all primary gravel roads would be crossed by boring beneath. Driveways may also be bored if required by landowners.
	The majority of smaller unpaved roads would be crossed using the open-cut method where permitted by local authorities or private owners.
Community Services	**Health Services and Facilities**
	No impacts are anticipated
	Schools
	Students enrolling in the local schools as a result of the construction would be minimal.

Environmental Resource	Potential Impact Summary Table
	Recreation
	There should be limited recreational impacts from the construction and it is not expected that workers would overtax the many recreational facilities in the area.
	Government Facilities or Services
	Law enforcement agencies in the communities adjacent to the pipeline should not experience a significant impact from the pipeline workers.
Other Impacts	**Populations and Demographics**
	The limited number of employees associated with pipeline construction would not significantly affect local populations or demographics.
	Protection of Human Health
	No impacts to health services, facilities, and public safety are anticipated from construction or operation of the gas pipeline.
	Noise
	Residences within 500 feet of the ROW would experience short-term increased noise from construction equipment and operations.
	Visual
	Visual resource impacts associated with construction of the pipeline include removal of existing vegetation, exposure of bare soils and earthwork activity.
	Visual resource impacts from construction activities would be of short duration with no significant long-term impacts.
	Cultural Resources and Landmarks
	The natural gas pipeline has been located so that construction activities would avoid impacts on cultural resources.

3.6.3 Physical Environment

The following discussion describes the physical environment through which the proposed pipeline will pass and delineates the effects of the proposed pipeline on the physical environment.

3.6.3.1 Landforms and Topography

Brookings County, South Dakota, is characterized by nearly level to gently rolling plains and is entirely within the Coteau des Prairies, a high land plateau that extends across the county in a southeasterly direction. The county is divided into four geographic parts, with the floodplain and outwash plain along the Big Sioux River separating the western one-third of the county from the eastern two-thirds. The proposed route is located east of the Big Sioux River, which is characterized by a till plain consisting of loamy glacial till. The till plain is characterized by nearly level to gently rolling plains that have well-defined drainage patterns. Exhibit 3.6-1 provides elevation mapping.

3.6.3.2 Geology and Paleontology

The dominant landforms in this area are stagnation moraines, end moraines, glacial outwash plains, terraces, and flood plains. The Major Land Resource Area (MLRA) is dominated by till-covered moraines. The stagnation moraines are gently undulating to steep and have many depressions and poorly defined drainages. The steepest slopes are on escarpments adjacent to some of the larger tributaries. Small outwash areas are adjacent to the watercourses. The Cretaceous Pierre Shale underlies the till in most of the area. Precambrian rocks also occur at depth. Granite is quarried at Milbank, South Dakota, and outcrops of Sioux Quartzite are common. Layers of silt in the quartzite near Pipestone, Minnesota, were quarried by Native Americans, and the stone was carved into pipe bowls.

The project area sits in the Coteau des Prairies, a plateau approximately 200 miles in length and 100 miles in width, rising from the prairie flatlands in eastern South Dakota, southwestern Minnesota, and northwestern Iowa in the United States.

The plateau is composed of thick glacial deposits, the remnants of many repeated glaciations, reaching a composite thickness of approximately 900 feet. They are underlain by a small ridge of resistant Cretaceous shale. During the last (Pleistocene) Ice Age, two lobes of the glacier appear to have parted around the pre-existing plateau and further deepened the lowlands flanking the plateau.

No unique geological features that have state or federal protection will be disturbed by the project. There is the potential for discovery of Pleistocene-era mammal fossils during site excavation and pipeline grading and trenching where the proposed route crosses continental glacial drift in South Dakota. Any mammalian fossils incidentally excavated during construction will not be recovered or studied for the scientific record.

No additional disturbance or loss of unique geological features, mineral resources, or scientifically important fossils will occur during operation of the project because there will be no additional surface disturbance required. Exhibit 3.6-2 provides a map of bedrock geology in the project area. Exhibit 3.6-3 provides a map of surficial geology in the project area.

No additional disturbance or loss of unique geological features, mineral resources, or scientifically important fossils will occur during operation of the proposed project because there will be no additional surface disturbance required.

3.6.3.3 Economic Mineral Deposits

Within the project area there are no substantial mineral resources. Sand and gravel deposits exist within pockets which have been utilized for construction and road base and concrete aggregates.

There are no oil or gas wells in the project area (SDDENR 2008). In addition, the proposed natural gas pipeline route does not propose to occupy or cross any active quarries or mines.

3.6.3.4 Soils

3.6.3.4.1 Existing Conditions

The dominant soil order in this MLRA is Mollisols. The soils in the area have a frigid soil temperature regime, an aquic or udic soil moisture regime, and mixed mineralogy. They generally are very deep, well drained to very poorly drained, and loamy. All of the soils listed in the Project area are considered hydric.

Prime farmland, as defined by USDA, is land that has been determined to have the best combination of physical and chemical properties for agricultural production and is available for farming (NRCS 2009). In addition to prime farmland, land may be classified as farmland of statewide importance, as determined by the state.

In Brookings County, 51 soils are classified as prime farmland, 18 soils are prime farmland if drained, five soils are prime farmland if irrigated, and 18 soils are classified as farmland of statewide importance. In Deuel County, 40 soils are listed as prime farmland, 11 soils are prime farmland if drained, three soils are prime farmland if irrigated, and seven soils are classified as farmland of statewide importance.

In the portion of the project area within Brookings County including the gas pipeline ROW, 44 of the soils found in this area are listed as prime or statewide important farmland. In the portion of the project area within Deuel County, there are 39 soils classified as prime or statewide important farmland. These soils account for approximately 60 percent of the entire project area.

According to the Natural Resources Conservation Service (NRCS), the Deer Creek Station proposed natural gas pipeline ROW contains 13.85 acres of farmland of statewide importance and 54.9 acres of prime farmland. However, this is a small percentage of the 441,708 acres of farmland in Brookings County.

The soils in the project area are comprised of three main groups of deposition: loess which lies on the ridge-tops, residual material that formed in glacial plains and moraines, and alluvial material that lies in stream terraces and glacial outwash plains.

According to NRCS, more than two-thirds of the project area is in farm production. Major soil resource concerns are wind erosion, water erosion, maintenance of the content of organic matter and productivity of the soils, soil wetness, and management of soil moisture.

Conservation practices on cropland generally include systems of crop residue management, especially no-till or other conservation tillage systems that conserve moisture and contribute to soil quality. Other practices include terraces, vegetative wind barriers, grassed waterways, and nutrient management.

3.6.3.4.2 Potential Impacts and Mitigation

Grading and excavating for the proposed natural gas pipeline will disturb agricultural, rangeland and wetland soils. Soils may be altered temporarily following construction because of soil compaction caused by equipment traffic, excavation, and handling. Both compaction-prone and hydric soils are especially prone to structural and aeration damage when trafficked or excavated. Soil compaction that occurs to a degree that will adversely affect backfilling and restoration efforts will be most likely to occur during wet conditions. In some of these areas, drain tile systems may exist that could be disturbed by construction. Acceptable clay texture soil replacement may be more difficult if there are large clods or blocks of the same type of soils present. Droughty soils will be prone to wind erosion during construction and will be more difficult to stabilize and revegetate successfully following construction. Saline and/or sodic soils often have drainage limitations and may undergo compaction impacts similar to the hydric or compaction-prone soils. In addition, the success of stabilization and restoration efforts in these areas may be limited unless additional treatments and practices are employed to offset the adverse physical and chemical characteristics of the soils.

Potential impacts to soils will be minimized or mitigated by the soil protection measures identified in the Erosion and Sediment Control Plan (ESCP), prepared prior to construction under the National Pollutant Discharge Elimination System (NPDES) program. BMPs are described in Section 3.6.4.1.1. The measures include procedures for segregating and replacing topsoil, trench backfilling, relieving areas compacted by heavy equipment, removing surface rock fragments, and implementing water and wind erosion control practices. In addition, Basin Electric will work closely with landowners and soil conservation agencies to identify and implement recommended soil conservation practices in specific areas where they are needed. Problems with drainage and irrigation systems resulting from construction in active agricultural areas will be monitored and corrected.

Topsoil will be segregated during excavation procedures as described in Section 3.8.1. Off-site soils or mud tracked onto public paved roads will be removed to insure clean road surfaces. Excavated material will be backfilled and compacted in the pipeline trench; and any excess materials will be spread across the pipeline ROW. Soils compacted by movement of construction vehicles and equipment will be loosened and leveled by harrowing or disking to approximate pre-construction contours at the discretion of the landowner and then reseeded with certified weed-free native grasses and mulched (except in cultivated fields). The specific seed mix and rate of application is included in Section 3.8.2.2.

If hydrocarbon-contaminated soils are encountered during trench excavation, the South Dakota Department of Environment and Natural Resources (SDDENR), which is responsible for emergency response and site remediation, will be contacted immediately. A remediation plan of action will be developed in consultation with SDDENR. Depending on the level of contamination found, affected soil may be replaced in the trench or removed to an approved landfill for disposal. If construction is curtailed for any reason and for any appreciable length of time, temporary erosion control measures should be employed.

During operation of the pipeline, very small-scale isolated surface disturbance impacts resulting in accelerated erosion, soil compaction, spills, and related reductions in the productivity of desirable

vegetation or crops could result from pipeline maintenance traffic and incidental repairs. Impacts related to excavation and topsoil handlings are not likely to occur. If they do occur, they will be limited to small areas where certain pipeline maintenance activities take place. Exhibits 3.6-4 through 3.6-9 provide soil mapping of the project area

3.6.3.5 Erosion or Sedimentation

Potential impacts to soils during construction will be minimized or mitigated by the soil protection measures identified in the ESCP and as described in the Section 3.6.3.4. The measures include procedures for implementing water and wind erosion control practices. Exhibits 3.6-10 and 3.6-11 provide water and wind erosion zones in the proposed project area, respectively.

3.6.3.6 Seismic, Subsidence, and Slope Instability Risks

The proposed pipeline is located mostly on relatively level terrain in South Dakota. In the few areas where the pipeline route crosses moderately steep slopes, additional grading may be required. Steep slopes often need to be graded down to a gentler slope for safe operation of construction equipment and to accommodate pipe-bending limitations. In such areas, the slopes will be excavated prior to pipeline installation and reconstructed to their original contours during restoration.

In areas where the proposed pipeline route crosses laterally along the side of a slope, cut-and-fill grading may be required to obtain a safe, flat work terrace. Topsoil may be stripped from the ROW as needed and stockpiled prior to commencing cut-and-fill grading on steep terrain. Generally, on steep side slopes, soil from the high side of the ROW will be excavated and moved to the low side of the ROW to create a safe and level work terrace. After the pipeline is installed, the soil from the low side of the ROW will be returned to the high side and the slope's original contours will be restored. Topsoil from the stockpile will be spread over the surface, erosion control features installed, and seeding completed.

In steep terrain, temporary sediment barriers such as silt fence and straw bales will be installed during clearing to prevent the movement of disturbed soil into wetland, water body, or other environmentally sensitive areas. Temporary slope breakers consisting of mounded and compacted soil will be installed across the ROW during grading and permanent slope breakers will be installed during cleanup. Following construction, seed will be applied to steep slopes and the ROW will be mulched with hay or non-brittle straw or covered with erosion control fabric as needed. Sediment barriers will be maintained across the ROW until permanent vegetation is established.

South Dakota lies within an area considered to be at the lowest possible risk for earthquakes in the U.S. There have been no earthquakes of a magnitude capable of damaging welded steel pipelines within South Dakota during historical times. The risk of significant seismic risk in South Dakota is extremely low.

3.6.4 Hydrology

3.6.4.1 Surface Water Drainage

Wetlands occupy about 1.8 million acres (3.6 percent) of South Dakota (USGS 1997). The predominant wetland type in the proposed project area is palustrine persistent emergent class, although forested wetlands and palustrine scrub-shrub wetlands were also delineated. Wetlands within the proposed pipeline route total approximately 54 acres of palustrine emergent, palustrine scrub-shrub, and palustrine forested wetlands

The proposed route traverses nine drainage crossings. If impacts to jurisdictional “waters of the U.S.” should occur during pipeline construction, Basin Electric will submit an application to the U.S. Army Corps of Engineers (USACE) to obtain Nationwide 12 permits for each stream and wetland crossing within the ROW. Basin Electric will abide by all requirements outlined in the Nationwide Permit. Perennial and intermittent water bodies and some associated wetlands will be crossed using open-cut trenching methods as described in Section 3.8.1.3 or horizontal directional drilling techniques as described in Section 3.8.1.4. Directional drilling will avoid impacts to waterways, protect aquatic habitat, and avoid temporary degradation of water quality, sedimentation, and channel bank modifications. In areas where the pipeline may be trenched, similar typical conventional upland cross-country construction procedures will be implemented, with several modifications where necessary to reduce the potential that the pipeline construction would affect wetland hydrology and soil structure.

For approximately 3.5 miles, the pipeline will be located directly in the primary drainage and alluvium of Deer Creek. The pipeline will be buried approximately 6 to 8 feet under channels, adjacent floodplains, and flood protection levees to avoid pipe exposure caused by channel degradation and lateral scour.

Runoff and the resulting erosion of lands adjacent to water bodies can lead to the introduction of solids into suspension and the deposition of sediment in-stream. Mitigation will include extensive procedures to limit the extent of disturbed land adjacent to water bodies, minimize erosion, and prevent sediments from entering water bodies or wetlands. These measures include BMPs such as clearing limits, buffer strips, drainage diversion structures, and sediment barrier installations. Construction of the proposed pipeline will comply with all applicable federal, state, and local permits and requirements for protection of water quality. The proposed project will apply for a construction storm water permit from the South Dakota Department of Environment and Natural Resources (SDDENR) and will develop and implement a SWPPP as required by the permit. Before the start of construction, an NPDES permit application will be submitted to SDDENR for construction stormwater discharges and hydrostatic testing. A SWPPP will be developed and implemented; this SWPPP will include site-specific BMPs to minimize the potential for storm water contamination. BMPs will be maintained until final stabilization of the disturbed construction areas occurs. It is estimated that vegetation cover in palustrine emergent wetlands would recover in three to five years; recovery of forested wetlands would require 20 to 50 years.

The pipeline may cross drain tiles along the route. Basin Electric will attempt to identify and classify any existing drain tile systems along the pipeline route when meeting with land owners, tenants, and local public officials. Cut tile lines will be marked with a flag or lath and ribbon placed in the spoil bank. Marking should follow close behind trench excavation. The tile lines will be

repaired permanently before the ditch is backfilled. Permanent tile repair, which occurs after the pipeline is in place in the trench, must allow 6 to 8 inches of clearance between the tile and pipeline to allow work space in the event of future work on either line. Permanent tile repair will prevent loss of grade and/or alignment as the soil settles in the trench area. In narrow trenches, a piece of metal pipe with flexible corrugated plastic pipe inside, rigid polyvinyl chloride (PVC), or double wall corrugated plastic pipe with slip couplings for end connections, shall be used. All drain tiles that are damaged during construction will be marked in the field. A local drain tile contractor will be hired to repair or replace any drain tile damaged as a result of pipeline construction. Drain tile repairs will be inspected and approved by a pipeline inspector.

3.6.4.1.1 Specific Measures to Protect Water Quality

The proposed project will implement specific measures to protect water quality on the ROW during construction of the gas pipeline, including the following:

- BMPs will be implemented to minimize erosion, sedimentation, runoff, and surface instability during construction.
- Construction will be planned and conducted to minimize disturbance near surface water and wetlands as much as possible.
- Current drainage patterns in areas affected by construction will be maintained as much as possible during construction and will be restored after construction.
- Staging and laydown areas for construction will be located at least 50 feet from waterways or wetlands.
- Construction equipment will not be serviced within 25 feet or fueled within 100 feet of waterways or wetlands.
- Any spills of fuels, chemicals, or other hazardous materials will be promptly contained and cleaned up.
- Exposed soils will be stabilized following grading and filling.
- Silt fencing and other structural devices will be implemented as appropriate to prevent sediment transport.

Once the construction and permanent stabilization of the ROW has been achieved, the construction storm water permit will be terminated. The ROW immediately over the pipeline will be maintained clear of any woody vegetation (trees and shrubs) to facilitate regular inspections. Pipeline ROW inspections will also include evaluation of any indication of erosion or sediment transport; if found these areas will be restored to a condition that will minimize erosion. Any herbicides used in ROW maintenance will be approved by the U.S. Environmental Protection Agency (EPA) and will be applied by licensed professionals. Application of herbicides will be limited to the extent necessary to control vegetative growth directly on the permanent ROW.

Impacts to surface water from the proposed pipeline would be minimal. After the completion of construction and stabilization of the ROW, the potential for impacts to surface water would be negligible. No direct, indirect, or cumulative impacts to surface water or groundwater quality from gas pipeline construction or operation are expected.

3.6.4.2 Floodplains

The proposed pipeline would be located in the 100-year floodplain associated with Deer Creek for approximately 4,789 feet. It will also cross the 100-year floodplains associated with tributaries to Oak Lake. The total length of the proposed route that crosses the 100-year floodplains is 5,691 feet. Temporary impacts from construction may affect drainage and flow in the floodplains in the project construction area. Drainage systems in the project area include Deer Creek and unnamed tributaries of Deer Creek, and unnamed tributaries of Lac qui Parle River. Construction of the pipeline would proceed quickly, however, and the potential effect in any one floodplain area would not be expected to exceed more than a few weeks. Potential direct or indirect impacts to the floodplains crossed by the proposed route during construction are expected to be short-term and minimal. Once the pipeline has been buried, the ground surface will be returned to its original condition and topography. Exhibits 6.3-12 and 3.6-13 provide surface water resource and FEMA floodplain information, respectively.

3.6.4.3 Groundwater

Because the pipeline will be buried at a depth of 60 inches with a minimum cover of 48 inches from top of pipe, it is unlikely that the construction or operation of the pipeline will alter the yield from any aquifers that are used for drinking water purposes. Groundwater entering the construction trench will be removed and disposed of in down gradient areas within the ROW. Depending on the water volume, Basin Electric may need to have temporary water dispersion structures (e.g., straw bale structures, etc.) to discharge the trench water. Appropriate measures will be implemented to prevent groundwater contamination and steps will be taken to manage the flow of any groundwater encountered. In the event that construction of the pipeline damages a landowner's well, Basin Electric will either reestablish the well or provide compensation. Pipeline construction in areas with known surficial aquifers or wetlands will be performed according to current industry BMPs methods to minimize adverse impacts potentially associated with pipeline construction activities.

The Brookings-Deuel rural water delivery system is expected to be crossed 11 times (including farm tap crossings) within Brookings County by the proposed pipeline construction. In preparation for excavation activities, those lines will be duly located by working with local water and irrigation districts and private owners. Wherever possible, the proposed pipeline will be routed under the existing water pipeline and any associated structures. Although not expected, the water pipeline owner will be compensated for any temporary loss of water delivery or other associated losses.

Reductions in groundwater quality from spills, leaks, or disposal practices are not anticipated during construction. Most of the aquifers along the route will be isolated at least temporarily from any spills that occur on the land surface. In the unlikely event of an incident, attending personnel will be able to respond to an incident before contaminants migrate into groundwater. Ground disturbance below the surface during construction will usually be limited to 6 feet or less. It is possible that activities such as trenching, blasting, drilling, dewatering and backfilling could impact shallow aquifers and create minor and short-term effects on groundwater levels and quality. Impacts to deep aquifers are not expected. In areas with near-surface groundwater or in areas adjacent to surface water bodies, additional procedures and measures will be implemented as previously discussed in this application. Exhibit 3.6-14 shows groundwater resources in the proposed project area.

3.6.4.4 Water Use and Sources

The only significant water use that the proposed pipeline will require is hydrostatic test water during the final phases of construction. Water used for hydrostatic testing of the pipeline will be obtained from the Brookings-Deuel County Local Water Supply. The water quantity required for hydrostatic testing will be approximately 301,592 gallons.

No consumption of groundwater will occur with the construction or operation of the pipeline. Construction and operation of the pipeline would have no impacts on planned water uses by communities, agriculture, recreation, fish or wildlife.

Sanitary sewage generated during construction will be collected in portable toilets and will be hauled off site for proper disposal.

3.6.5 Terrestrial Ecosystems

3.6.5.1 Existing Environment

Biological resource data for the proposed project were obtained from the U.S. Fish and Wildlife Service (USFWS), South Dakota Game Fish and Parks (SDGFP), and the National Wetlands Inventory (NWI). Field surveys were conducted between October 29 and November 6, 2008, and between May 4 and May 7, 2009, to collect site-specific data on vegetation, noxious weed occurrence, wetlands and riparian communities, wildlife, and special status species. A detailed biological resources report was prepared to document the proposed project area's existing environment and anticipate potential construction and operational impacts from the proposed project (EDAW 2009).

3.6.5.1.1 Vegetation Communities

Exhibits 3.6-15 through 3.6-20 provide an overview of the vegetation communities and noxious weed occurrence present on the proposed pipeline ROW. During field investigations, data were collected on the vegetation communities along the proposed pipeline. The exhibits show general vegetation community types and land use in the proposed project ROW. The pipeline will traverse areas predominantly used for agricultural purposes. The pipeline ROW will span a total of 120.09 acres. The majority of the area is under agricultural production; cropland, pastureland, and hayland. Other vegetation found in the ROW include native/non-native mixed prairie, forested communities (shelterbelts), and wetlands.

The dominant species observed in upland pastures were smooth brome (*Bromus inermis*), golden rod (*Solidago* sp.), Kentucky bluegrass (*Poa pratensis*), and tall dropseed (*Sporobolus asper*). Forested shelterbelts are associated with farmsteads and typically include green ash (*Fraxinus pennsylvanica*), eastern red cedar (*Juniperus virginiana*), plains cottonwood (*Populus deltoides*), and Siberian elm (*Ulmus pumila*). One area of native prairie was observed in W ½ Section 29 T112N R47W (Exhibit 3.6-17). The dominant plant species were sideoats grama (*Bouteloua curtipendula*), little bluestem (*Schizachyrium scoparium*), bluebunch wheatgrass (*Pseudoroegneria spicata*), western wheatgrass (*Agropyron smithii*), and sedge (*Carex* sp.).

Palustrine emergent, palustrine scrub-shrub, and palustrine forested wetlands occur in the pipeline ROW. Wetland communities are discussed in greater detail in Section 3.6.4.

Three noxious weed species, Canada thistle (*Cirsium arvense*), spiny plumeless thistle (*Carduus acanthoides*) and musk thistle (*Carduus nutans*) were identified during field surveys in moderate to high densities in some areas within the pipeline ROW. The spiny plumeless thistle had previously been documented during surveys conducted in 2008 and is documented in the figures associated with that report. Locations of Canada thistle and musk thistle are shown on Exhibits 3.6-15 through 3.6-20. It is estimated that vegetative cover in native and modified grasslands would recover in 3 to 5 years, while recovery of forests and woodlands would require 20 to 50 years in the temporary extra workspace areas.

3.6.5.1.2 Wildlife

The vegetation cover types that wildlife may inhabit within the proposed gas pipeline include cropland, wetlands, native and non-native tall to mixed-grass prairie, pastureland, hayland, and woodlands (shelterbelts). The majority (more than 80 percent) of the pipeline ROW has been converted or altered by agricultural practices. Wetlands, woodlands (shelterbelts) and native grassland habitats are present, but they make up a small percentage of the total habitat types found within the proposed ROW. The proposed pipeline would cross nine drainages. Perennial and ephemeral creeks and wetlands provide habitat for amphibians, fish and aquatic invertebrates. Species observed in proximity to the pipeline corridor include Bald Eagles (*Haliaeetus leucocephalus*), Red-Tailed Hawks (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsoni*), American kestrel (*Falco sparverius*), Northern Flicker (*Colaptes auratus*), Common grackle (*Quiscalus quiscula*), Loggerhead Shrikes (*Lanius ludovicianus*), western meadowlarks (*Sturnella neglecta*), mourning doves (*Zenaida macroura*), Ring-Necked Pheasants (*Phasianus colchicus*), tree swallows (*Tachycineta bicolor*), barn swallows (*Riparia riparia*), and European Starlings (*Sturnus vulgaris*). American white pelican (*Pelecanus erythrorhynchos*), Killdeer (*Charadrius vociferus*), Yellow-Headed Blackbirds (*Xanthocephalus xanthocephales*), Red-winged Blackbirds (*Agelaius phoeniceus*), Great Blue Heron (*Ardea herodias*), Painted turtles (*Chrysemys picta*), Northern leopard frogs (*Lithobates pipiens*), chorus frogs (*Pseudacris* sp.*),* Great Plains toad (*Bufo cognatus),* American toad (*Bufo americanus*) were all observed in wetland and aquatic habitats found within the new re-route sections of the alignment. White-tailed deer (*Odocoileus virginianus*) and thirteen-lined ground squirrels (*Spermophilus tridecemlineatus*) were also observed within the alignment. Bats may occur throughout the proposed pipeline route in the riparian, wetland, and woodland habitats.

3.6.5.1.3 Threatened and Endangered Species

Threatened and endangered species associated with terrestrial habitats in the proposed project area are discussed in this section. Federally listed aquatic species, namely the Topeka shiner, are discussed in Section 3.6.6. Discussion of state-listed threatened and endangered species is provided in the detailed biological resources report (EDAW 2009).

Exhibit 3.6-21 shows elemental occurrence records for special status species in the proposed project area. This data came from SDGFP biological diversity database. Other information pertaining to federally listed species was collected from USFWS and SDGFP in 2008 and 2009. Basin Electric conducted a site visit with representative of USFWS and USACE on May 5, 2009, to familiarize the agencies with the proposed project area and assess habitat for federally listed terrestrial and aquatic species. The whooping crane *(Grus americana*) and the Western prairie fringed orchid (*Platanthera praeclara*) were identified by USFWS as potentially occurring in the proposed project area. In addition, there is one candidate species that may have suitable habitat

in the proposed project area, the Dakota skipper (*Hesperia dacotae*). It was determined through informal consultation with USFWS that suitable habitat for the federally endangered American burying beetle (*Nicrophorus americanus)* does not occur in the Deer Creek project area and surveys for this species will not be required (Schriner 2009). A Biological Assessment (BA) will be prepared by Western in consultation with the USFWS. The BA will outline avoidance and mitigation measures that would be implemented to mitigate impacts to threatened, endangered, and candidate species that may occur in the project area.

In addition to the protection of species listed on the Endangered Species Act (ESA), federal protection is also afforded to nesting avian species listed under the Migratory Bird Treaty Act (MBTA). The Bald and Golden Eagle Protection Act (BGEPA) provides additional protection to bald and golden eagles.

Whooping Crane

The whooping crane is a federal endangered species that migrates through South Dakota and other parts of the Central Flyway on its way to northern breeding grounds and southern wintering areas. It can occupy numerous habitats, including cropland and pastures, wet meadows, shallow marshes, shallow portions of rivers, lakes, reservoirs, and stock ponds (Canadian Wildlife Service and USFWS 2005). Overnight roosting sites frequently require shallow water in which the bird stands and rests (Canadian Wildlife Service and USFWS 2005). In spring, the whooping crane migrates through South Dakota in mid-March through mid-April, and in fall, it migrates mid-September through mid-November. Some cranes can be observed migrating through early December. Whooping cranes may migrate through the proposed project area during spring and fall migration because of the presence of wetland and croplands in the proposed project area. According to the database maintained by USFWS for whooping crane sightings (USFWS 2008b) and review of elemental occurrence records from the South Dakota Wildlife Diversity Program (SDGFP 2008b), there are no recent or historical occurrences of whooping cranes in the proposed project area or Brookings County. Surveys for whooping cranes are not required by USFWS for this proposed project.

