

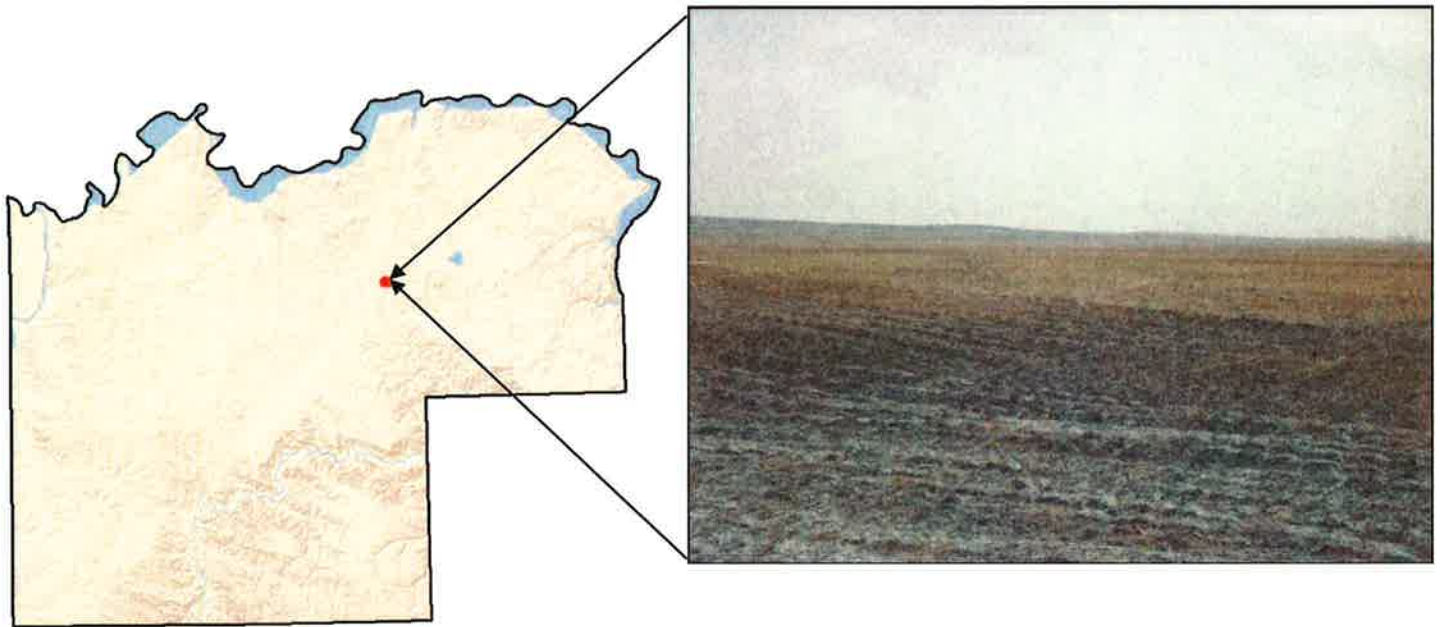
September 2012

APPLICATION TO

NORTH DAKOTA PUBLIC SERVICE COMMISSION

FOR A CERTIFICATE OF SITE COMPATIBILITY

GARDEN CREEK GAS PLANT II



ONEOK
ROCKIES MIDSTREAM
A SUBSIDIARY OF ONEOK PARTNERS

TABLE OF CONTENTS

INTRODUCTION	1
SECTION 1: DESCRIPTION	2
1.1 Type	2
1.2 Product	3
1.3 Size and Design.....	3
1.3.1 Gross Design Capacity.....	3
1.3.2 Net Design Capacity	3
1.3.3 Estimated Thermal Efficiency of the Energy Conversion Process and the Assumptions upon Which the Estimate is Based	3
1.4 Provide One Copy of the Design Data Reports Separate from the Application	3
1.5 Time Schedule.....	3
1.5.1 Certificate of Site Compatibility	3
1.5.2 Land Acquisition	3
1.5.3 Construction Start Date	3
1.5.4 Construction Completion Date	4
1.5.5 Test Operations	4
1.6 Commercial Production Data for Garden Creek Plant.....	4
1.7 100 Percent Capacity Factor.....	4
1.8 Any Expansions or Additions.....	4
SECTION 2: STUDIES	5
2.1 Study Area	5
2.2 Site.....	5
2.3 Environmental Analysis.....	5
2.3.1 Natural Resource Inventory	5
2.3.1.1 Botanical Inventory.....	6
2.3.1.2 Tree/Sapling/Shrub Inventory.....	6
2.3.1.3 Wetland and Waterbodies Inventory.....	6
2.3.1.4 Wildlife Inventory	6
2.3.2 U.S. Fish and Wildlife Service	6
2.3.2.1 Federally Protected Species Review	6
2.3.2.2 Migratory Bird Treaty Act.....	8
2.3.2.3 Bald and Golden Eagle Act.....	8
2.3.3 U.S. Fish and Wildlife Service Managed Lands	9
2.3.4 U.S. Farm Service Agency.....	9
2.3.5 North Dakota Game and Fish Department.....	9
2.3.6 North Dakota Parks and Recreation Department.....	9
2.3.7 North Dakota State Historic Preservation Office.....	10
2.3.8 North Dakota State Lands Department.....	10