Western Prairie Fringed Orchid

The Western prairie fringed orchid was listed under the ESA as threatened in the United States in 1989. The western prairie fringed orchid is not known to occur in Brookings County, and the species is thought to be extinct in South Dakota (USFWS 2008c).

Western prairie fringed orchids occur most often in remnant native prairies and meadows, but have also been observed at disturbed sites (USFWS 2008c). The orchid is associated with native tallgrass prairie species including big bluestem (*Andropogon gerardii*), Indian grass (*Sorghastrum nutans*), and switch grass (*Panicum virgatum*). In hydric habitats, the orchid is associated with communities dominated by sedges (*Carex* spp.) and spikerushes (*Eleocharis* spp.) (USFWS 1996). Potential habitat for the orchid exists within the wetland communities found in the proposed construction ROW. Habitat surveys were conducted in July 2009 and no suitable habitat was found for the Western prairie fringed orchid within the pipeline ROW.

American Burying Beetle

The American burying beetle is listed as a federally endangered species in South Dakota. The beetle is known to occur in Bennet, Gregory, Hakkan, Tripp, and Todd counties (USFWS 2008a). Suitable habitat for the beetle is considered to be any site with significant humus or topsoil suitable for burying carrion. American burying beetles appear to be largely restricted to areas mostly undisturbed by human influence (SDGFP 2008a). Conversations within USFWS and SDGFP (Schriner 2009) indicated there are historical records for beetle sightings within the proposed project area, but recent survey work has yielded no occurrences. USFWS believes that there is very limited habitat in the pipeline ROW and, therefore no surveys would be required for the proposed project.

Dakota Skipper

The Dakota skipper is a candidate for listing under the ESA. The skipper is a small butterfly with a 1-inch wingspan that requires tracts of native prairie consisting of bunchgrasses and forbs for nectar sources. Dakota skippers have not been found in habitats heavily overrun with exotic species, but can occur in transition zones of mixed and tallgrass prairie in South Dakota (USFWS 2007a). The species can exist in both wet and dry habitat. Wet habitat typically consists of relatively flat native bluestem prairie containing flowering wood lily (*Lilium philadelphicum*), harebell (*Campanula rotundifolia*), and smooth camas (*Zygadenus elegans*) (USFWS 2007a). Dry habitat typically consists of upland prairie areas on ridges and hillsides dominated by bluestem grasses and needlegrasses containing abundant pale purple coneflower (*Echinacea pallida*), upright coneflower (*E. angustifolia*), and blanketflower (*Gaillardia* sp.) as nectar sources (USFWS 2007a).

The Dakota skipper has been documented at Oak Lake in the SDGFP Wildlife Diversity Database. Oak Lake is located approximately 1 mile west of the proposed pipeline alignment (SDGFP 2008b). Preferred habitat for the species is limited in the proposed project construction area because of the prevalence of agricultural activities. Native grassland does occur within the pipeline ROW as shown on Exhibit 3.6-17. A specialist trained in conducting Dakota skipper surveys has conducted a habitat assessment and occurrence/absence surveys for this species within the pipeline ROW. Two areas of suitable habitat were found within the pipeline ROW. The survey indicated the absence of the Dakota Skipper within these two areas of suitable habitat within the pipeline ROW.

Bald and Golden Eagles

The bald eagle was recently de-listed from the ESA, but is still afforded protection under the MBTA and BGEPA. Bald eagles occur throughout South Dakota and new nests appear every year (USFWS 2007b). These birds are associated with large trees, such as cottonwoods, and large lake or river systems. Small mammals such as prairie dogs provide foraging opportunities for many raptors, including bald eagles. The SDGFP Wildlife Diversity Database (SDGFP 2008b) showed, and field observations confirmed that no active bald eagle nests of roosts were observed on the natural proposed construction ROW as of October 2008 (EDAW 2009). A bald eagle was observed in October 2008 near the Lac qui Parle River, which feeds into Lake Hendricks. Bald eagles may forage within the pipeline ROW, particularly near aquatic habitats such as Deer Creek and its tributaries.

Golden eagles may occur in eastern South Dakota during the winter months, but are primarily found in the western part of the state. There are no golden eagle nests within the proposed project vicinity or Brookings County.

Migratory Birds

The natural proposed construction ROW contains nesting and stop-over habitat for a number of ground and tree-nesting migratory birds, protected under the MBTA. Under the authority of the MBTA, federal projects are reviewed for impacts on migratory birds. Section 703 of the MBTA states that adverse impacts to migratory birds are to be avoided: "Unless and except as permitted by regulations ... it shall be unlawful at any time, by any means, or in any manner, to ... take, capture, kill, attempt to take, capture, or kill, possess... any migratory bird, any part, nest, or eggs of any such bird."

There were two inactive and one active raptor nests identified. An active great horned owl nest was documented on the east side of the energy conversion facility approximately 0.6 mile east of the southern end of the gas pipeline ROW and approximately .4 mile east of the energy conversion facility site boundary. The pair was observed nesting in a plains cottonwood community near an abandoned homestead.

One inactive raptor nest was documented in the south east corner of the energy conversion facility site. The nest was situated approximately 40 feet above ground in a cottonwood tree. Signs of nesting activity, such as raptors in the area, whitewash, fresh vegetation lining the nest, were not present at the time site visits were conducted in May 2009. Given the size and location of the nest, it is assumed the nest previously was used by a *Buteo* species such as a red-tailed hawk or Swainson's hawk or, possibly an owl.

Another inactive raptor nest was documented in May 2009 approximately .5 mile southwest of the proposed construction ROW in a shelterbelt just east of 484th and north of 197th. The nest was observed in a shelterbelt and appears to be an inactive raptor nest.

3.6.5.2 Environmental Effects

Resource protection measures for vegetation resources include the following:

- The contractor will exercise care to preserve the natural landscape and will conduct construction operations to prevent any unnecessary damage to or destruction of natural features.
- The contractor will exercise care to preserve the natural landscape by restricting equipment to designated roads, trails, and staging areas.
- Vegetation will be preserved and protected from damage that results from construction operations to the extent practicable.
- An integrated weed management plan for the project will be developed prior to construction.
- All construction materials and debris will be removed from the work area in a timely manner.
- Construction vehicles and equipment will be maintained in proper operating condition and equipped with manufacturers' standard noise control devices or better (e.g., mufflers and engine enclosures).

- Forested habitat (shelterbelts), especially those bordering wetlands, will be avoided wherever possible.
- If native prairie is disturbed during pipeline construction, existing topsoil will be carefully salvaged and replanted with native grasses. Planting will be conducted in a timely manner to minimize invasion of noxious or undesirable weed species.
- Noxious weeds will be controlled within the pipeline ROW during construction and operation.

3.6.5.2.1 Vegetation

Construction and operation of the gas pipeline would result in both construction and operation related impacts to vegetation communities in the proposed project area. The majority of the proposed pipeline parallels existing rights-of-way and will be almost entirely constructed in croplands, hay lands, and pasturelands. The approximate extent of impacts to each vegetation community type was outlined above in Section 3.6.5.1. Section 3.6.5.2 outlines resource protection measures that will be implemented to minimize and mitigate the potential impacts to vegetation as discussed below.

In general terms, construction-related impacts would be concentrated within the construction ROW for the gas pipeline. Construction activities would result in vegetation removal, increased trampling of vegetation, erosion, soil compaction, and sedimentation, any of which could result in adverse effects to vegetation communities. Construction will be sequenced to limit disruption to any area at one time to reduce the impact of construction on vegetation and to minimize the introduction of noxious and invasive weeds to the ROW. Any trenches will be backfilled according to state regulations, and the area will be reseeded with native grasses and forbs after construction is complete.

Soils subjected to vegetation removal in sloped areas, including draws, drainages, wetlands and riparian areas, are particularly vulnerable to sedimentation and erosion impacts. Compacted soils can inhibit germination and root growth for native plant species. If severe, native plants may have trouble becoming reestablished and could be replaced by new or weedy plant species. Ground disturbance also often results in propagation of noxious weeds, particularly in areas that have existing weed infestations.

Noxious weeds can be spread from unwashed construction equipment, vehicles transporting noxious weed-inoculated soil or plant materials into previously un-infested areas, or from transfer of topsoil inoculated with noxious weeds. Noxious weeds typically are fast-growing and can displace native species or inhibit reestablishment of native grasses, forbs, and shrubs. Caution would be exercised as part of the mitigation measures to avoid the introduction or spread of noxious weeds by requiring that construction equipment and vehicles are free of soil and debris prior to entering the construction area. Vehicle cleanings will be employed to prevent the spread of noxious weeds.

Fugitive dust poses a potential impact to local plant communities during proposed project construction, operation and future maintenance. Fugitive dust is defined as dust that is not emitted from a definable point source, such as industrial smokestacks. Construction equipment, travel on existing and newly constructed gravel access roads, soil disturbance, are all sources of fugitive dust. Fugitive dust can interfere with plant growth by clogging stomata (i.e., pores),

thereby reducing gas exchange with the environment, and reducing light interception. To minimize fugitive dust impacts from pipeline construction on vegetation, Basin Electric would ensure the projects comply with BMPs such as road watering, revegetation of disturbed soils, placement of non-dusting granular material for driving surfaces, installation of windbreak fencing or tree plantings, etc.

Temporary alteration of existing drainages and drainage patterns may impact water availability for vegetation communities including wetlands. Wetland communities and other vegetation communities may be affected by groundwater pumping. This impact cannot be quantified at this time. Species that require less water and those that thrive in bare ground are usually noxious and invasive weeds.

Vegetation communities such as forested communities, wetlands, and native grassland would be avoided to the greatest extent feasible. Minimal tree clearing or removal within forested shelterbelts will occur during the construction of the pipeline.

If native prairie is disturbed during pipeline construction, existing topsoil will be carefully salvaged and replanted with native grasses. A revegetation plan that includes a recommended seed mix for the pipeline ROW is included in this application as Section 3.8.2.8.

Through the implementation of resource protection measures and the proposed project's revegetation plan, impacts to vegetation within the pipeline ROW are expected to be short-term in nature. No long-term, adverse impacts to vegetation are expected. Areas that are disturbed by construction equipment are expected to recover naturally with vegetative reestablishment or will be reseeded with native vegetation after the construction equipment is permanently removed.

3.6.5.2.2 Wildlife

Some of the potential construction impacts to wildlife resulting from construction of the gas pipeline include habitat fragmentation, habitat loss, ground-disturbance, noise impacts, and hydrologic impacts are discussed in detail below. Impacts to wildlife can be direct, indirect, permanent or temporary and will be separated when necessary into construction and operation impacts.

Habitat Fragmentation Impacts

Habitat fragmentation is defined as the process by which a natural landscape is broken into smaller parcels of the natural ecosystems, isolated from one another in a matrix of lands dominated by human activities (Saunders and Hobbs 1991). Temporary habitat fragmentation may occur while the construction ROW is being re-seeded. Once the pipeline ROW is revegetated with native species, it is expected that wildlife would return to the area. Operation of the pipeline is not expected to have any long-term adverse impacts to wildlife species.

Temporary Habitat Loss—Nesting Habitat Impacts

The removal of vegetation and soils within the construction ROW would temporarily result in the loss of cover, forage, and nesting habitat for wildlife that occur in the area. The re-seeding plan and resource protection measures outlined above under the vegetation section would mitigate some of these impacts.

No active ground-nests were observed within the proposed construction ROW during field surveys conducted in 2009. Suitable nesting habitat is present, however, within the ROW. The temporary loss of nesting habitat could lower the overall productivity within the proposed project area over the course of the construction and re-seeding period; however, it is not expected to impact the viability of breeding avian populations in Deuel or Brookings County, in the state, or on a regional scale. In general, disturbance of wildlife would be greatest during spring-summer breeding season and fall migration. The bird species discussed in Section 3.6.5.1 have the potential to occur within the proposed project site boundaries.

The active Great-Horned Owl nest found approximately 0.6 miles from the pipeline ROW is of sufficient distance that construction of the pipeline would have no impact on the nesting pair. The nest is also buffered by a large hillside to the west and an old homestead. The inactive nest is also of sufficient distance that construction noise should not impact a breeding pair, should the nest become active again in the future.

The forested shelterbelts in the ROW provide suitable habitat for raptor species, though none were observed within the proposed construction ROW. Basin Electric is committed to preserving riparian trees and forested shelterbelts to the greatest extent feasible to minimize impacts to avian species and to preserve shelter for cattle found in these areas. If construction occurs during the raptor breeding season (time dependant on species), surveys would be conducted to ensure the proposed project does not affecting breeding raptors in the area. If an active raptor nest was found in within 0.25 mile of the ROW, Basin Electric and Western would work with USFWS to either buffer and monitor the nest from construction activity (depending on the location of the nest relative to disturbance) or delay construction until chicks have fledged.

If construction occurs at any time between March 15 and October 1, avian nesting surveys would be conducted by a qualified specialist in order to avoid the take of nesting avian species. If special status or migratory species were found nesting within the proposed project boundary, USFWS would be consulted to identify measures to minimize impacts and avoid the take of breeding birds. The majority of the resident and migratory bird species that may be found within the proposed project area are protected under the MBTA.

Ground Disturbance-Associated Impacts

Possible indirect effects to wildlife habitat from ground-disturbing activities include the risk of further propagation of noxious weeds. Noxious weeds can adversely affect wildlife habitats by reducing foraging opportunities for terrestrial wildlife, big game, and upland game bird species. An Integrated Noxious Weed Management Plan would be implemented to minimize and mitigate indirect effects to wildlife habitat during construction and operation of the proposed project.

Construction related impacts, including traffic, noise, and human disturbance, may result in the mortality of less mobile, fossorial (ground-dwelling) species within the proposed project area. Loss of smaller mammals may affect the local prey base for raptors and terrestrial predators. Mobile wildlife such as big game species would likely disperse from areas with construction activities or ongoing human disturbance. No long-term or permanent effects are expected. Once the ROW has been re-vegetated wildlife are expected to return to the area.

Noise Impacts

The construction- and operation-related noise effects on wildlife would depend greatly on which species are present within the proposed project site during or that remain following construction, the specific locations of these species, seasonal and diurnal timing of activities, the type of construction, maintenance, or operational activity and equipment utilized, and duration of activity at each site. Noise impacts would be limited to the construction period.

Hydrologic Impacts

Construction and operation may result in short- or long-term impacts to surface water, groundwater, and/or wetlands within the proposed project area. To minimize and mitigate hydrologic impacts and impacts to wetland habitats in the ROW, Basin Electric will directionally drill jurisdictional wetlands and surface waters that may provide habitat for federally listed species, namely, the Topeka shiner. Some jurisdictional waters may be trenched using conventional methods during drier months. Ditches or ephemeral streams that are found in the proposed project area may also be directionally drilled if construction occurs during wetter months. Directionally drilled the pipeline would minimize impacts to terrestrial wildlife species associated with wetland and surface water. Further impacts to aquatic species are discussed under Section 3.6.6.2.

Through implementation of resource protection measures, the proposed project is not expected to have long-term, adverse effects to wildlife species in the proposed project area.

3.6.5.2.3 Threatened and Endangered Species

Resource protection measures for threatened and endangered species include the following:

- USFWS and SDGFP have been consulted to identify known locations of any rare, threatened, or endangered species in the gas pipeline ROW. If any unanticipated threatened or endangered species are encountered during construction, all ground-disturbing activities in the immediate area will be stopped immediately until consultation with the appropriate resource agency can occur.
- Surveys for the Western prairie fringed orchid and the candidate species Dakota skipper occurred in the summer 2009. If any federally listed or candidate species is found within the construction ROW, USFWS will be notified and consulted on the appropriate avoidance or mitigation measures to minimize impacts to special status species. A Biological Assessment will be prepared for the project and it will thoroughly address impacts and mitigation measures for federally listed species.
- Basin Electric will also conduct nesting surveys if construction occurs during the avian breeding season, to avoid the take of a nest or bird protected under the MBTA.
- Basin Electric will be compliant with all stipulations provided by USFWS in the Biological Assessment and ensure compliance with the ESA and MBTA.

Whooping Crane

There are no recent or historical occurrences of whooping cranes in the proposed project area or in Deuel or Brookings County. The proposed project will minimize impacts to suitable stop-over habitat for whooping cranes (large wetland complexes and surface waters) and impacts to grassland and cropland areas will be temporary in nature. If construction occurs during spring

and/or fall migration, whooping cranes may temporarily avoid the proposed project area. The proposed project is not expected to have any long-term impacts on whooping cranes or habitat used by whooping cranes during migration.

Western Prairie Fringed Orchid

A habitat assessment was conducted in the summer of 2009 and no suitable habitat was found for the Western prairie fringed orchid within the pipeline ROW. If populations of the orchid are found within the ROW during construction, Basin Electric would work with Western and USFWS to avoid and/or mitigate impacts to this federally listed plant species.

American Burying Beetle

USFWS and SDGFP have determined that there is no suitable habitat for the American Burying Beetle in the proposed project area. Surveys will not be required and it is assumed at this time that the proposed project would not impact beetle populations.

Dakota Skipper

A specialist trained in Dakota skipper surveys conducted a habitat assessment for this species within the pipeline ROW and determined that two areas of suitable habitat were present within the pipeline ROW. No presence of Dakota Skipper was documented within the pipeline ROW. . If the skipper is found within the construction ROW, Basin Electric would work with Western, USFWS, and SDGFP to determine the appropriate course of action to avoid or mitigate impacts to this federal candidate species.

Bald and Golden Eagles

Basin Electric is planning to minimize impacts to large wetland complexes and surface waters in the proposed project area. This will minimize impacts to bald eagle foraging habitat and the aquatic species they prey upon. Bald eagles may temporarily avoid the construction ROW due to noise disturbance and human presence.

If a bald eagle is found nesting or roosting in the proposed project area prior to construction, USFWS and SDGFP would be contacted to establish construction buffers to avoid impacts to breeding pairs.

Migratory Birds

The proposed project occurs in the Central Flyway and it is likely that a number of species nest within proximity to the construction ROW. During proposed project construction, migratory birds may avoid the construction ROW and nest in locations further from the human and noise disturbance. The proposed project would result in the temporary loss of nesting substrate (vegetation), but the re-seeding plan and implementation of a noxious weed management plan would ensure these impacts are short-term and minor.

Basin Electric will minimize impacts to native prairie, wetlands, and forested communities to the greatest extent feasible. While there may be short-term impacts during construction, long-term impacts to these crucial nesting and stop-over habitats will be minimized. If construction occurs during the avian breeding season, nesting surveys will be conducted prior to any ground-disturbing activities to ensure the proposed project does not result in the “take” of a species protected under the MBTA.

If active raptor nests are found in the project area, Basin Electric would consult with SDGFP to determine appropriate construction buffers.

3.6.6 Aquatic Ecosystems

3.6.6.1 Existing Environment

3.6.6.1.1 Wetlands

Wetlands within the proposed pipeline route total approximately 35 acres (Exhibits 3.6-22 through 3.6-27). Of the approximately 35 acres of wetlands, 33 acres are palustrine emergent, 0.01 acres are palustrine scrub-shrub, 0.6 acres are palustrine forested, and 0.8 acres are palustrine unconsolidated bottom. Wetland communities in the pipeline ROW are associated with Deer Creek and its tributaries, the Lac qui Parle River, Oak Lake, roadside and irrigation ditches, swales, topographic depressions, and other unnamed intermittent drainages. The majority of these features have associated wetland communities. Hydrophytic vegetation recorded in the wetland communities found in the proposed project area include reed canary grass, yellow bristle grass, barnyardgrass, prairie cordgrass, coyote willow, and sedge species. The acreage of impacts to wetland communities within the proposed gas pipeline would be determined once proposed project design is finalized.

Deer Creek is a tributary to the Big Sioux River; the confluence is located approximately 20 miles southwest of the southern terminus of the proposed pipeline route. Wetlands associated with Deer Creek and its tributaries are likely classified as jurisdictional “waters of the U.S.” Wetlands associated with the roadside ditches and isolated topographic depressions are not likely classified as jurisdictional “waters of the U.S.” The pipeline may cross Deer Creek or tributaries up to five times. Three of these crossings are in an area just north of State Highway 30, where the creek has been re-routed.

Depending on the final alignment, the gas pipeline could have up to 11 surface water crossings, including irrigation ditches (Exhibits 3.6-22 through 3.6-27).

3.6.6.1.2 Aquatic Species

Based on review of South Dakota Gap Analysis Program (SD-GAP) data and the fish identification guide published by SDGFP, there are approximately 52 species that may occur within or in proximity to the proposed project area. The water bodies located within the proposed project feature boundaries are all fresh water streams and ponds (both natural and excavated stock ponds) that feed into small- and medium-sized lakes. Surface waters within or in proximity to the proposed project area include Deer Creek, Lac qui Parle River, Lake Hendricks, and Oak Lake. A number of unnamed tributaries associated with these water features are found within the proposed project area. Channelized creeks ranged in size from 2 inches deep and 6 inches wide to 3 feet deep and 30 feet wide. Wetland vegetation was generally present except in areas highly disturbed by livestock grazing. The substrates varied between small to medium gravel to thick silt. Stream banks within the proposed project area were generally channelized and averaged 2 feet in height. Stream bank heights varied from 6 inches to 5 feet in height. Ponds also varied in size, ranging from 6 inches deep and 6 feet wide to 6 feet deep and 50 feet across. Wetland and riparian vegetation was found along the margins of all ponds.

General habitat quality for fish species was assessed based on stream substrates, vegetation present, and lack of grazing impacts to stream banks and general water quality. Fish were observed in an unnamed drainage coming from the Black Slough, north of 197th Street (Exhibit 3.6-22). Deer Creek and its tributaries that flow through the pipeline ROW also provide suitable habitat for fish species.

Eastern South Dakota is home to 15 species of amphibians. Of these, seven species occur or have suitable habitat within the proposed project area, or may occur downstream from the proposed project area. During the winter, amphibians in South Dakota are found in deep permanent water bodies and during breeding season are found in more seasonal and temporary ponds (Fischer et al. 1999). Amphibian occurrence in South Dakota is highest in semi-permanent and permanent wetlands. Man-made wetlands and riverine wetland habitats have lower occurrence of amphibians compared to semi-permanent and permanent wetlands (Fischer et al. 1999). In South Dakota, agricultural practices may involve the draining of temporary, seasonal, and tillage wetlands. According to Fischer et al. (1999), “temporary wetlands may increase habitat connectivity for amphibians dispersing between breeding and overwintering ponds”. As a result, it is possible that loss of temporary or seasonal wetlands may increase the distance frogs, toads, and salamanders must travel between habitats, and it may increase the risk of local amphibian extinctions (Fischer et al. 1999). Reptiles and amphibians are sensitive to chemical pollutants, habitat loss, and competition by invasive species.

Painted turtles (*Chrysemys picta*), Northern leopard frogs (*Lithobates pipiens*), chorus frogs (*Pseudacris* sp.*),* Great Plains toad (*Bufo cognatus),* and American toad (*Bufo americanus*) were all observed in wetland and aquatic habitats found within the proposed construction ROW. Northern leopard frogs were abundant in the large wetland communities shown on Exhibits 3.6-23 and 3.6-24.

3.6.6.1.3 Threatened and Endangered Aquatic Species

USFWS listed the Topeka shiner (*Notropis topeka)* as endangered in January 1999. This species generally occupies small, prairie streams with high quality water, groundwater inputs, and sand or gravel substrates (SDGFP 2003). Some Topeka shiner habitat in South Dakota includes streams with silt substrates, off-channel backwater areas, borrow pits, and sloughs connected to occupied streams. Topeka shiners have been collected in varying abundance from streams with incised channels, high bank erosion, and intensive grazing pressure along riparian zones. Although no Topeka shiner critical habitat is designated in South Dakota, this species is known to occupy tributaries of the James, Vermillion, and Big Sioux rivers in South Dakota. Deer Creek is a tributary to the Big Sioux River. According to the SDGFP Wildlife Diversity Database (SDGFP 2008b), Topeka shiners were recorded in an unnamed tributary to Deer Creek in 2000, approximately 1.5 to 2 miles north (and upstream) of the proposed project location. Deer Creek and its tributaries in the pipeline ROW provide potential habitat for Topeka shiners. The USFWS has requested that Basin Electric move forward with the proposed project with the assumption that Topeka shiners do occur in the proposed project area.

3.6.6.2 Environmental Effects

Resource protection standards for wetlands and common and threatened and endangered aquatic species include the following:

- Construction activities will comply with the SWPPP, ESCP, and SPCC Plan.
- Discharges of fill material associated with unavoidable crossings of wetlands or intermittent streams will be carried out in compliance with provisions of Section 404 of the Clean Water Act and the nationwide and/or project specific permit requirements of the Corps of Engineers.
- SDGFP has been consulted for known locations of any rare, threatened, or endangered aquatic species in the proposed project area. If any unanticipated threatened or endangered species are encountered during construction, all ground disturbing activities in the immediate area will be stopped immediately until consultation with the appropriate resource agency can occur.
- If construction through a wetland cannot be avoided and directional drilling is determined to be infeasible, trenches through the wetland should be sufficiently compacted to prevent bottom seepage or drainage along the trench.
- If construction is necessary in or near wetlands, timing of construction will be deferred to late summer to avoid high water conditions and to decrease disruption of waterfowl or other wildlife during the nesting season to extents practicable.
- Basin Electric will be compliant with all stipulations provided by USFWS in the Biological Assessment and ensure compliance with the ESA.
- Basin Electric will be compliant with measures specified under Section 404 of the Clean Water Act.

3.6.6.2.1 Wetlands

The majority of jurisdictional wetlands within the gas pipeline ROW will be directionally drilled to avoid long- and short-term impacts to wetlands and the species associated with them. Trenching, along with appropriate mitigation measures, may also be used. Trenching would occur during dry periods, such as fall and winter months, to minimize impacts to surface waters, wetlands, and the species associated with these areas. If trenching is conducted, construction may result in short- or long-term impacts to wetlands from erosion of exposed sediments, during construction or accidental hazardous spills from construction equipment. Trenching would result in the removal of wetland vegetation, short-term alteration of surface hydrology, increased risk for spread of noxious weeds, and may result in the loss or degradation of aquatic habitats used by amphibians, fish, and other aquatic species. Basin Electric will submit an application to USACE to obtain Nationwide 12 permits for each stream and wetland crossing within the ROW. Basin Electric will abide by all requirements outlined in the Nationwide Permit. Impacts to wetlands are expected to be temporary in nature and the wetlands would be restored once the pipeline is in place.

3.6.6.2.2 Aquatic Species

Basin Electric will minimize direct and indirect impacts to fish and other aquatic species in the project area. If a particular area is not directionally drilled, and the crossings are trenched, construction may result in short-term impacts to fish, reptiles, amphibians, and aquatic invertebrates that may occur in the area. Most of the impacts to aquatic resources would occur as a result of the construction process. Sedimentation in aquatic ecosystems can have adverse

impacts as it may cover strategic feeding, resting, and breeding habitats. Sediment and turbidity can also be directly toxic to some aquatic species either through physical actions (e.g., abrasion and clogging of respiratory structures) or via chemical interactions. Erosion of exposed sediments or accidental hazardous spills from equipment may result in short- or long-term impacts.