2.3.9	North Dakota Department of Health	10
2.3.9.1	NDDoH Air Quality	11
2.3.9.2	NDDoH Pollution Discharge Elimination System.....	11
SECTION 3:	NEED FOR FACILITY	13
3.1	Analysis of Need Based on Present and Projected Demand, Including System Studies.....	13
3.2	Description of Feasible Alternative Methods of Serving the Need	13
3.3	ONEOK’s Most Recent 10-Year Plan	14
SECTION 4:	LOCATION	15
4.1	Study Area	15
4.2	Identify and Map Criteria	15
4.3	Exclusion Area Inventory and Analysis.....	15
4.3.1	Federal Resource Review	16
4.3.2	State Resource Review.....	16
4.3.3	County Resource Review	16
4.3.4	Prime Farmland.....	16
4.3.5	Irrigated Farmland	16
4.3.6	Protected Species Resource Review.....	16
4.3.7	Critical Habitat for Protected Species.....	17
4.4	Avoidance Area Inventory and Analysis	17
4.4.1	Other Historical Resources Not Meeting Exclusion Area Criteria.....	17
4.4.2	Areas within City Limits or Military Installation Boundaries	17
4.4.3	Areas Within Known 100-Year Floodplains	17
4.4.4	Areas of Known Geologic Instability	17
4.4.5	Woodlands and Wetlands	18
4.4.6	Areas of Recreational Significance Not Categorized as Exclusion Areas	18
4.5	Selection Criteria.....	18
4.5.1	Agricultural Impact Assessment	18
4.5.2	Impact upon the Availability and Adequacy of Local Public Services.....	19
4.5.3	The Impacts Upon:	20
4.5.4	Cumulative Effects of the Location of the Facility in Relation to Existing and Planned and Facilities and Other Industrial Development.....	21
4.6	Policy Criteria.....	22
4.6.1	Policies and Commitments to Limit Environmental Impact.....	22
4.6.2	Recycling of the Conversion Byproducts and Effluents	22
4.6.3	Energy Conservation Through Location, Process and Design.....	23
4.6.4	Training and Utilization of Available Labor in This State for the General and Specialized Skills Required	23
4.6.5	Use of a Primary Energy Source or Raw Material Located Within the State	23

4.6.6	Nonrelocation of Residents	23
4.6.7	The Dedication of an Area Adjacent to the Facility to Land Uses Such As Recreation, Agriculture, or Wildlife Management	23
4.6.8	Economies of Construction and Operation	23
4.6.9	Secondary Uses of Appropriate Associated Facilities for Recreation and the Enhancement of Wildlife	24
4.6.10	Use of Citizen Coordinating Committees	24
4.6.11	A Commitment of a Portion of the Transmitted Product for Use in This State	24
4.6.12	Labor Relations	24
4.6.13	The Coordination of Facilities	24
4.6.14	Monitoring of Impacts.....	24
4.6.15	Problems Raised by Federal Agencies, Other State Agencies, and Local Entities	24
SECTION 5: Mitigative Measures		25
SECTION 6: List of Preparers		26

APPENDICES

Appendix A: Engineering Documents

Appendix B: Exclusion & Avoidance Maps

Appendix C: Consultations

Appendix D: Natural Resource Report

Appendix E: Cultural Resources Report and Unanticipated Discovery Plan

INTRODUCTION

ONEOK Rockies Midstream, L.L.C. (ONEOK), owns and operates natural gas gathering, processing and fractionation facilities in the Williston Basin in Montana, North Dakota and Saskatchewan, Canada, as well as natural gas gathering facilities in the Powder River Basin in Wyoming. ONEOK's facilities interconnect to the interstate natural gas pipeline grid, which serves markets in the Rocky Mountains, Midwest and California.