If trenching were required, Basin Electric would implement resource protection measures as outlined above under Section 3.6.6.2 to mitigate potential impacts such as sedimentation, erosion, hazardous waste spill (e.g., fuel from construction equipment), and alteration of natural drainage patterns. Construction would occur during the driest time of the year to minimize impacts to aquatic resources.

3.6.6.2.3 Threatened and Endangered Species

Basin Electric will adhere to all stipulations in the Biological Assessment as developed by Western in consultation with USFWS.

3.6.7 Land Use and Local Land Controls

Operation and maintenance of the proposed pipeline will be compatible with the present land uses of the surrounding area. The pipeline will be located underground and land uses will return to pre-construction conditions after construction is completed. The depth of cover over the buried pipeline will be at least 48 inches, and will allow normal agricultural operations to occur after construction is completed.

The proposed pipeline is located in the jurisdictions in the townships of Sherman, Richland, and Lake Hendricks in Brookings County and in Scandinavia Township in Deuel County. The proposed project is compatible with existing land use designations in the counties and will not require rezoning. In both Brookings and Deuel counties, the proposed project area is zoned as Agricultural and the agricultural zoning intends to maintain and promote farming and related activities within an environment which is generally free of other land use activities. Residential development is discouraged in the zone to minimize conflicts with farming activities and reduce the demand for expanded public services and facilities (Brookings County 2007, Deuel County 2004).

In Brookings County, the proposed project will occupy land also designated in the Brookings County Comprehensive Plan as an Area of Development Stability (Brookings County 2000). Although the primary focus of the Area of Development Stability is to promote the agricultural designation, the defined area allows industrial site construction. There are no ordinances in place known to restrict pipeline development and it is not anticipated that there will be future ordinances that might restrict the pipeline. Basin Electric will secure all required planning and construction permits from authorizing jurisdictions. A Conditional Use Permit from Brookings County, a Special Exception Permit for Essential Services from Deuel County, and approval from township boards, as well as various construction-related permits will be obtained prior to construction. Adherence to appropriate codes and regulations with the counties will occur. Exhibit 3.6-28 shows the lands uses within the project area.

3.6.7.1 Measures to Ameliorate Adverse Land Use Impacts

The majority of the final gas pipeline alignment has been sited within and adjacent to existing ROWs, and road easements, and will cross agricultural areas. Existing ROWs will be restored to original conditions. During construction, vehicular and emergency access to all separately owned land will be controlled at all times. Construction hours for the installation of the gas pipeline will be limited to daytime hours as required by local county permitting to limit noise impacts to adjacent residences. Measures to ameliorate adverse land use impacts in agricultural areas are described in Section 3.7.6.

3.6.8 Air Quality

All counties in the affected area surrounding the proposed site have been designated as attainment areas (or unclassifiable) for all existing national ambient air quality standards (NAAQS), including the 8-hour ozone and particulate matter with mean aerometric diameter smaller than 2.5 microns ($PM_{2.5}$).

Any impact to air quality associated with the proposed pipeline will be short term and transient. Fugitive dust from off-road travel can be expected. This will be mitigated by limiting off-road vehicle speed to less than 25 miles per hour (mph). Other potential air impacts are expected from contractor-vehicle exhaust and construction equipment. Motors will be shut off and not be allowed to be idled when not in use.

3.7 Community Impacts

This section identifies and analyzes the effects of construction, operation, and maintenance of the proposed facility on economic, employment/labor market, infrastructure, community services, taxation, housing, agricultural production, and transportation within the designated affected area. Under South Dakota Codified Law (SDCL) 49-41 B-6, the Commission is required to designate the affected area relative to this filing and also to designate a local review committee within 30 days after the filing of the notification of intent. In Administrative Rule of South Dakota (ARSD) 20:10:22:01 (1), "affected area" is defined as "that area which may be affected environmentally, socially, aesthetically, or economically by the location of a facility at a proposed site."

At its January 27, 2009, meeting, SD PUC considered the request for waiver of the 30-day requirement of designation of the affected area and the local review committee and discussed the designation of the affected area and the local review committee. The SD PUC unanimously voted to grant the request for waiver of the 30-day requirement of designation of the affected area and the local review committee.

After discussion, the SD PUC determined that the affected area for Basin Electric's proposed Deer Creek Station Project is an area within 12 miles of the site of the proposed facility located entirely within Brookings and Deuel Counties, Brookings School District 051, Deubrook School District 05-6 and Elkton School District 05-3, and the cities of Astoria, Aurora, Brookings, Bushnell, Elkton and White. The affected area does not include any tribal lands. Exhibit 3.4.2 shows the designated affected area for the Deer Creek Station Project.

3.6 Environmental Information and Effect on Physical Environment

This section describes the existing environment along the proposed route and the anticipated effect on the physical environment. Basin Electric has evaluated, and in some cases is finalizing, evaluations of environmental impact to be supplied to SD PUC and has designed its proposed project to minimize those impacts to the extent practicable.

Basin Electric has applied to Western Area Power Administration (Western) for transmission interconnection of the project. Interconnection to Western transmission systems requires Western to implement Department of Energy and County in Environmental Quality National Environmental Policy Act (NEPA). Western will prepare an Environmental Impact Statement according to NEPA procedures as lead federal agency for the Deer Creek Station Project. All requirements of the EIS will be followed. A copy of the EIS will be provided to SD PUC upon completion and in accordance with South Dakota Codified Law (SDCL) 34A-9-9 as follows:

> *The environmental impact statement, prepared pursuant to SDCL 34A-9-4, together with the comments of public and federal agencies and members of the public, shall be filed with the office of the secretary and made available to the public at least thirty days prior to taking agency action on the proposal which is the subject of the environmental impact statement. Such a statement shall also include copies or a summary of the substantive comments received by the agency pursuant to SDCL 34A- 9-8, and the agency response to such comments.*

3.6.1 Other Major Industrial Facilities under Regulation

Table 3.6-1 provides a summary of major industrial facilities under regulation in South Dakota. Table 3.6-2 lists the proposed industrial projects in South Dakota that are planned to be under construction by 2013. The Buffalo Ridge I and MinnDakota Wind Farms are existing energy conversion facilities in Brookings County; White Wind Farm is under construction and Buffalo Ridge II has been approved by SD PUC for Brookings County.

Table 3.6-1:
Major Industrial Facilities in South Dakota

Project Name	Fuel	Owner	Capacity (MW)	Location
Spirit Mound	Fuel Oil	Basin Electric	67.5	Clay County
Chamberlain	Wind	Basin Electric	1.3	Brule County
City of Fort Pierre	Fuel Oil	City of Fort Pierre	2	Stanley County
Watertown Power Plant	Diesel	Missouri Basin Municipal Power Agency	67.5	Codington County
Pathfinder	Natural Gas	Northern States Power Company	75	Minnehaha County
Angus Anson	Natural Gas	Northern States Power Company	105	Minnehaha County
Aberdeen CT	Fuel Oil	Northwestern Energy	28.8	Brown County
Clark	Fuel Oil	Northwestern Energy	2.7	Clark County
Faulkton	Fuel Oil	Northwestern Energy	2.7	Faulk County

Project Name	Fuel	Owner	Capacity (MW)	Location
Highmore	Fuel Oil	Northwestern Energy	0.6	Hyde County
Huron	Natural Gas	Northwestern Energy	15	Beadle County
Mobile Unit	Fuel Oil	Northwestern Energy	0.5	Beadle County
Redfield	Natural Gas	Northwestern Energy	1.3	Spink County
Webster	Fuel Oil	Northwestern Energy	0.7	Day County
Yankton	Natural Gas	Northwestern Energy	2.2	Yankton County
Lake Preston	Fuel Oil	Otter Tail Power Company	24.1	Kingsbury County
Big Stone	Sub-Bituminous Coal	Otter Tail Power Company	456	Grant County
Ben French	Fuel Oil	Black Hills Corporation	2.0	Pennington County
Lange Gas Turbines	Natural Gas	Black Hills Corporation	40	Pennington County
Oahe	Water	USACE	782	Hughes County
Fort Randall	Water	USACE	320	Charles Mix
Big Bend	Water	USACE	488	Buffalo County
South Dakota Wind Energy Center	Wind	FPL Energy South Dakota Wind LLC	40.5	Hyde County
Valley Queen Cheese	Fuel Oil	Valley Queen Cheese Factory, Inc.	1.5	Grant County
State Auto Insurance	Fuel Oil	State Auto Insurance, Inc.	1.7	Grant County
Highmore	Wind	FPL Energy	40.5	Hyde County
Gavins Point	Water	USACE	132	Yankton County
Groton Generation Station I & II	Natural Gas	Basin Electric	93.5	Brown County
MinnDakota Wind Farm	Wind	Iberdrola Renewables	54	Brookings County
Buffalo Ridge I Wind Farm	Wind	Iberdrola Renewables	50.4	Brookings County
Tatanka Wind Farm	Wind	Acciona S.A.	88.5	McPherson County
Wessington Springs Wind Project	Wind	Babcock and Brown	51	Jerauld County

Source: South Dakota Public Utilities Commission (2009)

Table 3.6-2:
Planned or Industrial Projects under Construction in South Dakota by 2013

Plant Name	Fuel	Owner	Status	Capacity (MW)	Location
Big Stone II Generation Station	Coal	Otter Tail Power Company	Construction begins 2010	650	Grant County
Hyperion-Elk Point Refinery	Oil Refinery	Hyperion Resources	Construction begins 2013	N/A	Hyperion-Elk Point Refinery, Union County
Keystone Pipeline Project	Crude Oil Pipeline	TransCanada	Under construction	N/A	Keystone Pipeline Project, Eastern South Dakota
White Wind Farm	Wind	Navitas Energy, Inc.	Construction begins 2013	200 MW	Brookings County
Buffalo Ridge II Wind Farm	Wind	Iberdrola Renewables	Construction begins 2009	306	Brookings County

Source: South Dakota Public Utilities Commission (2009)

3.6.2 Summary of Environmental Impacts

Project impacts are predominantly short-term and are associated with the construction phase of the proposed project. Table 3.6-3 provides a summary of impacts that are expected to remain after implementation of mitigation measures and best management practices (BMPs), the Storm Water Pollution Prevention Plan (SWPPP), and the Erosion and Sediment Control Plan (ESCP) measures. These impacts include short-term uses of renewable resources, such as water withdrawn for hydrostatic testing and then discharged back to the land. These impacts also include long-term changes in land use, such as the prohibition of residential structures on the permanent pipeline ROW.

Table 3.6-3
Summary of Impacts

Environmental Resource	Potential Impact Summary Table
Physical Environment	Landforms and topographic conditions would not be affected as a result of gas pipeline construction since surface disturbance areas would be reclaimed to approximate pre-disturbance conditions (e.g., slopes, contours, vegetative cover).
	Landforms and topographic conditions would not be affected during gas pipeline operations.
Geology and Paleontology	No unique geological or paleontological resources will be affected during construction and operation of the gas pipeline.
	Any Pleistocene-era mammalian fossils excavated during construction would not be studied or retrieved.
Economic Mineral Deposits	Construction and operation of the pipeline system would limit access to underlying minerals (sand and gravel) for the project life. This limitation will be confined to the width of the permanent pipeline ROW that overlies glacial deposits.
Soils	The total area potentially affected by construction of the gas pipeline would be approximately120 acres.
	A small fraction of the excavated soils in areas with moderately erodible soils will be potentially lost to increased water and wind erosion acting on disturbed soil surfaces until grass and other herbaceous vegetation is restored.
Erosion or Sedimentation	The total acreage potentially affected by construction of the gas pipeline would be approximately120 acres.

Environmental Resource	Potential Impact Summary Table
	Soil disturbance from construction activities of the gas pipeline may result in accelerated erosion, compaction, and/or reduced agricultural productivity.
Seismic, Subsidence, and Slope Instability Risks	There are no concerns regarding seismicity or subsidence for gas pipeline.
Hydrology	**Surface Water Drainage**
	Perennial and intermittent flowing surface waters within the pipeline ROW will be directionally drilled to avoid and minimize direct and indirect impacts to surface waters. If directional drilling is not feasible in some locations, the pipeline will be trenched. If trenching is required; the surface topography and drainage along the pipeline ROW would be returned to pre-construction conditions. Construction will occur to the greatest extent feasible, during drier periods. There should be no long-term alteration to existing drainage features, direction or rates.
	Construction in and around wetland communities would be similar to that described above for surface waters. Directionally drilling the pipeline in these locations would avoid direct impacts to wetland communities. If trenching were required, the ROW would be restored post-construction. No permanent loss of wetlands would occur as a result of this project. All required USACE permits would be obtained prior to any construction in wetland communities that may be considered jurisdictional “waters of the U.S.”.
	Water quality degradation from construction of the gas pipeline is not anticipated to occur in streams and other water bodies from spills or leaks of fuel, lubricants, or hazardous materials.
	Runoff and the resulting erosion of lands adjacent to water bodies can lead to the introduction of solids into suspension and the deposition of sediment in-stream.
	Floodplains
	Temporary impacts from construction may affect drainage and flow in the floodplains in the project construction area.
	Groundwater
	Reductions in groundwater quality from spills, leaks, or disposal practices are not anticipated during construction of the gas pipeline.
	It is possible, though unlikely, that activities such as trenching, drilling, dewatering and backfilling could impact shallow aquifers and create minor and short-term effects on groundwater levels and quality,
	Water Use and Sources
	Hydrostatic test water would be discharged to an unnamed tributary to Deer Creek located in the northeastern portion of the plant site.
Terrestrial Ecosystems	**Vegetation Communities**
	Possible noxious weed infestations may occur in areas where ground disturbance occurs, but these would be minimized by implementation of a revegetation plan (included as part of the ESCP).
	Fugitive dust would pose a potential short-term impact to local plant communities during project construction and future maintenance resulting from dust collecting on plants and reducing their photosynthetic efficiency.
	Impacts to vegetation communities may also result in indirect adverse impacts to terrestrial and aquatic species that rely on these communities for forage, cover, and nesting habitats.
	Construction of the gas pipeline would directly affect vegetation within the ROW. Impacts from the gas pipeline would be short term in nature because the ROW vegetation would be restored once the pipeline had been buried.
	General impacts from the gas pipeline to vegetation would be trampling, fugitive dust, soil compaction, erosion, sedimentation, and the spread of noxious weeds. The vegetation and soil (if native or wetland community is present) within the gas pipeline ROW would be restored, so no long-term impacts are expected.

Environmental Resource	Potential Impact Summary Table
	Pipeline construction would disturb a total of approximately 120 acres plus additional acreage required for expanded work spaces in directional drilling activity areas. The majority of the pipeline ROW is cultivated cropland and pasture/hay land. The ROW could also span native and native/non-native grassland, forested communities (shelterbelts), and wetlands. Trees would not be permitted to grow on approximately 1.5 acres of currently forested woodlands during pipeline operations to allow for aerial surveillance of the proposed pipeline.
	Wildlife
	Most wildlife species would temporarily avoid areas under construction, which would alter movement patterns during the construction period.
	Construction would result in both short-term and long-term loss of foraging and cover habitats within the site boundaries.
	Possible indirect effects to wildlife habitat from ground-disturbing activities include the risk of further propagation of noxious weeds. Noxious weeds can adversely affect wildlife habitats by reducing foraging opportunities for terrestrial wildlife and game species.
	Wildlife would be displaced within the construction ROW for the gas pipeline and mortality may occur for smaller, less mobile, and ground-dwelling species. Because the gas pipeline is located adjacent to some existing road ROWs, impacts to wildlife are expected to be short term and not adverse.
	The gas pipeline would be buried, so operation of the gas pipeline is not expected to result in any impacts to wildlife within the ROW.
	If maintenance is required on the gas pipeline, short-term impacts to vegetation are expected, and wildlife in the area may avoid the ROW until maintenance is completed.
	Any habitat (vegetation) disturbance from the gas pipeline would be restored and re-contoured to mitigate disturbance to habitats within the pipeline ROW.
	Raptors and other avian species may be found nesting in the project area. If construction occurs during the avian breeding season as defined by USFWS (March 15–September 1), surveys would be conducted prior to construction to ensure the project does not "take" a nest or bird protected under the Migratory Bird Treaty Act.
	Threatened and Endangered Terrestrial Species
	Surveys for the federally listed Western prairie fringed orchid and the Dakota skipper (a candidate species) were conducted in summer 2009. A Biological Assessment (BA) will be prepared.
Aquatic Ecosystems	**Wetlands**
	The majority of jurisdictional wetlands and surface waters within the gas pipeline ROW will be directionally drilled to avoid sensitive resources and the species associated with them. Trenching, along with appropriate mitigation measures, may also be used. Trenching would occur during the fall and winter months to minimize impacts to surface waters, wetlands, and the species associated with these areas. If trenching is conducted, construction may result in short- or long-term impacts to wetlands from erosion of exposed sediments, during construction or accidental hazardous spills from construction equipment. Trenching would result in the removal of wetland vegetation, short-term alteration of surface hydrology, increased risk for spread of noxious weeds, and may result in the loss or degradation of aquatic habitats used by amphibians, fish, and other aquatic species.
	Construction could result in the direct loss or degradation (from sedimentation) of some ephemeral aquatic habitats used by breeding amphibians.
	Operation of the gas pipeline is not expected to have long-term impacts on wetland and riparian communities.
	It is expected that if aquatic habitats are disturbed, they would recover from any disturbance caused by construction and operation of the gas pipeline and return to their original condition.
	Operation of the gas pipeline is not expected to have any adverse effects on aquatic habitats or associated aquatic organisms.

Environmental Resource	Potential Impact Summary Table
	Fisheries
	Aquatic habitats would be directionally drilled to avoid impacts to fish and other aquatic resources. If it is not feasible to directionally drill, trenching would be the preferred method of construction. If trenching is required, construction may result in short- or long-term impacts to surface waters and/or groundwater from erosion of exposed sediments during construction or accidental hazardous spills from construction equipment.
	Operation of the gas pipeline is not expected to have any adverse effects on fisheries.
	Threatened and Endangered Aquatic Species
	The USFWS has requested that Basin Electric move forward with the proposed project with the assumption that Topeka shiners do occur in the proposed project area. Mitigation requirements that are required by USFWS as part of the Biological Assessment will be implemented.
Land Use	Gas pipeline construction would have a short-term effect on the current, mainly agricultural land use within the pipeline ROW during construction. This may result in the seasonal loss of crop productivity within the ROW. While the gas pipeline will temporarily disturb agricultural lands, there would be no long-term impacts to agriculture after construction. Agricultural uses (cropland) will be allowed to continue after construction has been completed. Maintenance and monitoring will occur during the operational phase and may cause minimal disruption to agricultural practices located adjacent or within the ROW.
	Public facilities would not be adversely affected by the gas pipeline operations.
	Installation of the gas pipeline would create short-term effects including short-term visual, noise, and dust impacts resulting from vegetation removal, soil disturbance, and the use of equipment at the construction site, including equipment exhaust.
	Approximately 120 acres would not be permitted to be occupied by residential or other structures within the permanent gas pipeline ROW over the life of the pipeline.
Air Quality	Construction of the gas pipeline has the potential for short-term, temporary adverse effects on air quality from fugitive dust and vehicle exhaust emissions in the immediate area around the construction sites.
	Emissions from construction activities of the gas pipeline would include exhaust from construction vehicles and fugitive dust from trenching and construction and would not affect regional air quality.
	Impacts from construction of the gas pipeline would be limited to the local area and would end once construction had been completed.
Community Impacts	**Economic Impacts**
	There would be short term economic benefits to the service industries such as hotels, restaurants, and gas stations. It is expected that any impacts would be positive to the local community.
	Purchases, equipment rental leases, equipment maintenance and repairs, storage areas, fuel for construction vehicles and associated equipment, licensing and permitting fees would all provide additional economic prosperity to the state during pipeline construction.
	Commercial and Industrial Sectors
	No impacts to the industrial sector are anticipated.
	Taxes
	Property taxes would be of greater economic significance to state and local revenues. Based on current tax rates and prior to the application of the discretionary formula, the gas pipeline is estimated to generate $109K in property taxes in the first taxable year after operation."
	Housing
	It is expected that most non-local workers would use temporary housing, such as hotels/motels, recreational vehicle parks, and campgrounds.

Environmental Resource	Potential Impact Summary Table
	Land Values
	Pipeline ROW easements would be obtained with monetary compensation for the conveyance of those easements. Construction activities would create the potential for damage to property, including drainage tiles, irrigation systems and fences.
	Certain existing land uses would be converted to long-term utility use for the duration of the pipeline's operation. The conversion represents a long-term future constraint on development of private land because dwellings cannot be placed on the permanent pipeline ROW for the duration of the easement.
	It is anticipated that property values would not be affected by the installation or presence of the pipeline.
	Agriculture
	Approximately 56 acres of agricultural lands are located within the pipeline ROW. Agricultural lands would be temporarily impacted during construction. Long term impacts on agricultural production are not expected since the pipeline would be buried deep enough to allow for agricultural practices to resume after construction.
	Employment/Labor Market
	The gas pipeline would be built between July and September 2010 and the construction crew would consist of 70 workers (Basin Electric 2009).
	The large percentage of the temporary workforce would consist of non-local personnel. A small portion is expected to be from local communities where possible. No permanent workforce is anticipated for the operation of the gas pipeline.
	Because no permanent employees are associated with the pipeline, no long-term impacts on public services are anticipated.
Infrastructure Impacts	**Energy**
	No new electrical service requirements are anticipated for operation of the natural gas pipeline.
	Temporary short term use of power during the construction phase is expected to be minimal.
	Long-term power supply to support the Deer Creek Station project is expected to be provided by existing utility providers, utilizing existing power generation capacity.
	Sewer and Water
	There would be increased utilization of water and sewage facilities due to the pipeline construction offices and influx of temporary construction workers utilizing local lodging. There should not be any significant impacts from workers on local communities' water, sewage or other public utilities.
	Solid Waste Management
	There would be a minor increased utilization of solid waste management facilities due to the pipeline construction offices and temporary construction workers utilizing local lodging and services and solid waste facilities from pipeline construction (stumps, rock, spacer ropes, end caps, welding rods, pipe shavings, and other trash/debris).
	Transportation
	In general, all major paved roads, including highways and all primary gravel roads would be crossed by boring beneath. Driveways may also be bored if required by landowners.
	The majority of smaller unpaved roads would be crossed using the open-cut method where permitted by local authorities or private owners.
Community Services	**Health Services and Facilities**
	No impacts are anticipated
	Schools
	Students enrolling in the local schools as a result of the construction would be minimal.

Environmental Resource	Potential Impact Summary Table
	Recreation
	There should be limited recreational impacts from the construction and it is not expected that workers would overtax the many recreational facilities in the area.
	Government Facilities or Services
	Law enforcement agencies in the communities adjacent to the pipeline should not experience a significant impact from the pipeline workers.
Other Impacts	**Populations and Demographics**
	The limited number of employees associated with pipeline construction would not significantly affect local populations or demographics.
	Protection of Human Health
	No impacts to health services, facilities, and public safety are anticipated from construction or operation of the gas pipeline.
	Noise
	Residences within 500 feet of the ROW would experience short-term increased noise from construction equipment and operations.
	Visual
	Visual resource impacts associated with construction of the pipeline include removal of existing vegetation, exposure of bare soils and earthwork activity.
	Visual resource impacts from construction activities would be of short duration with no significant long-term impacts.
	Cultural Resources and Landmarks
	The natural gas pipeline has been located so that construction activities would avoid impacts on cultural resources.

3.6.3 Physical Environment

The following discussion describes the physical environment through which the proposed pipeline will pass and delineates the effects of the proposed pipeline on the physical environment.

3.6.3.1 Landforms and Topography

Brookings County, South Dakota, is characterized by nearly level to gently rolling plains and is entirely within the Coteau des Prairies, a high land plateau that extends across the county in a southeasterly direction. The county is divided into four geographic parts, with the floodplain and outwash plain along the Big Sioux River separating the western one-third of the county from the eastern two-thirds. The proposed route is located east of the Big Sioux River, which is characterized by a till plain consisting of loamy glacial till. The till plain is characterized by nearly level to gently rolling plains that have well-defined drainage patterns. Exhibit 3.6-1 provides elevation mapping.

3.6.3.2 Geology and Paleontology

The dominant landforms in this area are stagnation moraines, end moraines, glacial outwash plains, terraces, and flood plains. The Major Land Resource Area (MLRA) is dominated by till-covered moraines. The stagnation moraines are gently undulating to steep and have many depressions and poorly defined drainages. The steepest slopes are on escarpments adjacent to some of the larger tributaries. Small outwash areas are adjacent to the watercourses. The Cretaceous Pierre Shale underlies the till in most of the area. Precambrian rocks also occur at depth. Granite is quarried at Milbank, South Dakota, and outcrops of Sioux Quartzite are common. Layers of silt in the quartzite near Pipestone, Minnesota, were quarried by Native Americans, and the stone was carved into pipe bowls.

The project area sits in the Coteau des Prairies, a plateau approximately 200 miles in length and 100 miles in width, rising from the prairie flatlands in eastern South Dakota, southwestern Minnesota, and northwestern Iowa in the United States.

The plateau is composed of thick glacial deposits, the remnants of many repeated glaciations, reaching a composite thickness of approximately 900 feet. They are underlain by a small ridge of resistant Cretaceous shale. During the last (Pleistocene) Ice Age, two lobes of the glacier appear to have parted around the pre-existing plateau and further deepened the lowlands flanking the plateau.

No unique geological features that have state or federal protection will be disturbed by the project. There is the potential for discovery of Pleistocene-era mammal fossils during site excavation and pipeline grading and trenching where the proposed route crosses continental glacial drift in South Dakota. Any mammalian fossils incidentally excavated during construction will not be recovered or studied for the scientific record.

No additional disturbance or loss of unique geological features, mineral resources, or scientifically important fossils will occur during operation of the project because there will be no additional surface disturbance required. Exhibit 3.6-2 provides a map of bedrock geology in the project area. Exhibit 3.6-3 provides a map of surficial geology in the project area.

No additional disturbance or loss of unique geological features, mineral resources, or scientifically important fossils will occur during operation of the proposed project because there will be no additional surface disturbance required.

3.6.3.3 Economic Mineral Deposits

Within the project area there are no substantial mineral resources. Sand and gravel deposits exist within pockets which have been utilized for construction and road base and concrete aggregates.

There are no oil or gas wells in the project area (SDDENR 2008). In addition, the proposed natural gas pipeline route does not propose to occupy or cross any active quarries or mines.

3.6.3.4 Soils

3.6.3.4.1 Existing Conditions

The dominant soil order in this MLRA is Mollisols. The soils in the area have a frigid soil temperature regime, an aquic or udic soil moisture regime, and mixed mineralogy. They generally are very deep, well drained to very poorly drained, and loamy. All of the soils listed in the Project area are considered hydric.

Prime farmland, as defined by USDA, is land that has been determined to have the best combination of physical and chemical properties for agricultural production and is available for farming (NRCS 2009). In addition to prime farmland, land may be classified as farmland of statewide importance, as determined by the state.

In Brookings County, 51 soils are classified as prime farmland, 18 soils are prime farmland if drained, five soils are prime farmland if irrigated, and 18 soils are classified as farmland of statewide importance. In Deuel County, 40 soils are listed as prime farmland, 11 soils are prime farmland if drained, three soils are prime farmland if irrigated, and seven soils are classified as farmland of statewide importance.

In the portion of the project area within Brookings County including the gas pipeline ROW, 44 of the soils found in this area are listed as prime or statewide important farmland. In the portion of the project area within Deuel County, there are 39 soils classified as prime or statewide important farmland. These soils account for approximately 60 percent of the entire project area.

According to the Natural Resources Conservation Service (NRCS), the Deer Creek Station proposed natural gas pipeline ROW contains 13.85 acres of farmland of statewide importance and 54.9 acres of prime farmland. However, this is a small percentage of the 441,708 acres of farmland in Brookings County.

The soils in the project area are comprised of three main groups of deposition: loess which lies on the ridge-tops, residual material that formed in glacial plains and moraines, and alluvial material that lies in stream terraces and glacial outwash plains.

According to NRCS, more than two-thirds of the project area is in farm production. Major soil resource concerns are wind erosion, water erosion, maintenance of the content of organic matter and productivity of the soils, soil wetness, and management of soil moisture.

Conservation practices on cropland generally include systems of crop residue management, especially no-till or other conservation tillage systems that conserve moisture and contribute to soil quality. Other practices include terraces, vegetative wind barriers, grassed waterways, and nutrient management.

3.6.3.4.2 Potential Impacts and Mitigation

Grading and excavating for the proposed natural gas pipeline will disturb agricultural, rangeland and wetland soils. Soils may be altered temporarily following construction because of soil compaction caused by equipment traffic, excavation, and handling. Both compaction-prone and hydric soils are especially prone to structural and aeration damage when trafficked or excavated. Soil compaction that occurs to a degree that will adversely affect backfilling and restoration efforts will be most likely to occur during wet conditions. In some of these areas, drain tile systems may exist that could be disturbed by construction. Acceptable clay texture soil replacement may be more difficult if there are large clods or blocks of the same type of soils present. Droughty soils will be prone to wind erosion during construction and will be more difficult to stabilize and revegetate successfully following construction. Saline and/or sodic soils often have drainage limitations and may undergo compaction impacts similar to the hydric or compaction-prone soils. In addition, the success of stabilization and restoration efforts in these areas may be limited unless additional treatments and practices are employed to offset the adverse physical and chemical characteristics of the soils.

Potential impacts to soils will be minimized or mitigated by the soil protection measures identified in the Erosion and Sediment Control Plan (ESCP), prepared prior to construction under the National Pollutant Discharge Elimination System (NPDES) program. BMPs are described in Section 3.6.4.1.1. The measures include procedures for segregating and replacing topsoil, trench backfilling, relieving areas compacted by heavy equipment, removing surface rock fragments, and implementing water and wind erosion control practices. In addition, Basin Electric will work closely with landowners and soil conservation agencies to identify and implement recommended soil conservation practices in specific areas where they are needed. Problems with drainage and irrigation systems resulting from construction in active agricultural areas will be monitored and corrected.

Topsoil will be segregated during excavation procedures as described in Section 3.8.1. Off-site soils or mud tracked onto public paved roads will be removed to insure clean road surfaces. Excavated material will be backfilled and compacted in the pipeline trench; and any excess materials will be spread across the pipeline ROW. Soils compacted by movement of construction vehicles and equipment will be loosened and leveled by harrowing or disking to approximate pre-construction contours at the discretion of the landowner and then reseeded with certified weed-free native grasses and mulched (except in cultivated fields). The specific seed mix and rate of application is included in Section 3.8.2.2.

If hydrocarbon-contaminated soils are encountered during trench excavation, the South Dakota Department of Environment and Natural Resources (SDDENR), which is responsible for emergency response and site remediation, will be contacted immediately. A remediation plan of action will be developed in consultation with SDDENR. Depending on the level of contamination found, affected soil may be replaced in the trench or removed to an approved landfill for disposal. If construction is curtailed for any reason and for any appreciable length of time, temporary erosion control measures should be employed.

During operation of the pipeline, very small-scale isolated surface disturbance impacts resulting in accelerated erosion, soil compaction, spills, and related reductions in the productivity of desirable

vegetation or crops could result from pipeline maintenance traffic and incidental repairs. Impacts related to excavation and topsoil handlings are not likely to occur. If they do occur, they will be limited to small areas where certain pipeline maintenance activities take place. Exhibits 3.6-4 through 3.6-9 provide soil mapping of the project area

3.6.3.5 Erosion or Sedimentation

Potential impacts to soils during construction will be minimized or mitigated by the soil protection measures identified in the ESCP and as described in the Section 3.6.3.4. The measures include procedures for implementing water and wind erosion control practices. Exhibits 3.6-10 and 3.6-11 provide water and wind erosion zones in the proposed project area, respectively.

3.6.3.6 Seismic, Subsidence, and Slope Instability Risks

The proposed pipeline is located mostly on relatively level terrain in South Dakota. In the few areas where the pipeline route crosses moderately steep slopes, additional grading may be required. Steep slopes often need to be graded down to a gentler slope for safe operation of construction equipment and to accommodate pipe-bending limitations. In such areas, the slopes will be excavated prior to pipeline installation and reconstructed to their original contours during restoration.

In areas where the proposed pipeline route crosses laterally along the side of a slope, cut-and-fill grading may be required to obtain a safe, flat work terrace. Topsoil may be stripped from the ROW as needed and stockpiled prior to commencing cut-and-fill grading on steep terrain. Generally, on steep side slopes, soil from the high side of the ROW will be excavated and moved to the low side of the ROW to create a safe and level work terrace. After the pipeline is installed, the soil from the low side of the ROW will be returned to the high side and the slope's original contours will be restored. Topsoil from the stockpile will be spread over the surface, erosion control features installed, and seeding completed.

In steep terrain, temporary sediment barriers such as silt fence and straw bales will be installed during clearing to prevent the movement of disturbed soil into wetland, water body, or other environmentally sensitive areas. Temporary slope breakers consisting of mounded and compacted soil will be installed across the ROW during grading and permanent slope breakers will be installed during cleanup. Following construction, seed will be applied to steep slopes and the ROW will be mulched with hay or non-brittle straw or covered with erosion control fabric as needed. Sediment barriers will be maintained across the ROW until permanent vegetation is established.

South Dakota lies within an area considered to be at the lowest possible risk for earthquakes in the U.S. There have been no earthquakes of a magnitude capable of damaging welded steel pipelines within South Dakota during historical times. The risk of significant seismic risk in South Dakota is extremely low.

3.6.4 Hydrology

3.6.4.1 Surface Water Drainage

Wetlands occupy about 1.8 million acres (3.6 percent) of South Dakota (USGS 1997). The predominant wetland type in the proposed project area is palustrine persistent emergent class, although forested wetlands and palustrine scrub-shrub wetlands were also delineated. Wetlands within the proposed pipeline route total approximately 54 acres of palustrine emergent, palustrine scrub-shrub, and palustrine forested wetlands

The proposed route traverses nine drainage crossings. If impacts to jurisdictional “waters of the U.S.” should occur during pipeline construction, Basin Electric will submit an application to the U.S. Army Corps of Engineers (USACE) to obtain Nationwide 12 permits for each stream and wetland crossing within the ROW. Basin Electric will abide by all requirements outlined in the Nationwide Permit. Perennial and intermittent water bodies and some associated wetlands will be crossed using open-cut trenching methods as described in Section 3.8.1.3 or horizontal directional drilling techniques as described in Section 3.8.1.4. Directional drilling will avoid impacts to waterways, protect aquatic habitat, and avoid temporary degradation of water quality, sedimentation, and channel bank modifications. In areas where the pipeline may be trenched, similar typical conventional upland cross-country construction procedures will be implemented, with several modifications where necessary to reduce the potential that the pipeline construction would affect wetland hydrology and soil structure.

For approximately 3.5 miles, the pipeline will be located directly in the primary drainage and alluvium of Deer Creek. The pipeline will be buried approximately 6 to 8 feet under channels, adjacent floodplains, and flood protection levees to avoid pipe exposure caused by channel degradation and lateral scour.

Runoff and the resulting erosion of lands adjacent to water bodies can lead to the introduction of solids into suspension and the deposition of sediment in-stream. Mitigation will include extensive procedures to limit the extent of disturbed land adjacent to water bodies, minimize erosion, and prevent sediments from entering water bodies or wetlands. These measures include BMPs such as clearing limits, buffer strips, drainage diversion structures, and sediment barrier installations. Construction of the proposed pipeline will comply with all applicable federal, state, and local permits and requirements for protection of water quality. The proposed project will apply for a construction storm water permit from the South Dakota Department of Environment and Natural Resources (SDDENR) and will develop and implement a SWPPP as required by the permit. Before the start of construction, an NPDES permit application will be submitted to SDDENR for construction stormwater discharges and hydrostatic testing. A SWPPP will be developed and implemented; this SWPPP will include site-specific BMPs to minimize the potential for storm water contamination. BMPs will be maintained until final stabilization of the disturbed construction areas occurs. It is estimated that vegetation cover in palustrine emergent wetlands would recover in three to five years; recovery of forested wetlands would require 20 to 50 years.

The pipeline may cross drain tiles along the route. Basin Electric will attempt to identify and classify any existing drain tile systems along the pipeline route when meeting with land owners, tenants, and local public officials. Cut tile lines will be marked with a flag or lath and ribbon placed in the spoil bank. Marking should follow close behind trench excavation. The tile lines will be

repaired permanently before the ditch is backfilled. Permanent tile repair, which occurs after the pipeline is in place in the trench, must allow 6 to 8 inches of clearance between the tile and pipeline to allow work space in the event of future work on either line. Permanent tile repair will prevent loss of grade and/or alignment as the soil settles in the trench area. In narrow trenches, a piece of metal pipe with flexible corrugated plastic pipe inside, rigid polyvinyl chloride (PVC), or double wall corrugated plastic pipe with slip couplings for end connections, shall be used. All drain tiles that are damaged during construction will be marked in the field. A local drain tile contractor will be hired to repair or replace any drain tile damaged as a result of pipeline construction. Drain tile repairs will be inspected and approved by a pipeline inspector.

3.6.4.1.1 Specific Measures to Protect Water Quality

The proposed project will implement specific measures to protect water quality on the ROW during construction of the gas pipeline, including the following:

- BMPs will be implemented to minimize erosion, sedimentation, runoff, and surface instability during construction.
- Construction will be planned and conducted to minimize disturbance near surface water and wetlands as much as possible.
- Current drainage patterns in areas affected by construction will be maintained as much as possible during construction and will be restored after construction.
- Staging and laydown areas for construction will be located at least 50 feet from waterways or wetlands.
- Construction equipment will not be serviced within 25 feet or fueled within 100 feet of waterways or wetlands.
- Any spills of fuels, chemicals, or other hazardous materials will be promptly contained and cleaned up.
- Exposed soils will be stabilized following grading and filling.
- Silt fencing and other structural devices will be implemented as appropriate to prevent sediment transport.

Once the construction and permanent stabilization of the ROW has been achieved, the construction storm water permit will be terminated. The ROW immediately over the pipeline will be maintained clear of any woody vegetation (trees and shrubs) to facilitate regular inspections. Pipeline ROW inspections will also include evaluation of any indication of erosion or sediment transport; if found these areas will be restored to a condition that will minimize erosion. Any herbicides used in ROW maintenance will be approved by the U.S. Environmental Protection Agency (EPA) and will be applied by licensed professionals. Application of herbicides will be limited to the extent necessary to control vegetative growth directly on the permanent ROW.

Impacts to surface water from the proposed pipeline would be minimal. After the completion of construction and stabilization of the ROW, the potential for impacts to surface water would be negligible. No direct, indirect, or cumulative impacts to surface water or groundwater quality from gas pipeline construction or operation are expected.

3.6.4.2 Floodplains

The proposed pipeline would be located in the 100-year floodplain associated with Deer Creek for approximately 4,789 feet. It will also cross the 100-year floodplains associated with tributaries to Oak Lake. The total length of the proposed route that crosses the 100-year floodplains is 5,691 feet. Temporary impacts from construction may affect drainage and flow in the floodplains in the project construction area. Drainage systems in the project area include Deer Creek and unnamed tributaries of Deer Creek, and unnamed tributaries of Lac qui Parle River. Construction of the pipeline would proceed quickly, however, and the potential effect in any one floodplain area would not be expected to exceed more than a few weeks. Potential direct or indirect impacts to the floodplains crossed by the proposed route during construction are expected to be short-term and minimal. Once the pipeline has been buried, the ground surface will be returned to its original condition and topography. Exhibits 6.3-12 and 3.6-13 provide surface water resource and FEMA floodplain information, respectively.

3.6.4.3 Groundwater

Because the pipeline will be buried at a depth of 60 inches with a minimum cover of 48 inches from top of pipe, it is unlikely that the construction or operation of the pipeline will alter the yield from any aquifers that are used for drinking water purposes. Groundwater entering the construction trench will be removed and disposed of in down gradient areas within the ROW. Depending on the water volume, Basin Electric may need to have temporary water dispersion structures (e.g., straw bale structures, etc.) to discharge the trench water. Appropriate measures will be implemented to prevent groundwater contamination and steps will be taken to manage the flow of any groundwater encountered. In the event that construction of the pipeline damages a landowner's well, Basin Electric will either reestablish the well or provide compensation. Pipeline construction in areas with known surficial aquifers or wetlands will be performed according to current industry BMPs methods to minimize adverse impacts potentially associated with pipeline construction activities.

The Brookings-Deuel rural water delivery system is expected to be crossed 11 times (including farm tap crossings) within Brookings County by the proposed pipeline construction. In preparation for excavation activities, those lines will be duly located by working with local water and irrigation districts and private owners. Wherever possible, the proposed pipeline will be routed under the existing water pipeline and any associated structures. Although not expected, the water pipeline owner will be compensated for any temporary loss of water delivery or other associated losses.

Reductions in groundwater quality from spills, leaks, or disposal practices are not anticipated during construction. Most of the aquifers along the route will be isolated at least temporarily from any spills that occur on the land surface. In the unlikely event of an incident, attending personnel will be able to respond to an incident before contaminants migrate into groundwater. Ground disturbance below the surface during construction will usually be limited to 6 feet or less. It is possible that activities such as trenching, blasting, drilling, dewatering and backfilling could impact shallow aquifers and create minor and short-term effects on groundwater levels and quality. Impacts to deep aquifers are not expected. In areas with near-surface groundwater or in areas adjacent to surface water bodies, additional procedures and measures will be implemented as previously discussed in this application. Exhibit 3.6-14 shows groundwater resources in the proposed project area.

3.6.4.4 Water Use and Sources

The only significant water use that the proposed pipeline will require is hydrostatic test water during the final phases of construction. Water used for hydrostatic testing of the pipeline will be obtained from the Brookings-Deuel County Local Water Supply. The water quantity required for hydrostatic testing will be approximately 301,592 gallons.

No consumption of groundwater will occur with the construction or operation of the pipeline. Construction and operation of the pipeline would have no impacts on planned water uses by communities, agriculture, recreation, fish or wildlife.

Sanitary sewage generated during construction will be collected in portable toilets and will be hauled off site for proper disposal.

3.6.5 Terrestrial Ecosystems

3.6.5.1 Existing Environment

Biological resource data for the proposed project were obtained from the U.S. Fish and Wildlife Service (USFWS), South Dakota Game Fish and Parks (SDGFP), and the National Wetlands Inventory (NWI). Field surveys were conducted between October 29 and November 6, 2008, and between May 4 and May 7, 2009, to collect site-specific data on vegetation, noxious weed occurrence, wetlands and riparian communities, wildlife, and special status species. A detailed biological resources report was prepared to document the proposed project area's existing environment and anticipate potential construction and operational impacts from the proposed project (EDAW 2009).

3.6.5.1.1 Vegetation Communities

Exhibits 3.6-15 through 3.6-20 provide an overview of the vegetation communities and noxious weed occurrence present on the proposed pipeline ROW. During field investigations, data were collected on the vegetation communities along the proposed pipeline. The exhibits show general vegetation community types and land use in the proposed project ROW. The pipeline will traverse areas predominantly used for agricultural purposes. The pipeline ROW will span a total of 120.09 acres. The majority of the area is under agricultural production; cropland, pastureland, and hayland. Other vegetation found in the ROW include native/non-native mixed prairie, forested communities (shelterbelts), and wetlands.

The dominant species observed in upland pastures were smooth brome (*Bromus inermis*), golden rod (*Solidago* sp.), Kentucky bluegrass (*Poa pratensis*), and tall dropseed (*Sporobolus asper*). Forested shelterbelts are associated with farmsteads and typically include green ash (*Fraxinus pennsylvanica*), eastern red cedar (*Juniperus virginiana*), plains cottonwood (*Populus deltoides*), and Siberian elm (*Ulmus pumila*). One area of native prairie was observed in W ½ Section 29 T112N R47W (Exhibit 3.6-17). The dominant plant species were sideoats grama (*Bouteloua curtipendula*), little bluestem (*Schizachyrium scoparium*), bluebunch wheatgrass (*Pseudoroegneria spicata*), western wheatgrass (*Agropyron smithii*), and sedge (*Carex* sp.).

Palustrine emergent, palustrine scrub-shrub, and palustrine forested wetlands occur in the pipeline ROW. Wetland communities are discussed in greater detail in Section 3.6.4.

Three noxious weed species, Canada thistle (*Cirsium arvense*), spiny plumeless thistle (*Carduus acanthoides*) and musk thistle (*Carduus nutans*) were identified during field surveys in moderate to high densities in some areas within the pipeline ROW. The spiny plumeless thistle had previously been documented during surveys conducted in 2008 and is documented in the figures associated with that report. Locations of Canada thistle and musk thistle are shown on Exhibits 3.6-15 through 3.6-20. It is estimated that vegetative cover in native and modified grasslands would recover in 3 to 5 years, while recovery of forests and woodlands would require 20 to 50 years in the temporary extra workspace areas.

3.6.5.1.2 Wildlife

The vegetation cover types that wildlife may inhabit within the proposed gas pipeline include cropland, wetlands, native and non-native tall to mixed-grass prairie, pastureland, hayland, and woodlands (shelterbelts). The majority (more than 80 percent) of the pipeline ROW has been converted or altered by agricultural practices. Wetlands, woodlands (shelterbelts) and native grassland habitats are present, but they make up a small percentage of the total habitat types found within the proposed ROW. The proposed pipeline would cross nine drainages. Perennial and ephemeral creeks and wetlands provide habitat for amphibians, fish and aquatic invertebrates. Species observed in proximity to the pipeline corridor include Bald Eagles (*Haliaeetus leucocephalus*), Red-Tailed Hawks (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsoni*), American kestrel (*Falco sparverius*), Northern Flicker (*Colaptes auratus*), Common grackle (*Quiscalus quiscula*), Loggerhead Shrikes (*Lanius ludovicianus*), western meadowlarks (*Sturnella neglecta*), mourning doves (*Zenaida macroura*), Ring-Necked Pheasants (*Phasianus colchicus*), tree swallows (*Tachycineta bicolor*), barn swallows (*Riparia riparia*), and European Starlings (*Sturnus vulgaris*). American white pelican (*Pelecanus erythrorhynchos*), Killdeer (*Charadrius vociferus*), Yellow-Headed Blackbirds (*Xanthocephalus xanthocephales*), Red-winged Blackbirds (*Agelaius phoeniceus*), Great Blue Heron (*Ardea herodias*), Painted turtles (*Chrysemys picta*), Northern leopard frogs (*Lithobates pipiens*), chorus frogs (*Pseudacris* sp.*),* Great Plains toad (*Bufo cognatus),* American toad (*Bufo americanus*) were all observed in wetland and aquatic habitats found within the new re-route sections of the alignment. White-tailed deer (*Odocoileus virginianus*) and thirteen-lined ground squirrels (*Spermophilus tridecemlineatus*) were also observed within the alignment. Bats may occur throughout the proposed pipeline route in the riparian, wetland, and woodland habitats.

3.6.5.1.3 Threatened and Endangered Species

Threatened and endangered species associated with terrestrial habitats in the proposed project area are discussed in this section. Federally listed aquatic species, namely the Topeka shiner, are discussed in Section 3.6.6. Discussion of state-listed threatened and endangered species is provided in the detailed biological resources report (EDAW 2009).

Exhibit 3.6-21 shows elemental occurrence records for special status species in the proposed project area. This data came from SDGFP biological diversity database. Other information pertaining to federally listed species was collected from USFWS and SDGFP in 2008 and 2009. Basin Electric conducted a site visit with representative of USFWS and USACE on May 5, 2009, to familiarize the agencies with the proposed project area and assess habitat for federally listed terrestrial and aquatic species. The whooping crane *(Grus americana*) and the Western prairie fringed orchid (*Platanthera praeclara*) were identified by USFWS as potentially occurring in the proposed project area. In addition, there is one candidate species that may have suitable habitat

in the proposed project area, the Dakota skipper (*Hesperia dacotae*). It was determined through informal consultation with USFWS that suitable habitat for the federally endangered American burying beetle (*Nicrophorus americanus)* does not occur in the Deer Creek project area and surveys for this species will not be required (Schriner 2009). A Biological Assessment (BA) will be prepared by Western in consultation with the USFWS. The BA will outline avoidance and mitigation measures that would be implemented to mitigate impacts to threatened, endangered, and candidate species that may occur in the project area.

In addition to the protection of species listed on the Endangered Species Act (ESA), federal protection is also afforded to nesting avian species listed under the Migratory Bird Treaty Act (MBTA). The Bald and Golden Eagle Protection Act (BGEPA) provides additional protection to bald and golden eagles.

Whooping Crane

The whooping crane is a federal endangered species that migrates through South Dakota and other parts of the Central Flyway on its way to northern breeding grounds and southern wintering areas. It can occupy numerous habitats, including cropland and pastures, wet meadows, shallow marshes, shallow portions of rivers, lakes, reservoirs, and stock ponds (Canadian Wildlife Service and USFWS 2005). Overnight roosting sites frequently require shallow water in which the bird stands and rests (Canadian Wildlife Service and USFWS 2005). In spring, the whooping crane migrates through South Dakota in mid-March through mid-April, and in fall, it migrates mid-September through mid-November. Some cranes can be observed migrating through early December. Whooping cranes may migrate through the proposed project area during spring and fall migration because of the presence of wetland and croplands in the proposed project area. According to the database maintained by USFWS for whooping crane sightings (USFWS 2008b) and review of elemental occurrence records from the South Dakota Wildlife Diversity Program (SDGFP 2008b), there are no recent or historical occurrences of whooping cranes in the proposed project area or Brookings County. Surveys for whooping cranes are not required by USFWS for this proposed project.

Western Prairie Fringed Orchid

The Western prairie fringed orchid was listed under the ESA as threatened in the United States in 1989. The western prairie fringed orchid is not known to occur in Brookings County, and the species is thought to be extinct in South Dakota (USFWS 2008c).

Western prairie fringed orchids occur most often in remnant native prairies and meadows, but have also been observed at disturbed sites (USFWS 2008c). The orchid is associated with native tallgrass prairie species including big bluestem (*Andropogon gerardii*), Indian grass (*Sorghastrum nutans*), and switch grass (*Panicum virgatum*). In hydric habitats, the orchid is associated with communities dominated by sedges (*Carex* spp.) and spikerushes (*Eleocharis* spp.) (USFWS 1996). Potential habitat for the orchid exists within the wetland communities found in the proposed construction ROW. Habitat surveys were conducted in July 2009 and no suitable habitat was found for the Western prairie fringed orchid within the pipeline ROW.

American Burying Beetle

The American burying beetle is listed as a federally endangered species in South Dakota. The beetle is known to occur in Bennet, Gregory, Hakkan, Tripp, and Todd counties (USFWS 2008a). Suitable habitat for the beetle is considered to be any site with significant humus or topsoil suitable for burying carrion. American burying beetles appear to be largely restricted to areas mostly undisturbed by human influence (SDGFP 2008a). Conversations within USFWS and SDGFP (Schriner 2009) indicated there are historical records for beetle sightings within the proposed project area, but recent survey work has yielded no occurrences. USFWS believes that there is very limited habitat in the pipeline ROW and, therefore no surveys would be required for the proposed project.

Dakota Skipper

The Dakota skipper is a candidate for listing under the ESA. The skipper is a small butterfly with a 1-inch wingspan that requires tracts of native prairie consisting of bunchgrasses and forbs for nectar sources. Dakota skippers have not been found in habitats heavily overrun with exotic species, but can occur in transition zones of mixed and tallgrass prairie in South Dakota (USFWS 2007a). The species can exist in both wet and dry habitat. Wet habitat typically consists of relatively flat native bluestem prairie containing flowering wood lily (*Lilium philadelphicum*), harebell (*Campanula rotundifolia*), and smooth camas (*Zygadenus elegans*) (USFWS 2007a). Dry habitat typically consists of upland prairie areas on ridges and hillsides dominated by bluestem grasses and needlegrasses containing abundant pale purple coneflower (*Echinacea pallida*), upright coneflower (*E. angustifolia*), and blanketflower (*Gaillardia* sp.) as nectar sources (USFWS 2007a).

The Dakota skipper has been documented at Oak Lake in the SDGFP Wildlife Diversity Database. Oak Lake is located approximately 1 mile west of the proposed pipeline alignment (SDGFP 2008b). Preferred habitat for the species is limited in the proposed project construction area because of the prevalence of agricultural activities. Native grassland does occur within the pipeline ROW as shown on Exhibit 3.6-17. A specialist trained in conducting Dakota skipper surveys has conducted a habitat assessment and occurrence/absence surveys for this species within the pipeline ROW. Two areas of suitable habitat were found within the pipeline ROW. The survey indicated the absence of the Dakota Skipper within these two areas of suitable habitat within the pipeline ROW.

Bald and Golden Eagles

The bald eagle was recently de-listed from the ESA, but is still afforded protection under the MBTA and BGEPA. Bald eagles occur throughout South Dakota and new nests appear every year (USFWS 2007b). These birds are associated with large trees, such as cottonwoods, and large lake or river systems. Small mammals such as prairie dogs provide foraging opportunities for many raptors, including bald eagles. The SDGFP Wildlife Diversity Database (SDGFP 2008b) showed, and field observations confirmed that no active bald eagle nests of roosts were observed on the natural proposed construction ROW as of October 2008 (EDAW 2009). A bald eagle was observed in October 2008 near the Lac qui Parle River, which feeds into Lake Hendricks. Bald eagles may forage within the pipeline ROW, particularly near aquatic habitats such as Deer Creek and its tributaries.

Golden eagles may occur in eastern South Dakota during the winter months, but are primarily found in the western part of the state. There are no golden eagle nests within the proposed project vicinity or Brookings County.

Migratory Birds

The natural proposed construction ROW contains nesting and stop-over habitat for a number of ground and tree-nesting migratory birds, protected under the MBTA. Under the authority of the MBTA, federal projects are reviewed for impacts on migratory birds. Section 703 of the MBTA states that adverse impacts to migratory birds are to be avoided: "Unless and except as permitted by regulations ... it shall be unlawful at any time, by any means, or in any manner, to ... take, capture, kill, attempt to take, capture, or kill, possess... any migratory bird, any part, nest, or eggs of any such bird."

There were two inactive and one active raptor nests identified. An active great horned owl nest was documented on the east side of the energy conversion facility approximately 0.6 mile east of the southern end of the gas pipeline ROW and approximately .4 mile east of the energy conversion facility site boundary. The pair was observed nesting in a plains cottonwood community near an abandoned homestead.

One inactive raptor nest was documented in the south east corner of the energy conversion facility site. The nest was situated approximately 40 feet above ground in a cottonwood tree. Signs of nesting activity, such as raptors in the area, whitewash, fresh vegetation lining the nest, were not present at the time site visits were conducted in May 2009. Given the size and location of the nest, it is assumed the nest previously was used by a *Buteo* species such as a red-tailed hawk or Swainson's hawk or, possibly an owl.

Another inactive raptor nest was documented in May 2009 approximately .5 mile southwest of the proposed construction ROW in a shelterbelt just east of 484th and north of 197th. The nest was observed in a shelterbelt and appears to be an inactive raptor nest.

3.6.5.2 Environmental Effects

Resource protection measures for vegetation resources include the following:

- The contractor will exercise care to preserve the natural landscape and will conduct construction operations to prevent any unnecessary damage to or destruction of natural features.
- The contractor will exercise care to preserve the natural landscape by restricting equipment to designated roads, trails, and staging areas.
- Vegetation will be preserved and protected from damage that results from construction operations to the extent practicable.
- An integrated weed management plan for the project will be developed prior to construction.
- All construction materials and debris will be removed from the work area in a timely manner.
- Construction vehicles and equipment will be maintained in proper operating condition and equipped with manufacturers' standard noise control devices or better (e.g., mufflers and engine enclosures).

- Forested habitat (shelterbelts), especially those bordering wetlands, will be avoided wherever possible.
- If native prairie is disturbed during pipeline construction, existing topsoil will be carefully salvaged and replanted with native grasses. Planting will be conducted in a timely manner to minimize invasion of noxious or undesirable weed species.
- Noxious weeds will be controlled within the pipeline ROW during construction and operation.

3.6.5.2.1 Vegetation

Construction and operation of the gas pipeline would result in both construction and operation related impacts to vegetation communities in the proposed project area. The majority of the proposed pipeline parallels existing rights-of-way and will be almost entirely constructed in croplands, hay lands, and pasturelands. The approximate extent of impacts to each vegetation community type was outlined above in Section 3.6.5.1. Section 3.6.5.2 outlines resource protection measures that will be implemented to minimize and mitigate the potential impacts to vegetation as discussed below.

In general terms, construction-related impacts would be concentrated within the construction ROW for the gas pipeline. Construction activities would result in vegetation removal, increased trampling of vegetation, erosion, soil compaction, and sedimentation, any of which could result in adverse effects to vegetation communities. Construction will be sequenced to limit disruption to any area at one time to reduce the impact of construction on vegetation and to minimize the introduction of noxious and invasive weeds to the ROW. Any trenches will be backfilled according to state regulations, and the area will be reseeded with native grasses and forbs after construction is complete.

Soils subjected to vegetation removal in sloped areas, including draws, drainages, wetlands and riparian areas, are particularly vulnerable to sedimentation and erosion impacts. Compacted soils can inhibit germination and root growth for native plant species. If severe, native plants may have trouble becoming reestablished and could be replaced by new or weedy plant species. Ground disturbance also often results in propagation of noxious weeds, particularly in areas that have existing weed infestations.

Noxious weeds can be spread from unwashed construction equipment, vehicles transporting noxious weed-inoculated soil or plant materials into previously un-infested areas, or from transfer of topsoil inoculated with noxious weeds. Noxious weeds typically are fast-growing and can displace native species or inhibit reestablishment of native grasses, forbs, and shrubs. Caution would be exercised as part of the mitigation measures to avoid the introduction or spread of noxious weeds by requiring that construction equipment and vehicles are free of soil and debris prior to entering the construction area. Vehicle cleanings will be employed to prevent the spread of noxious weeds.

Fugitive dust poses a potential impact to local plant communities during proposed project construction, operation and future maintenance. Fugitive dust is defined as dust that is not emitted from a definable point source, such as industrial smokestacks. Construction equipment, travel on existing and newly constructed gravel access roads, soil disturbance, are all sources of fugitive dust. Fugitive dust can interfere with plant growth by clogging stomata (i.e., pores),

thereby reducing gas exchange with the environment, and reducing light interception. To minimize fugitive dust impacts from pipeline construction on vegetation, Basin Electric would ensure the projects comply with BMPs such as road watering, revegetation of disturbed soils, placement of non-dusting granular material for driving surfaces, installation of windbreak fencing or tree plantings, etc.

Temporary alteration of existing drainages and drainage patterns may impact water availability for vegetation communities including wetlands. Wetland communities and other vegetation communities may be affected by groundwater pumping. This impact cannot be quantified at this time. Species that require less water and those that thrive in bare ground are usually noxious and invasive weeds.

Vegetation communities such as forested communities, wetlands, and native grassland would be avoided to the greatest extent feasible. Minimal tree clearing or removal within forested shelterbelts will occur during the construction of the pipeline.

If native prairie is disturbed during pipeline construction, existing topsoil will be carefully salvaged and replanted with native grasses. A revegetation plan that includes a recommended seed mix for the pipeline ROW is included in this application as Section 3.8.2.8.

Through the implementation of resource protection measures and the proposed project's revegetation plan, impacts to vegetation within the pipeline ROW are expected to be short-term in nature. No long-term, adverse impacts to vegetation are expected. Areas that are disturbed by construction equipment are expected to recover naturally with vegetative reestablishment or will be reseeded with native vegetation after the construction equipment is permanently removed.

3.6.5.2.2 Wildlife

Some of the potential construction impacts to wildlife resulting from construction of the gas pipeline include habitat fragmentation, habitat loss, ground-disturbance, noise impacts, and hydrologic impacts are discussed in detail below. Impacts to wildlife can be direct, indirect, permanent or temporary and will be separated when necessary into construction and operation impacts.

Habitat Fragmentation Impacts

Habitat fragmentation is defined as the process by which a natural landscape is broken into smaller parcels of the natural ecosystems, isolated from one another in a matrix of lands dominated by human activities (Saunders and Hobbs 1991). Temporary habitat fragmentation may occur while the construction ROW is being re-seeded. Once the pipeline ROW is revegetated with native species, it is expected that wildlife would return to the area. Operation of the pipeline is not expected to have any long-term adverse impacts to wildlife species.

Temporary Habitat Loss—Nesting Habitat Impacts

The removal of vegetation and soils within the construction ROW would temporarily result in the loss of cover, forage, and nesting habitat for wildlife that occur in the area. The re-seeding plan and resource protection measures outlined above under the vegetation section would mitigate some of these impacts.

No active ground-nests were observed within the proposed construction ROW during field surveys conducted in 2009. Suitable nesting habitat is present, however, within the ROW. The temporary loss of nesting habitat could lower the overall productivity within the proposed project area over the course of the construction and re-seeding period; however, it is not expected to impact the viability of breeding avian populations in Deuel or Brookings County, in the state, or on a regional scale. In general, disturbance of wildlife would be greatest during spring-summer breeding season and fall migration. The bird species discussed in Section 3.6.5.1 have the potential to occur within the proposed project site boundaries.

The active Great-Horned Owl nest found approximately 0.6 miles from the pipeline ROW is of sufficient distance that construction of the pipeline would have no impact on the nesting pair. The nest is also buffered by a large hillside to the west and an old homestead. The inactive nest is also of sufficient distance that construction noise should not impact a breeding pair, should the nest become active again in the future.

The forested shelterbelts in the ROW provide suitable habitat for raptor species, though none were observed within the proposed construction ROW. Basin Electric is committed to preserving riparian trees and forested shelterbelts to the greatest extent feasible to minimize impacts to avian species and to preserve shelter for cattle found in these areas. If construction occurs during the raptor breeding season (time dependant on species), surveys would be conducted to ensure the proposed project does not affecting breeding raptors in the area. If an active raptor nest was found in within 0.25 mile of the ROW, Basin Electric and Western would work with USFWS to either buffer and monitor the nest from construction activity (depending on the location of the nest relative to disturbance) or delay construction until chicks have fledged.

If construction occurs at any time between March 15 and October 1, avian nesting surveys would be conducted by a qualified specialist in order to avoid the take of nesting avian species. If special status or migratory species were found nesting within the proposed project boundary, USFWS would be consulted to identify measures to minimize impacts and avoid the take of breeding birds. The majority of the resident and migratory bird species that may be found within the proposed project area are protected under the MBTA.

Ground Disturbance-Associated Impacts

Possible indirect effects to wildlife habitat from ground-disturbing activities include the risk of further propagation of noxious weeds. Noxious weeds can adversely affect wildlife habitats by reducing foraging opportunities for terrestrial wildlife, big game, and upland game bird species. An Integrated Noxious Weed Management Plan would be implemented to minimize and mitigate indirect effects to wildlife habitat during construction and operation of the proposed project.

Construction related impacts, including traffic, noise, and human disturbance, may result in the mortality of less mobile, fossorial (ground-dwelling) species within the proposed project area. Loss of smaller mammals may affect the local prey base for raptors and terrestrial predators. Mobile wildlife such as big game species would likely disperse from areas with construction activities or ongoing human disturbance. No long-term or permanent effects are expected. Once the ROW has been re-vegetated wildlife are expected to return to the area.

Noise Impacts

The construction- and operation-related noise effects on wildlife would depend greatly on which species are present within the proposed project site during or that remain following construction, the specific locations of these species, seasonal and diurnal timing of activities, the type of construction, maintenance, or operational activity and equipment utilized, and duration of activity at each site. Noise impacts would be limited to the construction period.

Hydrologic Impacts

Construction and operation may result in short- or long-term impacts to surface water, groundwater, and/or wetlands within the proposed project area. To minimize and mitigate hydrologic impacts and impacts to wetland habitats in the ROW, Basin Electric will directionally drill jurisdictional wetlands and surface waters that may provide habitat for federally listed species, namely, the Topeka shiner. Some jurisdictional waters may be trenched using conventional methods during drier months. Ditches or ephemeral streams that are found in the proposed project area may also be directionally drilled if construction occurs during wetter months. Directionally drilled the pipeline would minimize impacts to terrestrial wildlife species associated with wetland and surface water. Further impacts to aquatic species are discussed under Section 3.6.6.2.

Through implementation of resource protection measures, the proposed project is not expected to have long-term, adverse effects to wildlife species in the proposed project area.

3.6.5.2.3 Threatened and Endangered Species

Resource protection measures for threatened and endangered species include the following:

- USFWS and SDGFP have been consulted to identify known locations of any rare, threatened, or endangered species in the gas pipeline ROW. If any unanticipated threatened or endangered species are encountered during construction, all ground-disturbing activities in the immediate area will be stopped immediately until consultation with the appropriate resource agency can occur.
- Surveys for the Western prairie fringed orchid and the candidate species Dakota skipper occurred in the summer 2009. If any federally listed or candidate species is found within the construction ROW, USFWS will be notified and consulted on the appropriate avoidance or mitigation measures to minimize impacts to special status species. A Biological Assessment will be prepared for the project and it will thoroughly address impacts and mitigation measures for federally listed species.
- Basin Electric will also conduct nesting surveys if construction occurs during the avian breeding season, to avoid the take of a nest or bird protected under the MBTA.
- Basin Electric will be compliant with all stipulations provided by USFWS in the Biological Assessment and ensure compliance with the ESA and MBTA.

Whooping Crane

There are no recent or historical occurrences of whooping cranes in the proposed project area or in Deuel or Brookings County. The proposed project will minimize impacts to suitable stop-over habitat for whooping cranes (large wetland complexes and surface waters) and impacts to grassland and cropland areas will be temporary in nature. If construction occurs during spring

and/or fall migration, whooping cranes may temporarily avoid the proposed project area. The proposed project is not expected to have any long-term impacts on whooping cranes or habitat used by whooping cranes during migration.

Western Prairie Fringed Orchid

A habitat assessment was conducted in the summer of 2009 and no suitable habitat was found for the Western prairie fringed orchid within the pipeline ROW. If populations of the orchid are found within the ROW during construction, Basin Electric would work with Western and USFWS to avoid and/or mitigate impacts to this federally listed plant species.

American Burying Beetle

USFWS and SDGFP have determined that there is no suitable habitat for the American Burying Beetle in the proposed project area. Surveys will not be required and it is assumed at this time that the proposed project would not impact beetle populations.

Dakota Skipper

A specialist trained in Dakota skipper surveys conducted a habitat assessment for this species within the pipeline ROW and determined that two areas of suitable habitat were present within the pipeline ROW. No presence of Dakota Skipper was documented within the pipeline ROW. . If the skipper is found within the construction ROW, Basin Electric would work with Western, USFWS, and SDGFP to determine the appropriate course of action to avoid or mitigate impacts to this federal candidate species.

Bald and Golden Eagles

Basin Electric is planning to minimize impacts to large wetland complexes and surface waters in the proposed project area. This will minimize impacts to bald eagle foraging habitat and the aquatic species they prey upon. Bald eagles may temporarily avoid the construction ROW due to noise disturbance and human presence.

If a bald eagle is found nesting or roosting in the proposed project area prior to construction, USFWS and SDGFP would be contacted to establish construction buffers to avoid impacts to breeding pairs.

Migratory Birds

The proposed project occurs in the Central Flyway and it is likely that a number of species nest within proximity to the construction ROW. During proposed project construction, migratory birds may avoid the construction ROW and nest in locations further from the human and noise disturbance. The proposed project would result in the temporary loss of nesting substrate (vegetation), but the re-seeding plan and implementation of a noxious weed management plan would ensure these impacts are short-term and minor.

Basin Electric will minimize impacts to native prairie, wetlands, and forested communities to the greatest extent feasible. While there may be short-term impacts during construction, long-term impacts to these crucial nesting and stop-over habitats will be minimized. If construction occurs during the avian breeding season, nesting surveys will be conducted prior to any ground-disturbing activities to ensure the proposed project does not result in the “take” of a species protected under the MBTA.

If active raptor nests are found in the project area, Basin Electric would consult with SDGFP to determine appropriate construction buffers.

3.6.6 Aquatic Ecosystems

3.6.6.1 Existing Environment

3.6.6.1.1 Wetlands

Wetlands within the proposed pipeline route total approximately 35 acres (Exhibits 3.6-22 through 3.6-27). Of the approximately 35 acres of wetlands, 33 acres are palustrine emergent, 0.01 acres are palustrine scrub-shrub, 0.6 acres are palustrine forested, and 0.8 acres are palustrine unconsolidated bottom. Wetland communities in the pipeline ROW are associated with Deer Creek and its tributaries, the Lac qui Parle River, Oak Lake, roadside and irrigation ditches, swales, topographic depressions, and other unnamed intermittent drainages. The majority of these features have associated wetland communities. Hydrophytic vegetation recorded in the wetland communities found in the proposed project area include reed canary grass, yellow bristle grass, barnyardgrass, prairie cordgrass, coyote willow, and sedge species. The acreage of impacts to wetland communities within the proposed gas pipeline would be determined once proposed project design is finalized.

Deer Creek is a tributary to the Big Sioux River; the confluence is located approximately 20 miles southwest of the southern terminus of the proposed pipeline route. Wetlands associated with Deer Creek and its tributaries are likely classified as jurisdictional “waters of the U.S.” Wetlands associated with the roadside ditches and isolated topographic depressions are not likely classified as jurisdictional “waters of the U.S.” The pipeline may cross Deer Creek or tributaries up to five times. Three of these crossings are in an area just north of State Highway 30, where the creek has been re-routed.

Depending on the final alignment, the gas pipeline could have up to 11 surface water crossings, including irrigation ditches (Exhibits 3.6-22 through 3.6-27).

3.6.6.1.2 Aquatic Species

Based on review of South Dakota Gap Analysis Program (SD-GAP) data and the fish identification guide published by SDGFP, there are approximately 52 species that may occur within or in proximity to the proposed project area. The water bodies located within the proposed project feature boundaries are all fresh water streams and ponds (both natural and excavated stock ponds) that feed into small- and medium-sized lakes. Surface waters within or in proximity to the proposed project area include Deer Creek, Lac qui Parle River, Lake Hendricks, and Oak Lake. A number of unnamed tributaries associated with these water features are found within the proposed project area. Channelized creeks ranged in size from 2 inches deep and 6 inches wide to 3 feet deep and 30 feet wide. Wetland vegetation was generally present except in areas highly disturbed by livestock grazing. The substrates varied between small to medium gravel to thick silt. Stream banks within the proposed project area were generally channelized and averaged 2 feet in height. Stream bank heights varied from 6 inches to 5 feet in height. Ponds also varied in size, ranging from 6 inches deep and 6 feet wide to 6 feet deep and 50 feet across. Wetland and riparian vegetation was found along the margins of all ponds.

General habitat quality for fish species was assessed based on stream substrates, vegetation present, and lack of grazing impacts to stream banks and general water quality. Fish were observed in an unnamed drainage coming from the Black Slough, north of 197th Street (Exhibit 3.6-22). Deer Creek and its tributaries that flow through the pipeline ROW also provide suitable habitat for fish species.

Eastern South Dakota is home to 15 species of amphibians. Of these, seven species occur or have suitable habitat within the proposed project area, or may occur downstream from the proposed project area. During the winter, amphibians in South Dakota are found in deep permanent water bodies and during breeding season are found in more seasonal and temporary ponds (Fischer et al. 1999). Amphibian occurrence in South Dakota is highest in semi-permanent and permanent wetlands. Man-made wetlands and riverine wetland habitats have lower occurrence of amphibians compared to semi-permanent and permanent wetlands (Fischer et al. 1999). In South Dakota, agricultural practices may involve the draining of temporary, seasonal, and tillage wetlands. According to Fischer et al. (1999), “temporary wetlands may increase habitat connectivity for amphibians dispersing between breeding and overwintering ponds”. As a result, it is possible that loss of temporary or seasonal wetlands may increase the distance frogs, toads, and salamanders must travel between habitats, and it may increase the risk of local amphibian extinctions (Fischer et al. 1999). Reptiles and amphibians are sensitive to chemical pollutants, habitat loss, and competition by invasive species.

Painted turtles (*Chrysemys picta*), Northern leopard frogs (*Lithobates pipiens*), chorus frogs (*Pseudacris* sp.*),* Great Plains toad (*Bufo cognatus),* and American toad (*Bufo americanus*) were all observed in wetland and aquatic habitats found within the proposed construction ROW. Northern leopard frogs were abundant in the large wetland communities shown on Exhibits 3.6-23 and 3.6-24.

3.6.6.1.3 Threatened and Endangered Aquatic Species

USFWS listed the Topeka shiner (*Notropis topeka)* as endangered in January 1999. This species generally occupies small, prairie streams with high quality water, groundwater inputs, and sand or gravel substrates (SDGFP 2003). Some Topeka shiner habitat in South Dakota includes streams with silt substrates, off-channel backwater areas, borrow pits, and sloughs connected to occupied streams. Topeka shiners have been collected in varying abundance from streams with incised channels, high bank erosion, and intensive grazing pressure along riparian zones. Although no Topeka shiner critical habitat is designated in South Dakota, this species is known to occupy tributaries of the James, Vermillion, and Big Sioux rivers in South Dakota. Deer Creek is a tributary to the Big Sioux River. According to the SDGFP Wildlife Diversity Database (SDGFP 2008b), Topeka shiners were recorded in an unnamed tributary to Deer Creek in 2000, approximately 1.5 to 2 miles north (and upstream) of the proposed project location. Deer Creek and its tributaries in the pipeline ROW provide potential habitat for Topeka shiners. The USFWS has requested that Basin Electric move forward with the proposed project with the assumption that Topeka shiners do occur in the proposed project area.

3.6.6.2 Environmental Effects

Resource protection standards for wetlands and common and threatened and endangered aquatic species include the following:

- Construction activities will comply with the SWPPP, ESCP, and SPCC Plan.
- Discharges of fill material associated with unavoidable crossings of wetlands or intermittent streams will be carried out in compliance with provisions of Section 404 of the Clean Water Act and the nationwide and/or project specific permit requirements of the Corps of Engineers.
- SDGFP has been consulted for known locations of any rare, threatened, or endangered aquatic species in the proposed project area. If any unanticipated threatened or endangered species are encountered during construction, all ground disturbing activities in the immediate area will be stopped immediately until consultation with the appropriate resource agency can occur.
- If construction through a wetland cannot be avoided and directional drilling is determined to be infeasible, trenches through the wetland should be sufficiently compacted to prevent bottom seepage or drainage along the trench.
- If construction is necessary in or near wetlands, timing of construction will be deferred to late summer to avoid high water conditions and to decrease disruption of waterfowl or other wildlife during the nesting season to extents practicable.
- Basin Electric will be compliant with all stipulations provided by USFWS in the Biological Assessment and ensure compliance with the ESA.
- Basin Electric will be compliant with measures specified under Section 404 of the Clean Water Act.

3.6.6.2.1 Wetlands

The majority of jurisdictional wetlands within the gas pipeline ROW will be directionally drilled to avoid long- and short-term impacts to wetlands and the species associated with them. Trenching, along with appropriate mitigation measures, may also be used. Trenching would occur during dry periods, such as fall and winter months, to minimize impacts to surface waters, wetlands, and the species associated with these areas. If trenching is conducted, construction may result in short- or long-term impacts to wetlands from erosion of exposed sediments, during construction or accidental hazardous spills from construction equipment. Trenching would result in the removal of wetland vegetation, short-term alteration of surface hydrology, increased risk for spread of noxious weeds, and may result in the loss or degradation of aquatic habitats used by amphibians, fish, and other aquatic species. Basin Electric will submit an application to USACE to obtain Nationwide 12 permits for each stream and wetland crossing within the ROW. Basin Electric will abide by all requirements outlined in the Nationwide Permit. Impacts to wetlands are expected to be temporary in nature and the wetlands would be restored once the pipeline is in place.

3.6.6.2.2 Aquatic Species

Basin Electric will minimize direct and indirect impacts to fish and other aquatic species in the project area. If a particular area is not directionally drilled, and the crossings are trenched, construction may result in short-term impacts to fish, reptiles, amphibians, and aquatic invertebrates that may occur in the area. Most of the impacts to aquatic resources would occur as a result of the construction process. Sedimentation in aquatic ecosystems can have adverse

impacts as it may cover strategic feeding, resting, and breeding habitats. Sediment and turbidity can also be directly toxic to some aquatic species either through physical actions (e.g., abrasion and clogging of respiratory structures) or via chemical interactions. Erosion of exposed sediments or accidental hazardous spills from equipment may result in short- or long-term impacts.

If trenching were required, Basin Electric would implement resource protection measures as outlined above under Section 3.6.6.2 to mitigate potential impacts such as sedimentation, erosion, hazardous waste spill (e.g., fuel from construction equipment), and alteration of natural drainage patterns. Construction would occur during the driest time of the year to minimize impacts to aquatic resources.

3.6.6.2.3 Threatened and Endangered Species

Basin Electric will adhere to all stipulations in the Biological Assessment as developed by Western in consultation with USFWS.

3.6.7 Land Use and Local Land Controls

Operation and maintenance of the proposed pipeline will be compatible with the present land uses of the surrounding area. The pipeline will be located underground and land uses will return to pre-construction conditions after construction is completed. The depth of cover over the buried pipeline will be at least 48 inches, and will allow normal agricultural operations to occur after construction is completed.

The proposed pipeline is located in the jurisdictions in the townships of Sherman, Richland, and Lake Hendricks in Brookings County and in Scandinavia Township in Deuel County. The proposed project is compatible with existing land use designations in the counties and will not require rezoning. In both Brookings and Deuel counties, the proposed project area is zoned as Agricultural and the agricultural zoning intends to maintain and promote farming and related activities within an environment which is generally free of other land use activities. Residential development is discouraged in the zone to minimize conflicts with farming activities and reduce the demand for expanded public services and facilities (Brookings County 2007, Deuel County 2004).

In Brookings County, the proposed project will occupy land also designated in the Brookings County Comprehensive Plan as an Area of Development Stability (Brookings County 2000). Although the primary focus of the Area of Development Stability is to promote the agricultural designation, the defined area allows industrial site construction. There are no ordinances in place known to restrict pipeline development and it is not anticipated that there will be future ordinances that might restrict the pipeline. Basin Electric will secure all required planning and construction permits from authorizing jurisdictions. A Conditional Use Permit from Brookings County, a Special Exception Permit for Essential Services from Deuel County, and approval from township boards, as well as various construction-related permits will be obtained prior to construction. Adherence to appropriate codes and regulations with the counties will occur. Exhibit 3.6-28 shows the lands uses within the project area.

3.6.7.1 Measures to Ameliorate Adverse Land Use Impacts

The majority of the final gas pipeline alignment has been sited within and adjacent to existing ROWs, and road easements, and will cross agricultural areas. Existing ROWs will be restored to original conditions. During construction, vehicular and emergency access to all separately owned land will be controlled at all times. Construction hours for the installation of the gas pipeline will be limited to daytime hours as required by local county permitting to limit noise impacts to adjacent residences. Measures to ameliorate adverse land use impacts in agricultural areas are described in Section 3.7.6.

3.6.8 Air Quality

All counties in the affected area surrounding the proposed site have been designated as attainment areas (or unclassifiable) for all existing national ambient air quality standards (NAAQS), including the 8-hour ozone and particulate matter with mean aerometric diameter smaller than 2.5 microns ($PM_{2.5}$).

Any impact to air quality associated with the proposed pipeline will be short term and transient. Fugitive dust from off-road travel can be expected. This will be mitigated by limiting off-road vehicle speed to less than 25 miles per hour (mph). Other potential air impacts are expected from contractor-vehicle exhaust and construction equipment. Motors will be shut off and not be allowed to be idled when not in use.

3.7 Community Impacts

This section identifies and analyzes the effects of construction, operation, and maintenance of the proposed facility on economic, employment/labor market, infrastructure, community services, taxation, housing, agricultural production, and transportation within the designated affected area. Under South Dakota Codified Law (SDCL) 49-41 B-6, the Commission is required to designate the affected area relative to this filing and also to designate a local review committee within 30 days after the filing of the notification of intent. In Administrative Rule of South Dakota (ARSD) 20:10:22:01 (1), "affected area" is defined as "that area which may be affected environmentally, socially, aesthetically, or economically by the location of a facility at a proposed site."

At its January 27, 2009, meeting, SD PUC considered the request for waiver of the 30-day requirement of designation of the affected area and the local review committee and discussed the designation of the affected area and the local review committee. The SD PUC unanimously voted to grant the request for waiver of the 30-day requirement of designation of the affected area and the local review committee.

After discussion, the SD PUC determined that the affected area for Basin Electric's proposed Deer Creek Station Project is an area within 12 miles of the site of the proposed facility located entirely within Brookings and Deuel Counties, Brookings School District 051, Deubrook School District 05-6 and Elkton School District 05-3, and the cities of Astoria, Aurora, Brookings, Bushnell, Elkton and White. The affected area does not include any tribal lands. Exhibit 3.4.2 shows the designated affected area for the Deer Creek Station Project.

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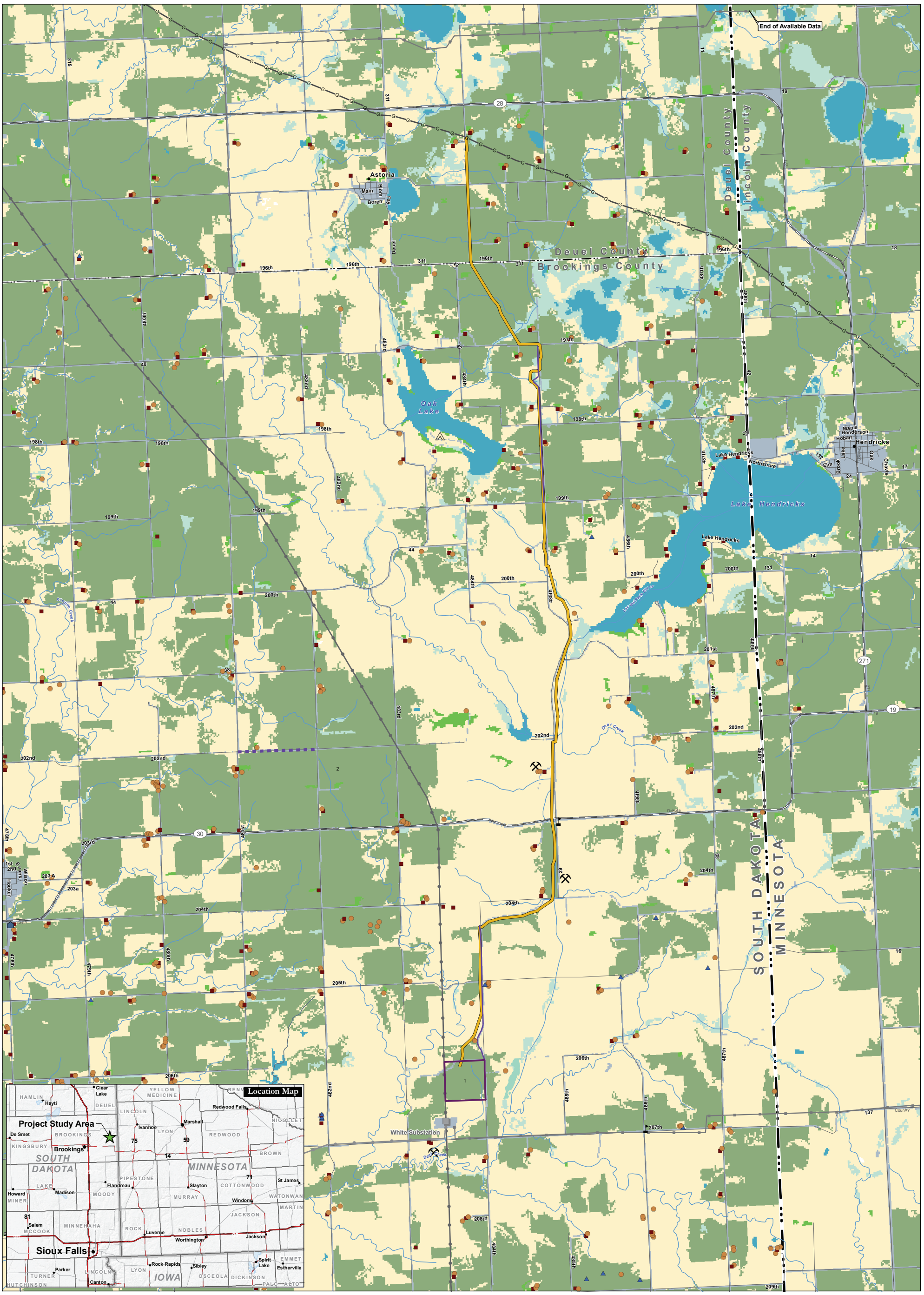
Deer Creek Station Project



0 0.5 1 2 Miles

Project Features
- Proposed Gas Pipeline Route
- Deer Creek Station Site

Existing Utilities
- Northern Border Pipeline
- Substation
- East River Distribution
- Rural Water Pipeline Extension
- Rural Water

WAPA Transmission
- 115kV
- 345kV

Facilities/Structures
- School
- Campground
- Farm Building
- Outbuilding or Other Building
- House
- Commercial Building
- Mining Sites

Land Cover (NLCD)
- Cultivated Crops
- Forest
- Developed Land
- Wetland
- Hay/Pasture; Herbaceuous
- Water

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

EDAW | AECOM

Source: USDA NAIP 2006; USGS NHD 2006; ESRI 2006; Basin Electric 2008; NLCD 2006; Census 2000

Consolidated Land Use

MXD Path: P:\2009\09180001.01\GIS\Layout\PUC\Consolidated_Land_Use.mxd

Exhibit 3.6-28: Consolidated Land Use Map

In accordance with SDCL 49-41 B-6, the SD PUC designated the local review committee, which will be comprised of the following individuals, ex officio:

- The Presidents of the Boards of Education of Brookings School
- District 05-1, Deubrook School District 05-6 and Elkton School District 05-3
- The chairs of the Brookings and Deuel County Commissions
- The mayors of the cities of Astoria, Aurora, Brookings, Bushnell
- The communities of Elkton and White
- A representative of Basin Electric Power Cooperative, Inc.

The proposed natural gas pipeline route is in a rural and sparsely populated region of South Dakota. The pipeline construction is planned to occur for approximately 3 months and various construction activities will occur simultaneously along the pipeline alignment. The transitional nature and short construction period is expected to have limited impact on the surrounding communities. It is anticipated that approximately 70 workers will support the construction of the 13.2 mile gas pipeline. It is expected that the majority of the workforce will be non-local. Basin Electric is in the process of garnering support for the proposed project from local communities. Resolutions of community support are provided in the Deer Creek Station Project PUC application for the energy conversion facility.

3.7.1 Economic Impacts

There will be short term economic benefits to the service industries such as hotels, restaurants, gas stations. It is expected that any impacts will be positive to the local community.

3.7.2 Commercial and Industrial Sectors

The local economy will benefit from temporary hiring of local and non-local workforce. Payroll taxes will increase income tax revenue. Economic benefits to nearby businesses (in White and Brookings County) will likely be increased through the sales of food, goods, services, and lodging that will be generated by the temporary non-local workforce. The increase in consumer demand could boost the local economies. Some pipeline materials and supplies will be purchased from local businesses. Local purchases could include consumables, fuel, and equipment rental. No impacts to the industrial sector are anticipated.

3.7.3 Taxes

Property taxes would be of greater economic significance to state and local revenues. Based on current tax rates and prior to the application of a discretionary formula, the gas pipeline is estimated to generate $109,000 in property taxes in the first taxable year after operation.

3.7.4 Housing

It is expected that most non-local workers will use temporary housing, such as hotels/motels, recreational vehicle parks, and campgrounds. Most of the temporary workers will likely seek housing in the more populated, service-oriented towns located within a reasonable commuting distance to the gas pipeline site.

3.7.5 Land Values

The gas pipeline will be constructed entirely within rural, agricultural areas. Compensation to landowners for the conveyance of pipeline ROW easements will be made. Construction activities will create the potential for damage to property, including drainage tiles, irrigation systems and fences. If property is damaged, Basin Electric will restore damaged drain tiles, irrigation systems, fences and other items that may become damaged or temporarily disturbed because of pipeline construction. Certain existing land uses will be converted to long-term utility use for the duration of the pipeline's operation. The conversion represents a long-term future constraint on development of private land because dwellings cannot be placed on the permanent pipeline ROW for the duration of the easement. It is anticipated that property values will not be affected by the installation or presence of the pipeline.

3.7.6 Agriculture

Approximately 56 acres of agricultural lands are located within the pipeline ROW. Agricultural lands will be temporarily impacted during construction. Long term impacts on agricultural production are not expected since the pipeline will be buried deep enough to allow for agricultural practices to resume after construction. Disturbance will be short term and mitigated by the following measures:

- Vegetation will be preserved and protected from damage that results from construction operations to the extent practicable.
- To minimize the spread of noxious weeds, construction crews will clean all equipment and vehicles (power or high pressure) of all mud, dirt, and plant parts before entering and leaving the construction area. Basin Electric will be responsible for control of noxious weeds in the area proposed for construction. Suppliers will ensure that gravel and fill imported to the site come from weed-free sources.
- The top 12 inches of top soil will be separated during trenching activities. When the trench is backfilled, the subsoil will be placed first, followed by topsoil. Tillable agriculture land will be deeply tilled following construction to alleviate compaction.
- BMPs according to the ESCP will be implemented.
- Upon completion of the work, all work areas, except any permanent access roads, will be re-graded, as required, so that all surfaces drain naturally, blend with the natural terrain, and are left in a condition that will facilitate natural revegetation. Vegetation will be reestablished by seeding with an approved grass seed mixture compatible with local soils. These practices will provide proper drainage and prevent erosion.
- Construction will be delayed after heavy rains to avoid impacts to the soil including compaction.
- Fencing, drain tiles, irrigation systems, or other agricultural-related facilities disturbed during construction would be restored to their pre-construction condition upon completion of construction activities.
- All work on pasture and farmlands including access and removal of bevel shavings, litter, and garbage will be in accordance with applicable permits. Temporary gates used for access will remain closed at all times. The temporary gates will be replaced with permanent fence.
- Basin Electric will prohibit feeding or harassment of livestock or wildlife, firearms, and pets on the construction ROW. Food and food wastes will be stored and secured. Once construction

has been completed, normal grazing and livestock movement over the permanent ROW may resume.

3.7.7 Other Economic Benefits

Purchases, equipment rental leases, equipment maintenance and repairs, storage areas, fuel for construction vehicles and associated equipment, and licensing and permitting fees will all provide additional economic prosperity to the state during pipeline construction.

3.7.8 Employment/Labor Market

The construction workforce will be temporary. The gas pipeline will be built between July and September 2010 and the construction crew will consist of 70 workers (Basin Electric 2009). The large percentage of the temporary workforce will consist of non-local personnel. A small portion is expected to be from local communities where possible. No permanent workforce is anticipated for the operation of the gas pipeline. Because no permanent employees are associated with the pipeline, no long-term impacts on public services including transportation, sewer and water, solid waste or energy services.

3.7.9 Infrastructure Impacts

3.7.9.1 Energy

Long-term electrical service requirements for the Deer Creek Station Project include utilizing existing service lines and constructing electrical transmission lines; no new electrical service requirements are anticipated for operation of the proposed pipeline. Temporary short term use of power during the construction phase is expected to be minimal. Long-term power supply to support the Deer Creek Station Project is expected to be provided by existing utility providers, utilizing existing power generation capacity.

3.7.9.2 Sewer and Water

There will be increased utilization of water and sewage facilities due to the pipeline construction offices and influx of temporary construction workers utilizing local lodging. However, there should not be any significant impacts from workers on local communities' water, sewage or other public utilities. It is not expected that workers will overtax these facilities in the area of the gas pipeline and the local communities should not see any impact on their public utilities as result of the gas pipeline.

3.7.9.3 Solid Waste Management

Increased utilization of solid waste management facilities will occur as a result of pipeline construction and the influx of temporary construction workers utilizing local lodging and services and solid wastes from pipeline construction (stumps, rock, spacer ropes, end caps, welding rods, pipe shavings, and other trash/debris). Solid waste generated by construction activities will be managed according to applicable federal, state, and local regulations. Local waste disposal transporters and landfills will be utilized where appropriate. Hazardous wastes, which will be limited to very small volumes, will be transported to permitted hazardous waste disposal facilities by licensed transporters.

Construction debris will be removed and taken to the nearest permitted landfill in South Dakota; Brookings Landfill is the closest to the proposed project area, and Watertown Landfill is also nearby.

3.7.9.4 Transportation

The Deer Creek Station Project is locally served by a well defined system of low volume paved and gravel roadways, essentially located on the grid line defined by the land section lines. Interstate I-29 runs north-south and is located 11.5 miles west of Deer Creek Station, and is expected to carry regional traffic generated from southwest and northwest origins. Major east-west highways SD 30, about 2.5 miles north of Deer Creek Station, and U.S. Highway 14, about 6 miles to the south. A Traffic and Transportation Technical Memorandum is provided in the Deer Creek Station Project PUC application for the energy conversion facility.

Local roadways that are likely to carry project-generated traffic are generally located along the legal land section lines, and fall within the jurisdiction of Deuel County, Brookings County, Richland Township, Sherman Township, and Scandinavia Township. Road surfaces are mainly gravel, though several asphalt surfaced roads are within the proposed project area.

There are several bridge span structures crossing Deer Creek or its tributaries with posted load restrictions in the immediate proposed project area. In addition, there are several creek crossings on the county and township road system consisting of single and multi-culvert combinations, comprised of either corrugated metal or reinforced concrete pipe.

Routine maintenance of the Brookings County and Deuel County roads and bridges are generally maintained by county forces. The townships contract for their respective maintenance activities.

Construction across paved roads and highways will be in accordance with the requirements of the road permits and approvals to be obtained by Basin Electric. In general, all major paved roads, including highways and all primary gravel roads will be crossed by boring beneath. Driveways will be bored if required by landowners. The majority of smaller unpaved roads will be crossed using the open-cut method where permitted by local authorities or private owners. Table 3.7-1 provides a summary of paved and gravel roads to be crossed during construction and the construction method to be used.

Construction of the proposed pipeline is expected to require 70 workers for a 3-month duration. The majority of the workers are expected to originate from Brookings with others to be in adjacent communities. These workers will be in the proposed project area for approximately three months during the earliest stages of construction and should finish construction of the gas pipeline several months prior to peak construction of the power generation plan. Because the existing gas line is approximately 11.5 miles north (as the crow flies) of the proposed project site, it is reasonable to assume that all 70 of these workers will travel to the proposed project site from the west via SD 30 beginning at I-29 exit 140. None of the gas pipeline construction is scheduled to occur south of the proposed project site.

Table 3.7-1:
Paved and Gravel Roads Crossed by Natural Gas Pipeline Construction

Road/Highway Name	Crossing Type	Jurisdiction
195th Street	Directional Boring	Deuel County
196th Street	Directional Boring	Deuel/Brookings County Line
197th Street	Directional Boring	Brookings County
485th Avenue north of tributary to Oak Creek	Directional Boring	Brookings County
485th Avenue south of tributary to Oak Creek	Directional Boring	Brookings County
198th Street	Directional Boring	Brookings County
199th Street	Directional Boring	Brookings County
485th Avenue north of 200th Street	Directional Boring	Brookings County
201st Street	Directional Boring	Brookings County
485th Avenue south of 202nd Street	Directional Boring	Brookings County
SD 30	Directional Boring	State of South Dakota
204th Street	Directional Boring	Brookings County
485th Street north of 205th Street	Directional Boring	Brookings County
205th Street	Directional Boring	Brookings County

Transportation logistics that will identify possible routes to be utilized during construction will be established prior to construction as necessary to support state and local permitting. Basin Electric will make all necessary provisions for conformance with federal, state, and local traffic safety standards and will conduct construction operations to offer the least possible obstruction and inconvenience to public traffic.

3.7.10 Community Services

3.7.10.1 Health Services and Facilities

Local health facilities will provide health services to workers during the construction and operation phases of the gas pipeline.

3.7.10.2 Schools

While it is difficult to determine the specific demographic and “family unit” data on the projected increased labor force, the number of new students enrolling in the local schools as a result of the construction will be minimal depending on geographical distribution and location. Most workers do not travel with their families or enroll their children in the local schools. Because of this limited potential for new students, local schools should be capable of providing more than adequate opportunities and accommodations for any new students.

3.7.10.3 Recreation

Recreational opportunities in proximity to the gas pipeline include swimming, boating, hunting, and photography. The area lakes provide yearly recreational opportunities to residents and visitors. Some temporary workers may choose to buy hunting and fishing licenses and utilize them during the construction period. There should be limited recreational impacts from the construction and it is not expected that workers will overtax the many recreational facilities in the area.

3.7.10.4 Government Facilities or Services

Law enforcement agencies in the communities adjacent to the pipeline should not experience a significant impact from the pipeline workers. Local law enforcement agencies should have adequate full and part-time law enforcement officers to accommodate the additional labor personnel as a result of construction.

Basin Electric will work with the local law enforcement, fire departments, and emergency medical services to determine the best course of action and coordinate for effective emergency response.

3.7.11 Other Impacts

3.7.11.1 Population and Demographics

The construction period will is expected to take 3 months and most non-local workers will not be accompanied by their families during their work tenure. The limited number of permanent employees associated with pipeline construction will not significantly affect local populations or demographics.

3.7.11.2 Protection of Human Health and Safety

Pipeline safety is mandated under the authority of the U.S. Department of Transportation (DOT). The USDOT pipeline standards (49 Code of Federal Regulations [CFR] Part 192) are intended to ensure public protection and to prevent accidents and failures. This regulation specifically addresses natural gas pipeline safety issues and specifies material selection, qualification, minimum design requirements; and protection from internal, external, and atmospheric corrosion.

During construction local jurisdictions will be consulted to identify potential buried hazards within the proposed construction ROW prior to construction. Occupational Safety and Health Administration (OSHA) standards will be followed for safe excavation and trenching. An existing excavation safety program will be utilized to protect employees from safety hazards that may be encountered during work in trenches and excavations. This excavation safety program will ensure compliance with the requirements of OSHA's Excavation Standard, 29 CFR 1926, Subpart P.

The contractor will maintain in all construction and operations vehicles a current list of local emergency response providers and methods of contact/communication. Designated construction and operations personnel will be trained in first aid. During construction or operation of the gas pipeline, vehicles will not be parked or left idling on areas of standing dry grass or shrubs that could constitute a fire hazard. Gas pipeline design will include reasonable mitigation measures to reduce problems of induced currents into conductive objects within the ROW. Problems of induced currents during operation will be resolved to the mutual satisfaction of the parties involved.

No impacts to health services, facilities, and public safety are anticipated from construction or operation of the gas pipeline.

3.7.11.3 Noise Impacts

3.7.11.3.1 Existing conditions

There are minimal noise sources in the project area, with vehicular traffic and farming equipment being the primary sources of existing noise. Accordingly, the background noise levels vary by time of day. A Noise Technical Report is provided in the Deer Creek Station Project PUC application for the energy conversion facility.

There are two substations located to the south of the proposed Deer Creek Station that will contribute to ambient noise especially to residences located close to the substations, located to the south of the Station. Additionally, an existing wind farm is located approximately 3 miles east of the proposed Deer Creek Station and a proposed wind farm may be constructed to the west of the proposed site in the future. Because of the distance of the wind farms to the energy conversion facility site, noise associated with the wind farms is not expected to contribute to ambient noise near the proposed site.

An ambient noise survey was conducted in the project vicinity. Background sound level measurements were taken during several time periods on May 19, 2009, and May 20, 2009, to capture the ambient sound levels. Strong winds were present during each of the noise survey periods. High wind speeds generate higher noise levels as winds interact with vegetation and other nearby objects and therefore tend to increase ambient noise level readings over times when light wind or still conditions exist.

3.7.11.3.2 Potential Impacts

Potential noise impacts resulting from construction of the natural gas pipeline include increased noise levels during construction near sensitive noise receivers, such as residences. Noise associated with operation of the natural gas pipeline is anticipated to be negligible.

The project has the potential to cause a localized and temporary increase in ambient noise levels near roadways used for transporting equipment and materials; and around the construction of the pipeline. There will also be an increase in traffic in the area during the construction that will also temporarily increase noise levels in the area. The actual noise levels generated by construction will vary on a daily and hourly basis, depending on the activity that is occurring, and the types and number of pieces of equipment that are operating. EPA has compiled data regarding the noise generating characteristics of specific types of construction equipment and typical construction activities. Noise levels diminish rapidly with distance from the construction site at a rate of approximately 6 decibels on the A-weighted scale (dBA) per doubling of distance. These data are summarized in Tables 3.8-7 and 3.8-8.

The project lies within Brookings County and Deuel County agricultural zoning areas. There are no specific noise-sensitive areas or restrictions articulated by county code except in relation to wind farm operations; wind farms are required to operate facilities below a 50 dBA. There are no designated noise-sensitive areas within the project PUC defined affected area.

Table 3.8-7:
Noise Ranges of Typical Construction Equipment

Equipment	Noise Levels at 50 feet (Leq, dBA)[1]
Back Hoe	73–95
Compressors	75–87
Concrete Mixers	75–88
Concrete Pumps	81–85
Cranes (moveable)	75–88
Cranes (derrick)	86–89
Front Loader	73–86
Generators	71–83
Jackhammers	81–98
Paver	85–88
Pile Driving (peaks)	95–107
Scraper/Grader	80–93
Tractor	77–98
Trucks	82–95
Vibrator	68–82

[1] Machinery equipped with noise control devices or other noise-reducing design features do not generate the same level of noise emissions as shown in this table.

Source: EPA (1971)

Table 3.8-8:
Typical Outdoor Construction Noise Levels

Construction Phase	Noise Level at 50 feet (L_{eq}, dBA)	Noise Level at 50 feet with Mufflers (L_{eq}, dBA)
Ground Clearing	84	82
Excavation, Grading	89	86

Source: EPA (1971)

Construction vehicles and equipment will be maintained in proper operating condition and equipped with manufacturers' standard noise control devices or better (e.g., mufflers and engine enclosures).

Pipeline areas along major highways and interstate highways may experience higher ambient noise levels. During construction, Basin Electric will comply with any applicable noise guidelines. Equipment design will be incorporated to minimize noise at the source.

Residences within 500 feet of the ROW will experience short-term increased noise from construction equipment. There are 3 residences within 500 feet of the pipeline ROW and no commercial buildings or schools within 2 miles of the pipeline. One campground is approximately 1.25 miles from the pipeline. Several farm and outbuildings are in the pipeline vicinity. Locations of residences and buildings in the project vicinity are shown in Exhibit 3.6-28. During construction, Basin Electric will comply with any applicable noise guidelines. In addition, construction activities will primarily be limited to daylight hours as determined by local permitting to limit noise impacts to adjacent residences. Construction vehicles and equipment will be maintained in proper

operating condition and equipped with manufacturers' standard noise control devices or better (e.g., mufflers and engine enclosures).

3.7.11.4 Visual Impacts

An analysis of the pipeline corridor did not identify any designed scenic outlooks of viewing areas on or along the route. Visual resource impacts associated with construction of the pipeline include removal of existing vegetation, exposure of bare soils, earthwork and grading scars, and landform changes that introduce contrasts. Visual resource impacts from construction activities will be of short duration with no significant long-term impacts. Aboveground structures associated with the pipeline are limited to the existing Valve Site 42 and interconnect site, the regulator station immediately adjacent to the interconnect site, and required pipeline markers at road crossings. These features are not anticipated to significantly impact existing visual resources.

3.7.11.5 Cultural Resources and Landmarks

To assess the presence of cultural resources within the proposed project area, a Level I file search was conducted for the proposed gas pipeline in T111N R47W Sections 5-8, 17-19, 30; T111N R48W Sections 2, 12-13, 24-25, 36; T112N R47W Sections 5-8, 17-20, 29-32; T112N R48W Sections 1 and 12; T113N R47W Sections 30-31; and T113N R48W Sections 25 and 36. Also, a Class III Cultural Resources Inventory was completed for the gas pipeline. Based on findings, a final report will be supplied to the SD PUC upon completion. Measures will be taken to prevent disturbance to historically and culturally sensitive areas and resources. Results will be coordinated with the State Historic Preservation Officer (SHPO) and appropriate avoidance and mitigation measures will be implemented. The proposed pipeline has been located so that construction activities will avoid impacts on cultural resources. In the event that prehistoric or historic cultural resources are discovered during construction or operation of the proposed project, a discovery protocol will be followed.

3.8 Liquid Transmission Line Standards of Construction for the Natural Gas Pipeline (ARSD 20:10:22:37)

The construction contractor for the pipeline will be Montana-Dakota Utility Company. The proposed pipeline will be constructed in compliance with construction standards under the contractor's, Montana-Dakota Utility Company, Gas Distribution Standards and in conformance with the DOT regulations, 49 CFR Parts 191 and 192, Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards (Federal Safety Standards) as amended.

The proposed pipeline will be constructed, maintained and operated in accordance with 49 CFR Part 191, Transportation of Natural and Other Gas by Pipeline; Annual Reports, Incident Reports, and Safety Related Condition Reports; 49 CFR Part 192, Transportation of Natural and Other Gas by Pipeline; Minimum Federal Safety Standards; and 49 CFR Part 199, Drug and Alcohol Testing. Under 49 CFR, Basin Electric will utilize the following existing plans and procedures: Operations, Maintenance and Emergency Response Plan (Parts 192.603 and 192.615); Operator Qualification Program (Part 192 Subpart N); Integrity Management Plan (Part 192 Subpart O); and, if applicable, Anti-Drug and Anti-Alcohol Plans, including testing provisions (Part 199). In addition, for pipeline construction and installation, Basin Electric's contractor and/or its construction contractor will use qualified welding procedures (49 CFR 192.225) and qualified

operating condition and equipped with manufacturers' standard noise control devices or better (e.g., mufflers and engine enclosures).

3.7.11.4 Visual Impacts

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welders (49 CFR 192.225 and 192.227). Unless otherwise indicated, all design, construction, operation and maintenance records will be in accordance with the appropriate federal and state regulations and standards.

3.8.1 Construction Procedures

Pipeline construction generally involves various sequential operations as detailed in this section. The proposed pipeline will comply with South Dakota statues and administrative law, DOT pipeline safety regulations, and other applicable regulations. Exhibit 3.8-1 depicts a typical proposed pipeline cross section during the construction phase.

Before starting construction, Basin Electric will finalize engineering surveys of the ROW centerline and extra workspaces and substantially complete the acquisition of ROW easements and any necessary acquisitions of property in fee. Exhibit 3.8-1 provides a typical proposed pipeline ROW cross section and Exhibit 3.8-2 provides a typical plan and elevation view of pipeline construction.

3.8.1.1 Route Planning and Right-of-Way Staking

ROW limits are staked prior to construction. All work will take place between those limits. Additional ROW access will be gained by the use of existing approaches or the construction of temporary approaches where required. Permanent approaches may be constructed per landowner requests and inspector approval. All approaches will be constructed in a location and manner as to minimize vegetation and land owner disturbances.

3.8.1.2 Clearing and Topsoil Separation

Preparation of the ROW is the initial step in the construction of the proposed pipeline. After the completion of the survey and staking of the proposed line, the construction ROW will be cleared of any surface obstructions. Following clearing, a minimum or 12 inches of topsoil will be removed over the trench line and deposited along the working side of the trench utilizing double ditching. Following the topsoil removal subsequent subsoil down to trench depth shall be removed and will be deposited on the non-working side of the trench. During backfilling operations, the subsoil will be deposited into the trench first, followed by the topsoil. The backfilled trench will be wheel compacted and graded to existing contours. A slight crown shall be placed over the area of the trench to allow for any settling that may occur. When necessary, in areas of unstable working conditions, topsoil may also be separated over the working side and/or the subsoil storage areas to allow for safe working conditions. Conventional double ditching techniques will be used in designated wetland areas where water is not flowing and the soil is adequately dry. In wetland areas where water is not present but soil conditions do not allow for conventional excavation techniques, directional drilling will be utilized to minimize impacts on the wetland area. Adequate erosion control and silt fencing will be implemented to minimize possible erosion and sedimentation issues.

Fences encountered along the proposed route will be cut and braced on each side of the ROW to prevent damage to the remaining fence, unless the landowner requests otherwise. Temporary gates will be installed where needed to contain livestock or prohibit public access to the ROW during construction.

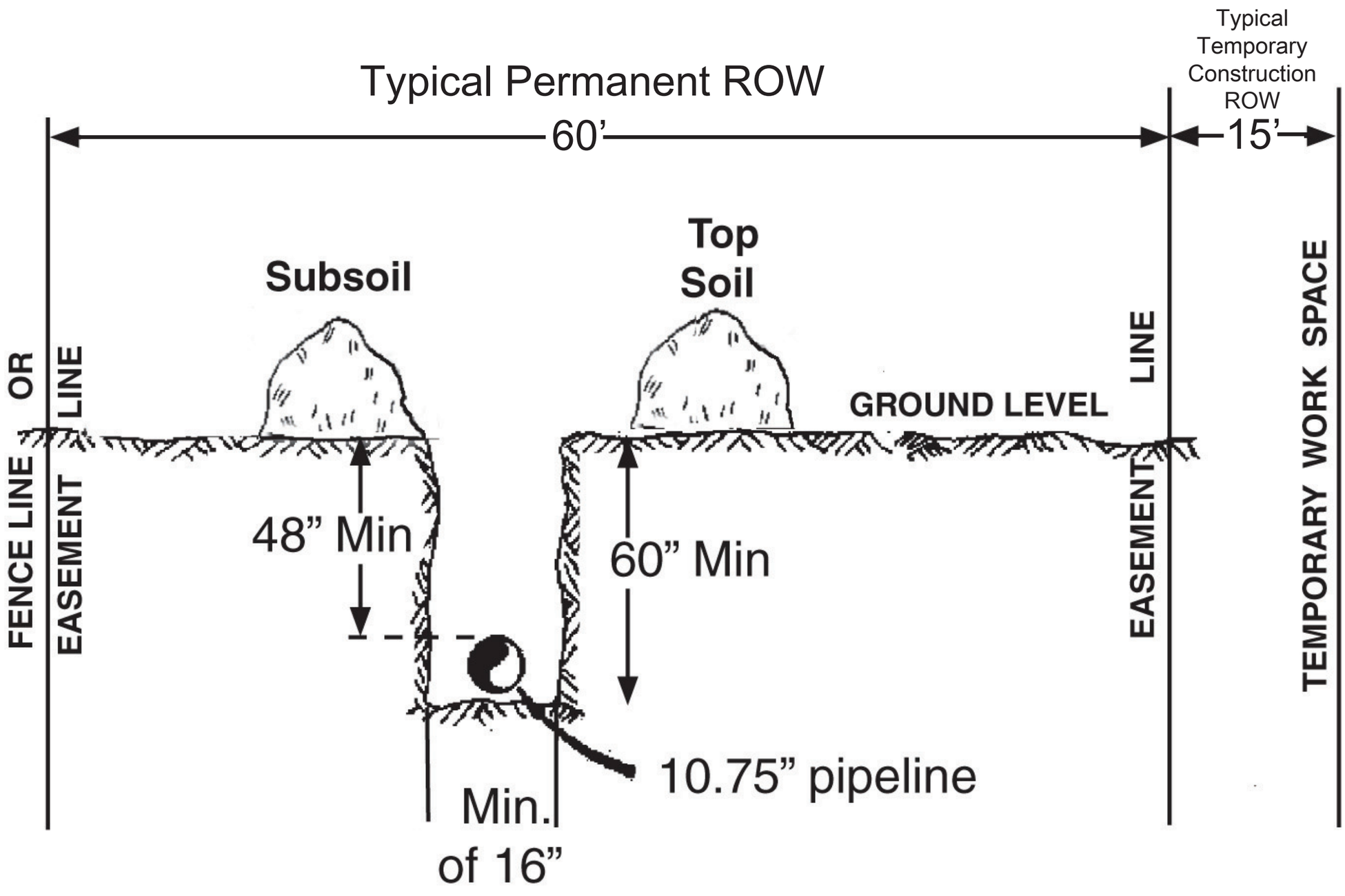
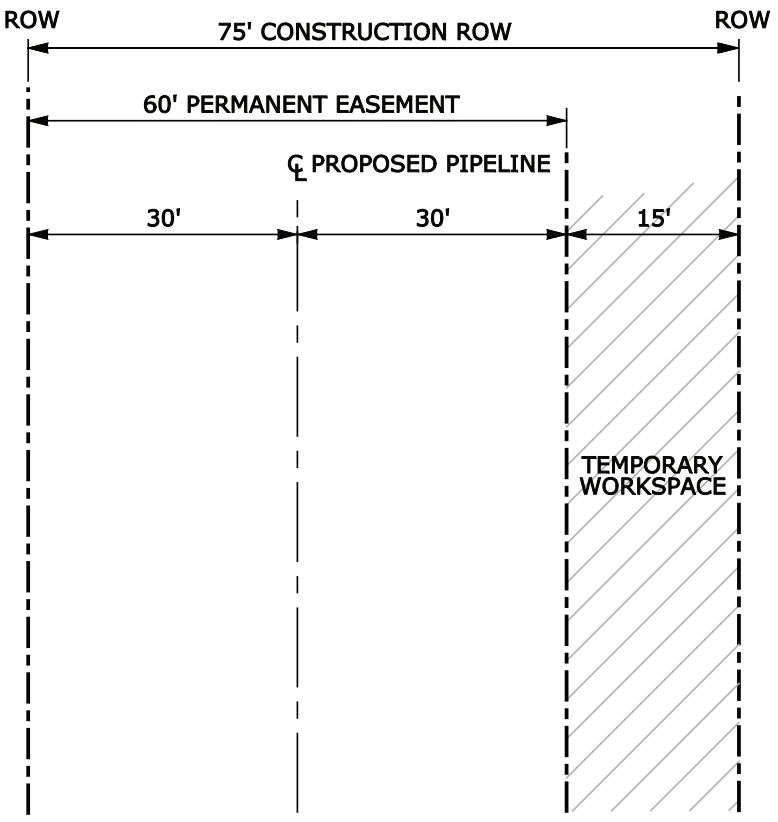
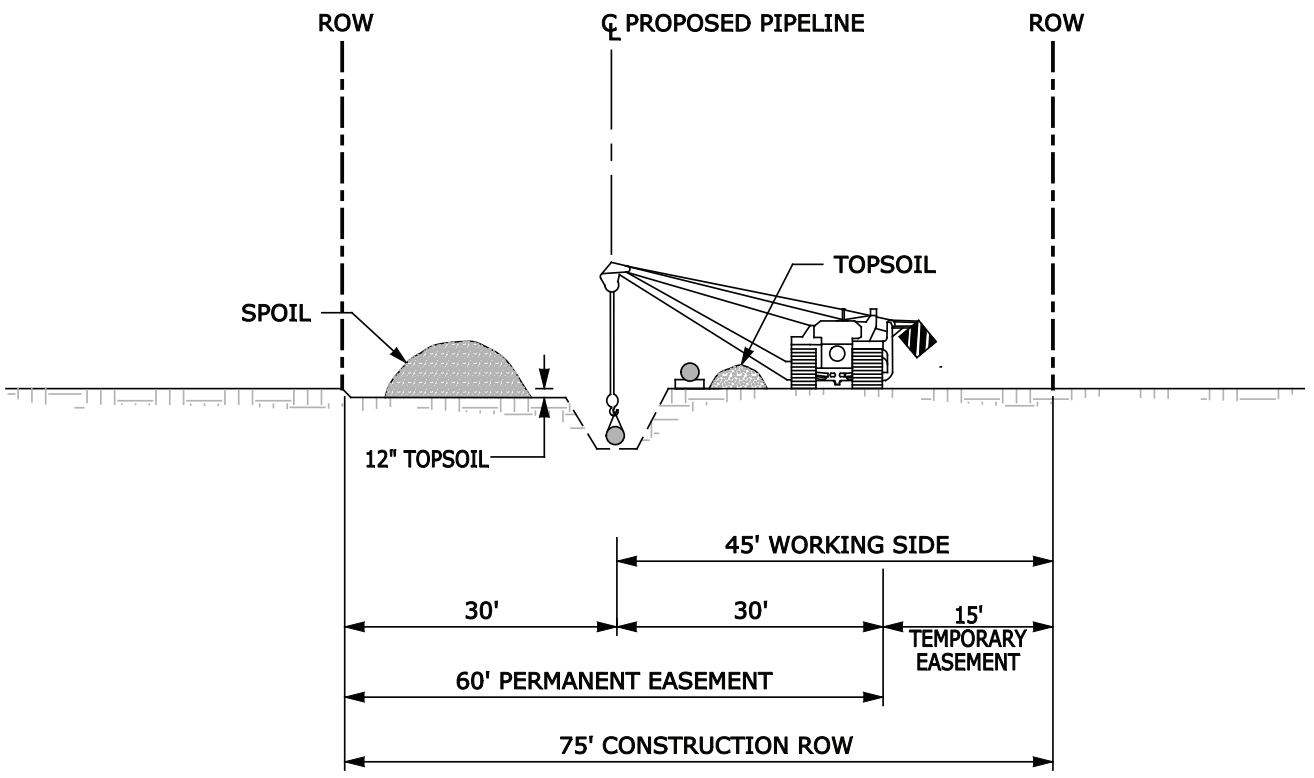


Exhibit 3.8-1: Typical Natural Gas Pipeline Right-of-Way Cross Section



PLAN VIEW



ELEVATION

NOTES:

1. Remove a minimum of 12 inches of topsoil if possible over the trench line and store along the working side.
2. Installation specifications to be modified as necessary to suit actual site conditions.
3. Trench width may vary based on soil conditions.

ProSource TECHNOLOGIES, INC.	DEER CREEK PIPELINE PROJECT Basin Electric	TYPICAL ROW LAYOUT MONTANA-DAKOTA UTILITIES CO. A Division of MDU Resources Group, Inc.

Exhibit 3.8-2 Typical Natural Gas Pipeline Plan and Elevation View

3.8.1.3 Trenching

Prior to any trenching activities, notification will be provided to the South Dakota One Call, as required, to ensure all utilities are properly identified. Trenching involves excavating a trench for the pipe and is typically accomplished using a crawler-mounted, wheel-type or rubber-tired wheel-type ditch digging machine or track type excavators. Areas that show signs of unstable soil conditions or require larger excavations, typically at tie-ins and line crossings, will be excavated using a backhoe. The trench will be a minimum of approximately 60 inches deep to provide a minimum 48-inch cover over the pipeline once backfilling has been completed.

Special attention will be paid to erosion and sedimentation control in areas where surface waters and wetlands may be trenched. A narrower temporary construction easement will be used where feasible in wetland areas that are open-trenched to minimize surface impacts during construction. If trenching is conducted, all work will comply with the conditions stipulated under the Nationwide 12 Permit issued by the USACE. Exhibit 3.8-3 provides a typical plan and profile of open trenching in wetland areas.

3.8.1.4 Directional Drilling

Directional drilling under water features and boring under road features consists of drilling a tunnel underground so as not to disturb surficial features. Surficial features that will be avoided via directional drilling include all state and improved county roads and surface waters, including some wetlands. Exhibit 3.8-4 provides a plan of a typical directional drilling beneath roadways. Additional workspace (for access and bell holes) will be acquired for equipment and materials used in the drilling process and to facilitate tunneling construction.

The directional drill will be set up in-line with the pipeline route and directionally drill under the roadway, waterway or sensitive area from bell hole (entrance pit) to bell hole (exit pit). Bell holes will be excavated using backhoes and will require additional workspace outside of the standard 75 foot construction area. Additional easements will be acquired when necessary outside the standard 75 foot construction area.

The first step in the directional drilling process is the drilling of the pilot hole after the drill rig is in place. Upon completion of the pilot hole, the reaming process begins, which opens the diameter of the hole to facilitate pulling of the pipe. After the hole is reamed to the required diameter, the welded pipe strings are pulled through the drill hole by the drill rig. The pull back process continues until the entire section of drilled pipe has been pulled through the drilled hole.

Bell holes typically will be located outside the road ROW; the pipeline crossing of SD 30 will be outside of the road ROW. In some locations, however, bell holes may be located within the road ROW; all road crossings will comply with state and county permits as applicable.

Drilling equipment and bell holes will be placed away from the edge of any waterways and wetlands to comply with USACE regulatory requirements. Exhibit 3.8-5 provides a diagram of a directional drill operation beneath waterways and Exhibit 3.8-6 provides a diagram of a directional drilling site plan and profile for waterway crossings. Wetlands without flowing water at the time of construction may also be directionally drilled if soil conditions are unstable or surrounding areas do not allow for conventional trenching techniques.

The directional drilling process involves use of a drilling fluid primarily made up of bentonite clay and water. The purpose of this fluid includes lubrication and stabilization of the borehole and removal of drilled material. The mix of water and bentonite clay will be stored on-site in frac tanks. Water for use in directionally drilling will be purchased from the Brookings-Deuel Rural Water Supply, or other municipal supply.

Once the drilling has been completed, the bentonite slurry, intermixed with cuttings (e.g., sand, gravel, small rock fragments), will be buried in the entrance pit. Basin Electric will obtain permission from private landowners prior to burying this mixture of slurry. Soil excavated from the entrance and exit pits will be backfilled. Any excess soil at the pits will be spread at the surface in the immediate vicinity of the pit or disposed at a location approved by the private landowner or other applicable entities.

A release of drilling fluid can occur when pressure causes the fluid to migrate from the borehole to the ground surface, following subterranean fractures. The extent of the release can be limited by careful monitoring and utilizing appropriate equipment and response plans. Basin Electric will detail prevention and clean-up procedures in the SPCC. Basin Electric will also utilize BMPs, such as sediment barriers and silt fencing, to help prevent siltation from entering sensitive features.

3.8.1.5 Pipe Stringing

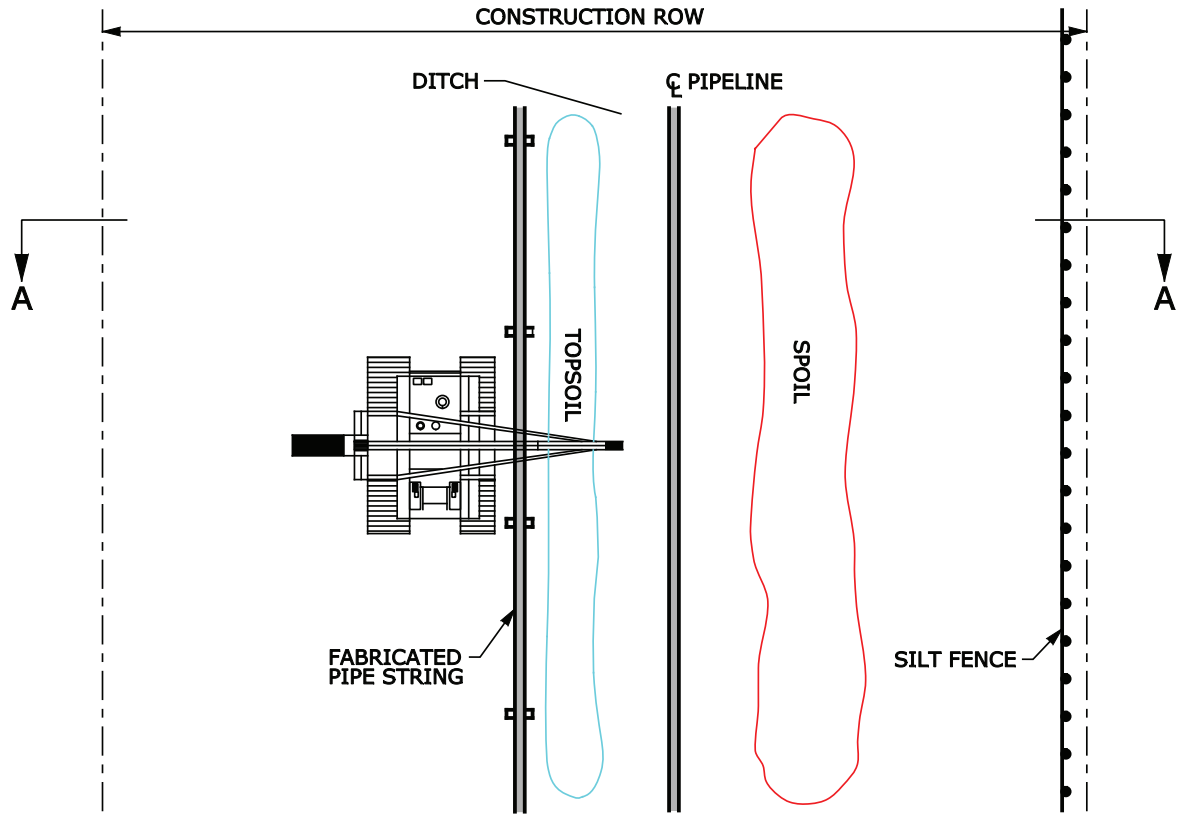
Pipe stringing activities will involve the transportation and placement of coated pipe along the ROW. Pipe will be loaded onto trucks, transported to the ROW and unloaded by excavators, sidebooms, cranes or other equipment. The pipe will be strung parallel to the trench in preparation for subsequent bending and welding operations.

3.8.1.6 Bending

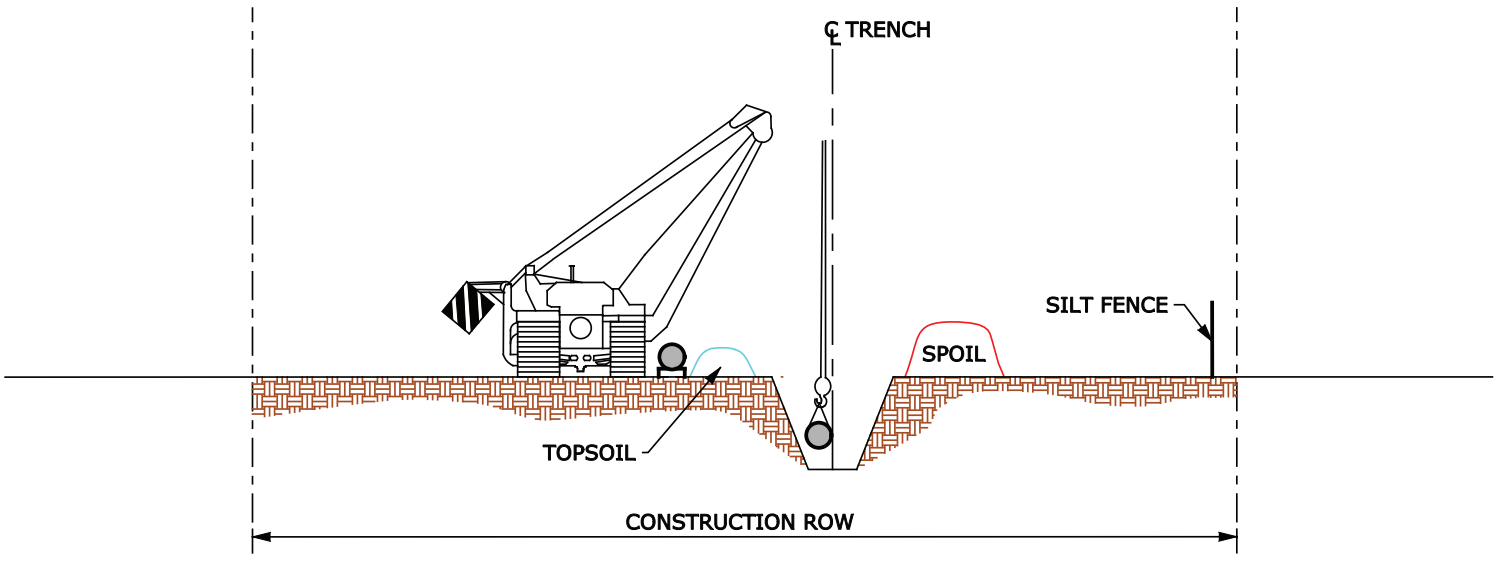
After the sections of pipe are strung parallel to the trench and before the sections of pipe are welded together, individual joints are bent to allow a uniform fit of the pipeline with the varying contours of the trench and terrain. Sections of pipe that require multiple or complex bends may be pre-fabricated off-site.

3.8.1.7 Line-up and Welding

Installation of the pipe will commence after the pipe ends are sufficiently cleaned. Following cleaning, the pipe is lined up, held in place, and welded until pieces of pipe are securely joined. Welding is one of the most important activities associated with pipeline construction. Welding is a technique of joining individual sections of pipe in which actual melting of the pieces to be joined occurs in the vicinity of the bond. Each weld must exhibit the same structural integrity with respect to strength and ductility. Each weld will be inspected by qualified welding inspectors to determine the quality of the weld. In addition, a minimum of 10 percent of all welds will be radiographically inspected and 100 percent of all welds under stream beds and road crossings will be radiographically inspected.



PLAN VIEW



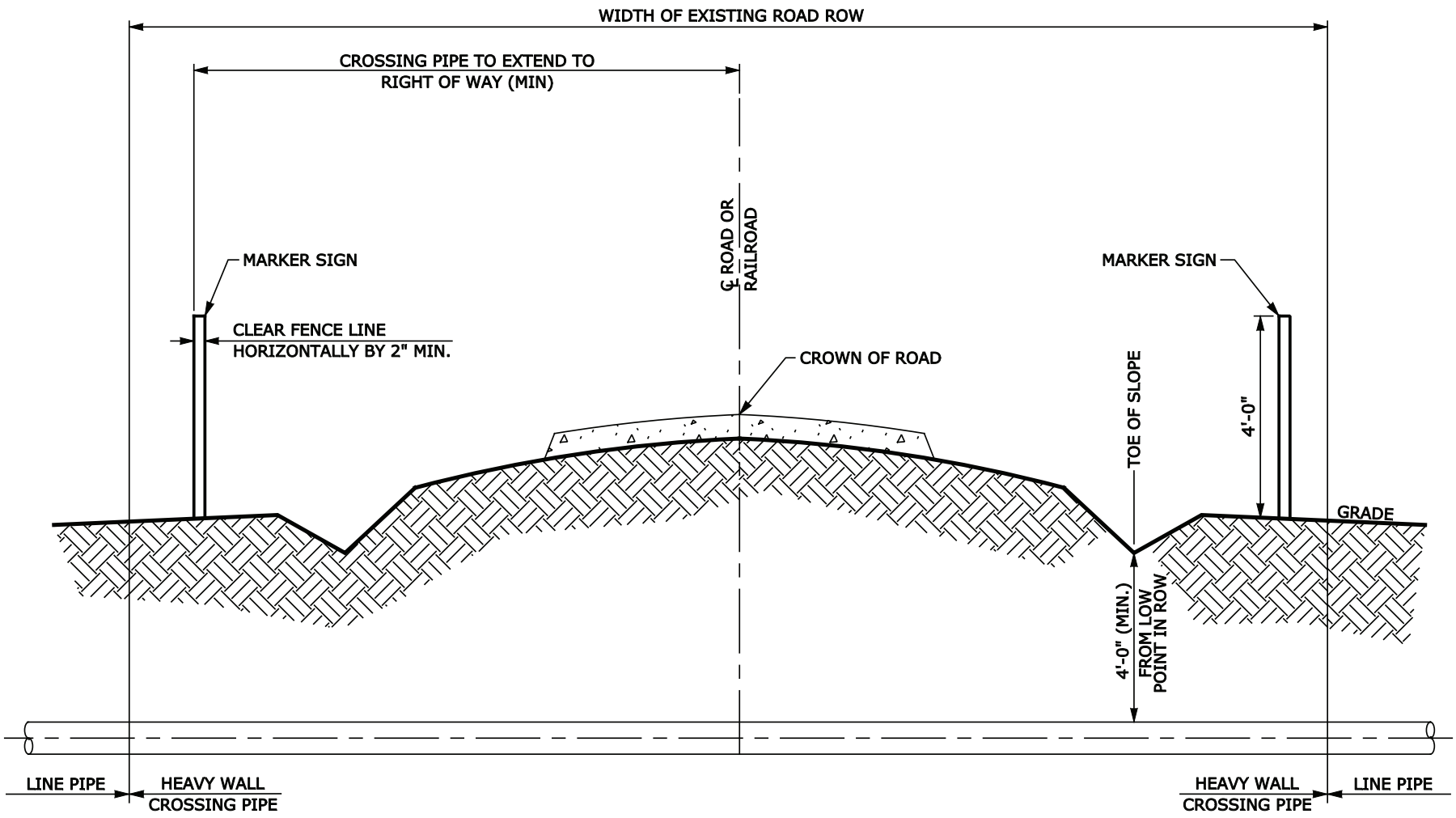
SECTION A-A

CONSTRUCTION PROCEDURES:

1. Clearly mark wetland boundaries.
2. To minimize impacts to wetlands, install timber mats if needed.
3. No refueling within 100 feet of a wetland.
4. No concrete coating within 100 feet of a wetland.
5. Install sediment barriers along the edge of the construction right-of-way as necessary to prevent sediment flow into the wetland.
6. Install temporary slope breakers if needed.
7. Topsoil over the trenchline.
8. Stump removal is limited to the area directly over the trench line.
9. Excavated stumps must be removed from the wetland.
10. Install trench plugs at the edges of the wetland before backfilling if needed.
11. Remove timber mats from wetlands if used.
12. Restore the wetland to near pre-construction conditions.
13. Seed wetlands with seed mix as needed.

	DEER CREEK PIPELINE PROJECT Basin Electric	**TYPICAL WETLANDS TRENCHING** MONTANA-DAKOTA UTILITIES CO. A Division of MDU Resources Group, Inc.

Exhibit 3.8-3 Typical WetlandsTrenching Plan and Profile



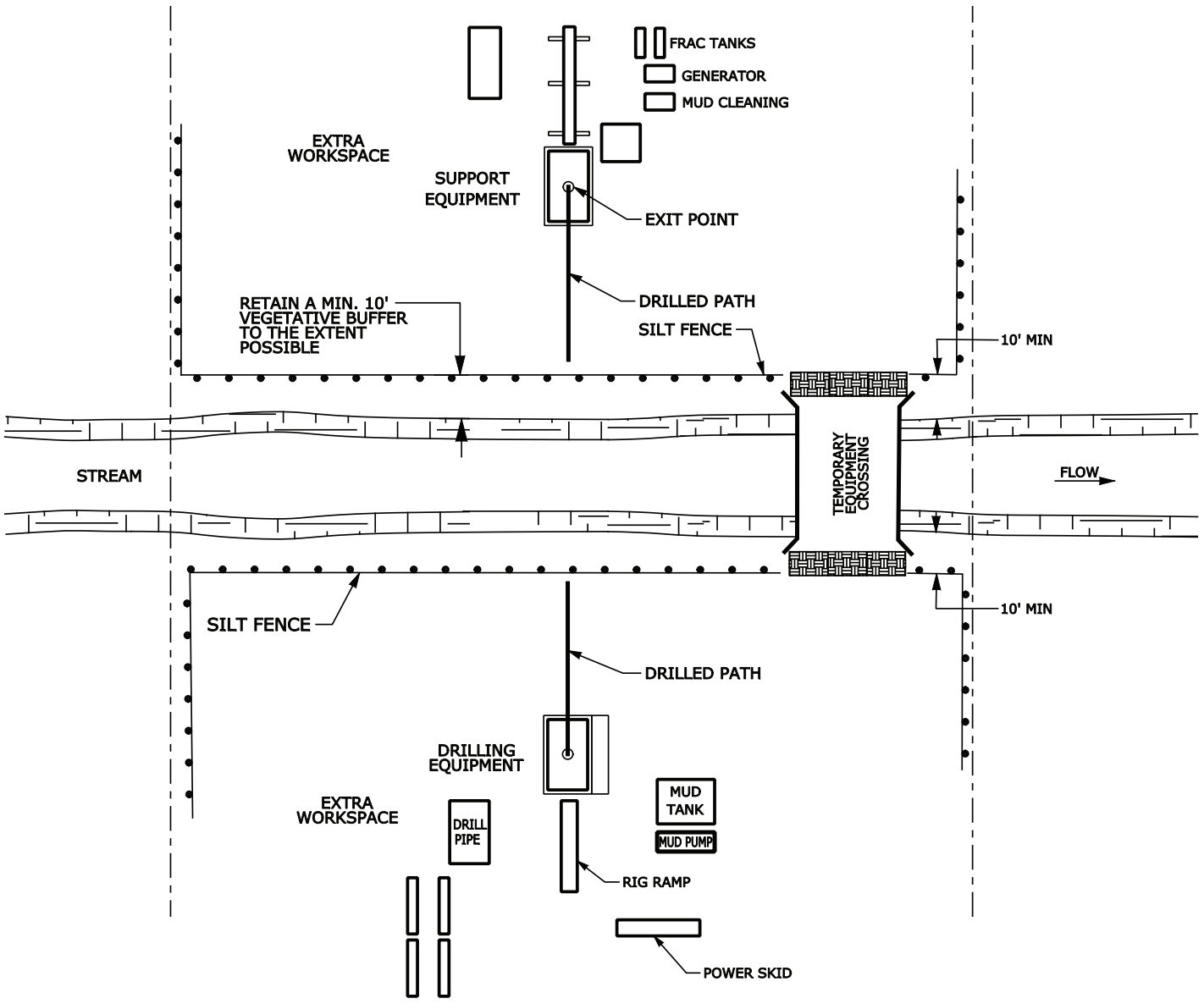
TYPICAL UNCASED BORED
ROAD CROSSING

NOTES:

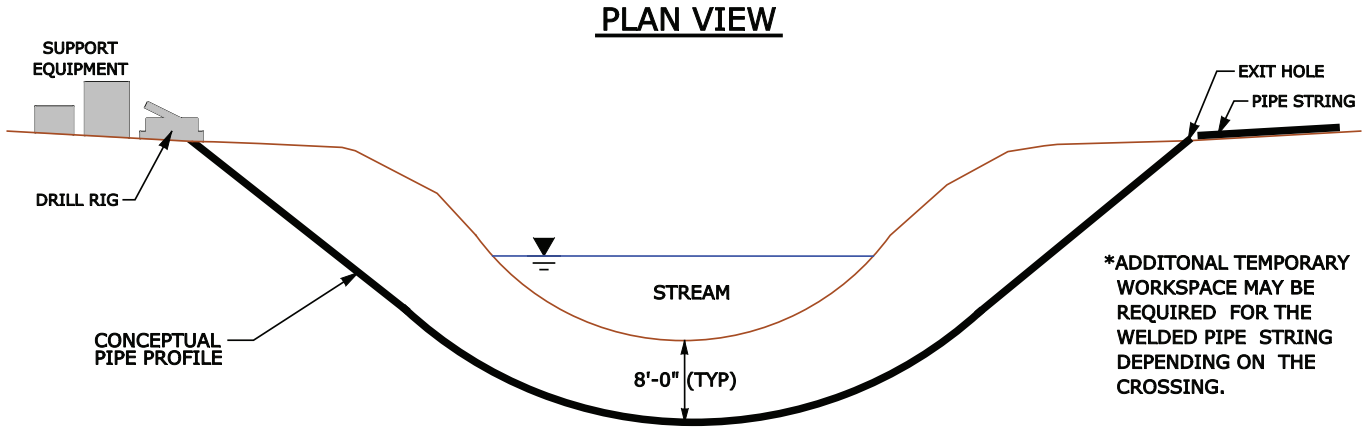
1. Road crossings shall comply with applicable permits.
2. Road crossing pipe shall be straight with no vertical or horizontal bends within the road right-of-way.
3. The minimum required pipe length and type of pipe shall be specified on the alignment sheets.
4. The pipe used for bored crossings shall include abrasion-resistant (ARB) coating.
5. Pipeline markers and test stations shall be installed on the right-of-way edge next to a fence if possible.

ProSource TECHNOLOGIES, INC.	DEER CREEK PIPELINE PROJECT Basin Electric	TYPICAL UNCASED ROAD CROSSING BORE METHOD MONTANA-DAKOTA UTILITIES CO. A Division of MDU Resources Group, Inc.

Exhibit 3.8-4 Typical Roadway Directional Drill Boring Plan



PLAN VIEW



PROFILE

NOTES:

1. Maintain a 10 foot vegetative buffer if possible between the disturbed area and the stream.
2. Limit clearing to only the area needed for construction.
3. Install timber mats for equipment staging as necessary.
4. Install silt fence and/or other sediment barriers based on site specific conditons.
5. No refueling within 100 feet of a stream.
6. Install trench breakers and permanent slope breakers as needed.
7. Actual site layout may be modified based on site specific conditions.
8. Temporary equipment crossing will be installed outside of high water mark.

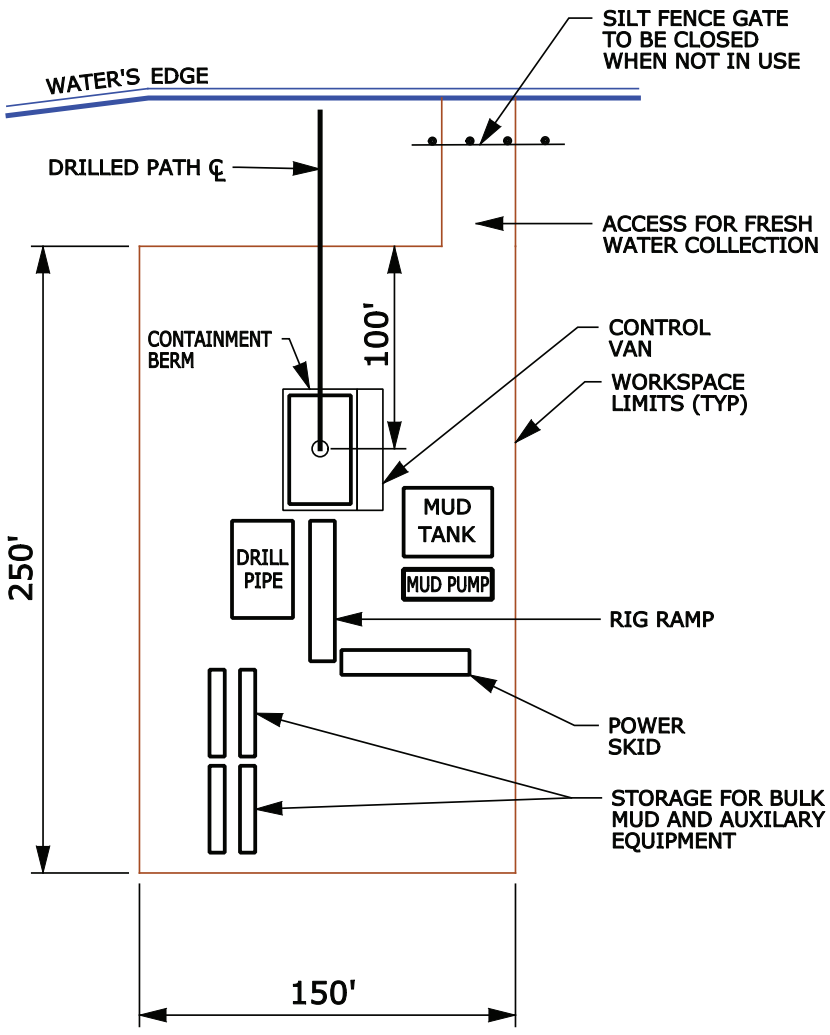
ProSource TECHNOLOGIES, INC.

DEER CREEK
PIPELINE PROJECT
Basin Electric

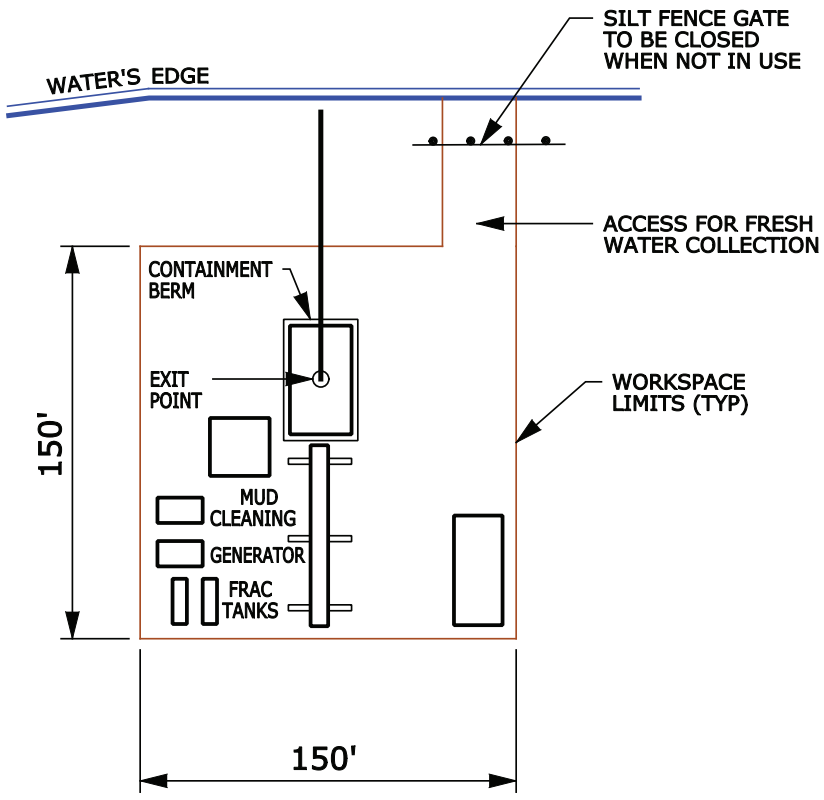
STREAM CROSSING
TYPICAL HORIZONTAL DIRECTIONAL
DRILL (HDD) SITE PLAN & PROFILE

MONTANA-DAKOTA UTILITIES CO.
A Division of MDU Resources Group, Inc.

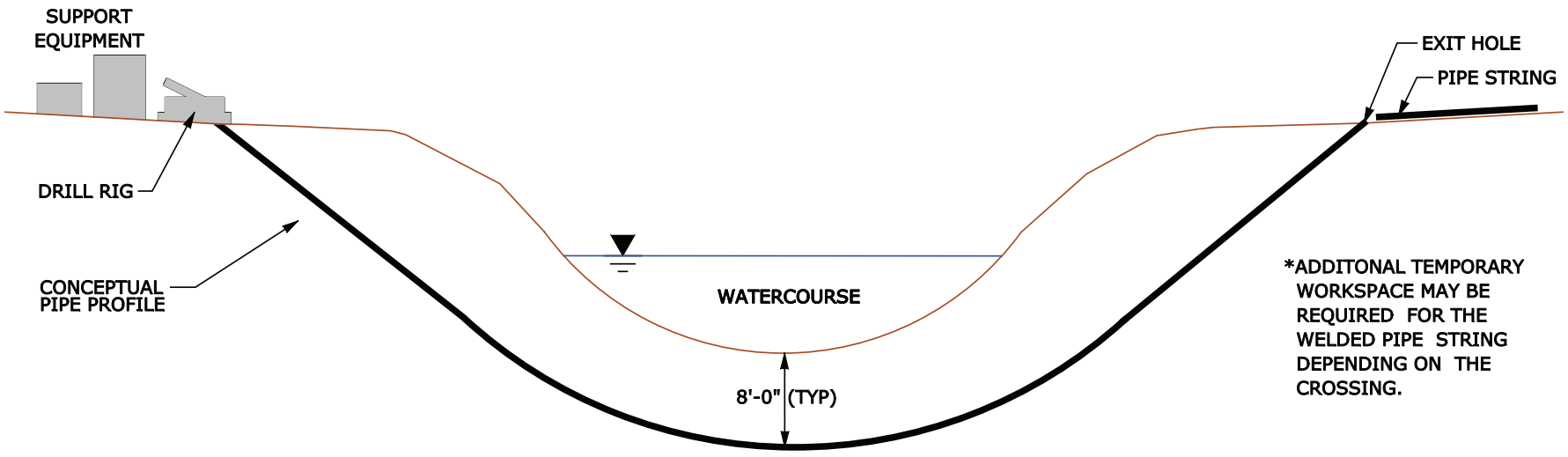
Exhibit 3.8-5 Typical Waterway Directional Drill Boring Plan



SITE PLAN-ENTER SIDE



SITE PLAN-EXIT SIDE



PROFILE

NOTES:

1. To minimize impacts, install timber mats for equipment staging if necessary.
2. Install silt fence and/or other sediment barriers as needed.
3. No refueling within 100 feet of a waterbody.
4. Actual site layout may be modified based on site specific conditions.

ProSource TECHNOLOGIES, INC.	DEER CREEK PIPELINE PROJECT Basin Electric	TYPICAL HORIZONTAL DIRECTIONAL DRILL (HDD) SITE PLAN & PROFILE MONTANA-DAKOTA UTILITIES CO. A Division of MDU Resources Group, Inc.

Exhibit 3.8-6 Typical Waterway Directional Drill Site Plan and Profile

3.8.1.8 Lowering-In

After the pipe is strung and bent to conform to the pipeline alignment and ground contours, the pipe will be lifted by side-boom crawlers or other equipment to move the pipe over the open trench. Inspection of the pipe coating will be completed prior to being lowered into the trench and any necessary repairs made to unsatisfactory or damaged areas.

3.8.1.9 Backfilling

After the pipe has been lowered in, the trench will be backfilled according to regulations with all impacted areas being reseeded with the designated seed mix. The contractor will be responsible for vegetation of the impacted areas to 80 percent of pre-project levels within 12 months of completion of the contract. Large rocks (over 8 inches in diameter) and construction debris that can interfere with soil cultivation and damage tillage equipment will be removed from the ROW. Smaller rocks or pieces of debris on the soil surface that can be picked up by and cause damage to harvesting equipment will also be removed. After construction, all foreign materials should be picked up and rock conditions can be no worse than the native condition of adjacent areas. Careful attention will be paid during backfilling to avoid the mixing of topsoil and subsoil.

3.8.1.10 Testing

The pipeline will be pressure tested once backfilling has been completed to ensure that the system is capable of withstanding the designed operating pressure. Pressure testing will be conducted using water purchased from the Brookings-Deuel County local water supply. A SDDNR permit for stormwater will be acquired. The hydrostatic testing will use approximately 301,592 gallons of test water. After the test, the water will be discharged on the energy conversion facility using a filter bag and/or a straw bale dewatering structure. The test water will be discharged into an unnamed tributary to Deer Creek located in the northeastern area of the energy conversion facility.

3.8.1.11 Cleanup and Restoration

Cleanup and restoration of the ROW will be the final phase of construction and typically begins immediately after backfilling or as soon as weather and soil conditions permit. Cleanup in the ROW will consist of removing and disposing of the construction debris and surplus materials. Construction debris will be taken to a licensed landfill. The purpose of restoration is to return the ROW as close as possible to pre-construction conditions. Areas will be revegetated as described in 3.8.2

3.8.2 Revegetation

The purpose of revegetation will be to reestablish existing soil contours and to replace vegetation that is removed during construction to the extent possible. By reestablishing vegetation, the potential for soil erosion will be reduced and current land uses may continue. The revegetation process will be applied to the gas pipeline and interconnect site in Deuel County and gas pipeline in Brookings County, South Dakota. The revegetation work will be primarily on rangelands (native pasture) and roadside ditch locations. This revegetation plan does not cover wetlands, intermittent creek banks, or active crop production areas. It is anticipated that crop production areas will be revegetated by the landowner following construction and restoration. Revegetation on private property will comply with landowner specifications.

3.8.2.1 Surface Conditions after Construction

After construction and prior to seeding, in level or gently sloping areas, trenched areas will have no residual vegetative cover. The vegetation on the remainder of the disturbed construction areas will incur varying amounts of disturbance from vehicular traffic, backfill operations, material storage, and associated activities. Where the construction area includes steeper slopes, varying amounts of land grading activities to enable the operation of equipment and installation of the pipeline are expected. Graded and recontoured areas will have no residual vegetative cover. Natural native seed, rhizomes, and viable root materials may be present throughout the disturbed area.

3.8.2.2 Seeding

Some degree of natural vegetation recovery will occur from existing seedbed and vegetative propagules (e.g., rhizomes, bulbs) in the soil and from the presence of native seed sources adjacent to construction areas. To complement the natural tendency for vegetation to reoccupy a site, seeding will be conducted as needed. Two seed mixes are recommended. The first is a rangeland mix that features species that are common on range sites in this area of South Dakota. Table 3.8-1 recommends the species composition and seeding rates. Table 3.8-2 provides a regional species mix and seeding rates for roadside ditches. Both seed mixes should work well with the ambient precipitation, temperatures, and soil conditions in the construction areas. The rangeland seed mix also includes several native forbs that will enhance community diversity and will improve forage habitat. The addition of milkvetches to the seed mix will facilitate fixation of nitrogen in the reclaimed soils.

Table 3.8-1:
Reclamation Seed Mix (Rangeland Areas)

Species	Pure Live Seed (Pounds/Acre)
Western wheatgrass (Rodan, Walsh, Flintlock, or Rosana)	5.8
Switchgrass (Dacotah, Forestburg, Sunburst, Nebraska-28, Pathfinder, Summer, Trailblazer, or Bonanza)	1.8
Sideoats grama (Killdeer, Pierre, Butte, or Trailway)	4.4
Green needlegrass (Lodorm)	4.4
Big bluestem (Sunnyview, Bison, Bonilla, Champ, Pawnee, or Rountree)	4.5
Blue grama (Bad River or Willis)	0.6
Little bluestem	3.7
Indiangrass (Holt, Tomahawk)	2.7
Purple prairie clover (Bismarck)	0.8
Total	28.7

Source: NRCS (2009)

Table 3.8-2:
Reclamation Seed Mix for Roadside Ditches

Species	Pure Live Seed (Pounds/Acre)
Western Wheatgrass (Flintlock, Rodan, Rosana)	7
Switchgrass (Dacotah, Forestburg, Nebraska-28, Pathfinder, Summer, Sunburst, Trailblazer)	3
Indiangrass (Holt, Tomahawk)	2.7
Big Bluestem (Bison, Bonilla, Champ, Pawnee, Sunnyview)	3
Canada Wildrye (Mandan)	2
Total	17.7

Source: SDDOT (2008)

3.8.2.3 Timing

The preferred seeding times are in the spring (April 1 through May 15) or fall (October 1 through November 15). Actual seeding dates will depend on soil conditions, because planting should not occur when equipment will significantly compact or otherwise disturb the soil because of excessive soil moisture. Although these are the recommended times for seeding, it is important to establish a desirable vegetation cover as soon as possible after construction is complete to prevent establishment and spread of noxious weeds.

3.8.2.4 Seedbed Preparation

The seedbed will be prepared using appropriate equipment. To relieve compaction, one or more passes with a chisel, disc, or other appropriate equipment will be made in travel areas that have been compacted by heavy equipment passage. Fertilizers may be added in accordance with recommendations obtained from the local soil conservation authority. It is not anticipated that fertilizers will be used at wetland crossings.

3.8.2.5 Drill Seeding

Drill seeding is the recommended seeding method. Any seed drill used will be fitted with seed boxes that can accommodate the chosen species. This is particularly important for fluffy or irregular seed shapes, or when a wide variety of seed sizes are included in the seed mix. This is not generally expected to be a problem for the seed mixes designated in s 3.8-1 and 3.8-2. To the extent possible, drill seeding will be along the contour of the seeded areas.

3.8.2.6 Broadcast Seeding

Broadcast seeding may also be used, although the seeding rate will need to be doubled to account for seed loss and poorer soil-seed contact. Broadcast seeding may be accomplished with hand-held or vehicle-mounted equipment. Any site where broadcast seeding is used will be dragged or raked to improve contact between seed and soil.

3.8.2.7 Cover Crop

Where permanent reseeding is delayed by weather or other factors, a temporary cover crop (e.g., winter wheat, rye, barley, oats) may be planted to control wind and water erosion over one or multiple sites.

3.8.2.8 Mulching

To prevent potential wind and water erosion, mulch will be applied to all sandy soils and on all slopes of 2:1 or steeper. Vegetative, commercial mulches, or other methods may be used on areas with slopes ranging from level to 2:1.

- Wheat, oat, or barley straw, from which grain has been removed, may be used.
- Commercial mulches including excelsior erosion control blankets, wood cellulose fiber mulches, asphalt, asphalt emulsion, and resin emulsion may be used.
- The application rate will be 4,000 pounds per acre when anchored with mulch tiller equipment. When anchored with emulsion tack, netting, or hand methods, the rate will be 3,000 pounds per acre.

3.8.2.9 Fertilizer

The use of fertilizer before, during, or after planting and seeding is not recommended, except in cases where little or no topsoil is available as a planting medium. The use of fertilizer tends to favor growth and spread of non-native plant species and noxious weeds over native species. The native plant species recommended for use in reclamation are adapted to natural levels of soil nutrients. Even when topsoil is sparse or lacking, the preferred action may be to bring topsoil in, rather than trying to amend the soil on site with fertilizers.

3.8.2.10 Irrigation

Irrigation will generally not be used on sites that are seeded. The native plant species selected for use on this proposed project are adapted to the natural precipitation regime. In the event of a prolonged drought, Basin Electric will consider the use of supplemental irrigation to aid plant establishment and survival in seeded areas.

3.8.2.11 Post-Construction Weed Survey and Control

After construction and reclamation is complete, the proposed project area will be monitored to identify any infestations of noxious weeds. Appropriate control methods will then be used to control these weeds.

3.8.2.12 Monitoring

For a 2-year period after reclamation is completed, the proposed project will be monitored to ensure that reclamation efforts have been successful. The general goal for reclamation will be to establish 80-percent ground cover on rangeland or grassland areas within two years after the end of construction. If monitoring identifies any situations that are preventing attainment of this goal, such as weed infestations, poor plant survival, or other factors, corrective actions will be developed and implemented.

3.8.2.13 Maintenance

Basin Electric will maintain vegetation in the ROW, including reclaimed areas to accomplish several goals, including 1) control of noxious weeds; 2) prevention of soil erosion; and 3) allowance for safe and effective use of the ROW. As necessary, Basin Electric will conduct various activities, such as weed control and mowing or trimming of vegetation, to meet these goals.

3.8.3 Construction Spill Prevention and Response

This section describes measures to prevent, control, and minimize impacts from a hazardous, toxic, or petroleum substances spill during construction. The SPCC Plan will identify the handling, transportation, storage, and disposal procedures for these products and outlines procedures in the event of a spill.

3.8.3.1 Material Management Practices

Properly managing materials during construction activities will greatly reduce the potential for storm water pollution. Good housekeeping along with proper use and storage of construction materials form the basis for proper management.

3.8.3.2 Good Housekeeping

The proper use of materials and equipment, along with the use of general common sense, greatly reduces the potential for contaminating storm water runoff. The following list of good housekeeping practices used during the construction of the gas pipeline:

- Storage of hazardous materials, chemicals, fuels, and oils and fueling of construction equipment will not be performed within 150 feet of definitive storm water drainages.
- An effort will be made to store only enough products required.
- Materials will be stored in a neat, orderly manner, in appropriate closed containers, in secondary containment and, if practical, under a roof or other enclosure.
- Products will be kept in their original containers with the original manufacturer's label.
- Substances will not be mixed with one another unless recommended by the manufacturer.
- Whenever practical, all of the product will be used before the container is disposed.
- Manufacturer's recommendations for proper use of a product will be followed.
- If surplus product must be disposed of, local and state recommended methods for proper disposal will be followed.

3.8.3.3 Product-Specific Practices

Due to the chemical makeup of specific products, certain handling and storage procedures are necessary to promote the safety of personnel and prevent the possibility of pollution. Care will be taken to follow all directions and warnings for products used on site. All pertinent information is in the Material Safety Data Sheets (MSDS) for each product. The MSDS will be collocated with each product container it represents or in a readily accessible central location. Several product-specific practices are listed in the following sections.

3.8.3.4 Flammable and Combustible Liquids and Hazardous Materials

All products will be stored in tightly sealed containers that are clearly labeled. The containers will be stored in secondary containment, which will be of sufficient size to contain the entire contents of the primary container plus a sufficient quantity for precipitation (a total of approximately 110 percent of the volume of the primary container). The secondary containment will be an impermeable containment basin to prevent any spills or leaks from reaching the ground. The containment may be one of the following or other means that meets the definition of

impermeable: (1) a temporary earthen berm lined with 20-milliliter-thick plastic, (2) a portable tank or basin, or (3) a galvanized steel or plastic trough.

After each rain event, the contractor will inspect the contents of all secondary containment areas. If there is no visible sheen on the collected water, it can be pumped or drained to the ground in a manner that does not cause scouring. If a sheen is present, it must be cleaned using absorbent materials prior to discharging or disposing of the water. The absorbent material will be disposed of properly.

3.8.3.5 Petroleum Products

In addition to the requirements above, petroleum products have additional procedures for handling and storage to prevent the possibility of pollution. On-site vehicles will be monitored for leaks and receive regular maintenance to reduce the potential for leakage.

Bulk fuel or lubricating oil dispensers will have a valve that must be manually held open to allow the flow of fuel. When not in use, the fuel dispensing nozzles and/or associated hoses will be kept inside the containment basin. During fueling operations, the contractor will have personnel present at all times to detect and contain spills. If any spills or leaks occur, the activity will stop immediately, and the containment and cleanup will begin.

Refueling and lubricating of most construction equipment will be restricted to upland areas at least 100 feet away from the edge of any streams, wetlands, ditches, and other water bodies and at least 150 feet away from known groundwater wells. Wheeled and tracked construction equipment will be moved to an upland area more than 100 feet away from streams, wetlands, ditches, and other water bodies for refueling when necessary. Fuels and lubricants will be stored in designated areas and in appropriate service vehicles. Whenever practical, storage sites for fuels, other petroleum products, chemicals, and hazardous materials, including wastes will be located in uplands or at least 100 feet from water bodies and wetlands.

3.8.3.5.1 Spill Control and Cleanup

In addition to the material management practices discussed previously, the following spill control and cleanup practices will be followed to prevent storm water pollution in the event of a spill:

- Spills will be contained and cleaned up immediately after discovery.
- Manufacturer's methods for spill cleanup of a material will be followed as described on the material's MSDS.
- Materials and equipment needed for cleanup procedures will be kept readily available in construction areas, either at an equipment storage area or on contractor's trucks. Equipment may include, but is not be limited to, brooms, dust pans, shovels, granular absorbents, sand, sawdust, absorbent pads and socks, plastic and metal trash containers, gloves, and goggles.
- Drums containing used cleanup materials will be labeled with the contents and date.
- Personnel will be made aware of cleanup procedures and the location of spill cleanup equipment.
- The contractor will be responsible for all cleanup activities in accordance with applicable local, state, and federal regulations.