In the Williston Basin, ONEOK has approximately 4,600 miles of gathering pipelines with approximately 390 million cubic feet per day of capacity at six processing plants. Most of the wells connected to the facilities produce casinghead gas in association with crude oil. This casinghead gas is generally high in natural gas liquids (NGL) content, which are separated from the natural gas at the processing plants, fractionated into individual components and sold.

In response to growing demand for gas processing capacity of NGL produced in North Dakota, ONEOK proposes to construct the Garden Creek Gas Plant II (Garden Creek Plant II, Plant II, or Plant.) ONEOK's proposed Plant II would be located approximately 4.3 miles northeast of Watford City in McKenzie County, North Dakota.

ONEOK hereby submits to the North Dakota Public Service Commission (PSC or Commission) an application of a Certificate of Site Compatibility for its Garden Creek Plant II Project.

This application provides the necessary information as stipulated by the North Dakota Century Code, Energy Conversion and Transmission Facility Siting Act, Chapter 49-22-08, and the PSC Administrative Code, Chapter 69-06-08-01 Energy Conversion Facility Siting Criteria.

The information presented in this application is organized according to the format prescribed in the PSC Application Guidelines for a Certificate of Site Compatibility, which divides the information into the following four main categories:

SECTION 1: DESCRIPTION

SECTION 2: STUDIES

SECTION 3: NEED FOR FACILITY

SECTION 4: LOCATION

To assist the Commission in its review of ONEOK's application, ONEOK has included with this application the information described in Section 49-22-09 of the Century Code, Factors to Consider in Evaluating Applications and Designation of Sites, Corridors, and Routes. This information is placed toward the end of Section 4, following the discussion of the Facility Siting Criteria.

SECTION 1: DESCRIPTION

1.1 Type

ONEOK's proposed Garden Creek Plant II will be located approximately 4.3-miles northeast of Watford City, North Dakota. Plant II will be an independent, standalone operating plant while sharing an office building with Plant I. As proposed, Plant II would be constructed on a plot of approximately 80 acres located in the N ½ SE ¼, Section 35, Township 151 North, Range 98 West of McKenzie County, as depicted in the map included in Appendix B.

The Garden Creek Plants (i.e. Plant I and Plant II) will operate independently of each other. However, ONEOK will be establishing interconnecting piping between the plants for plant balancing or to provide backup processing capability if one plant is at reduced rates or shutdown. The Garden Creek Plant II has a design capacity of 100 million standard cubic feet per day (MMscfd) utilizing a cryogenic turboexpander process. Plant II will process associated natural gas from oil production wells connected to ONEOK's gathering system. The feed will be supplied to the proposed Plant via ONEOK's existing gathering system and once processed, the NGL product will be transferred to on-site storage tanks prior to being transferred to facilities owned and operated by ONEOK. Residual gas, largely methane and ethane, will be transferred to Williston Basin Interstate pipeline through a meter located in the southwestern portion of the property.

Once constructed, Garden Creek Plant II will occupy approximately 80 acres of land located directly north of Plant I. The acreage will accommodate Plant II and an electrical substation to provide electrical power for gas compression, provide space for product metering, and serve as a stormwater outfall, vehicle parking, and unused space for potential future expansion.

Construction of the Plant will include the installation of underground piping, above ground piping and above ground gas processing facilities. The major processing systems shall be located within the Plant site starting from the inlet gas and condensate piping as they enter the Plant. These systems include:

- Inlet gas slug catchers;
- Inlet gas condensate pumping, filtration, and stabilization;
- Mole sieve dehydration;
- NGL extraction (including refrigeration);
- HP residue gas compression;
- NGL product storage and pipeline pumps;
- Flare system;
- Drain system;
- Plant control systems; and
- Utility systems (electrical, instrument air, and heat medium).

A simplified engineering flow chart depicting the facility's process and an overview plot plan drawing showing the layout of the proposed processing equipment are included in Appendix A.

1.2 Product

The Plant will produce a NGL mix stream, containing products such as propane, butane, and natural gasoline, as well as pipeline grade natural gas (i.e., a mixture of methane, ethane and small amounts of carbon dioxide).

1.3 Size and Design

1.3.1 Gross Design Capacity

The Garden Creek Gas Plant II is designed with a nameplate capacity of 100 MMscfd. Appendix A includes a Design Data Report, which discusses the nameplate capacity in more detail.

1.3.2 Net Design Capacity

The net design capacity of the proposed Plant II using a feed stream benchmark is 81.73 MMscfd less 0.5 MMscfd for utility natural gas.

1.3.3 Estimated Thermal Efficiency of the Energy Conversion Process and the Assumptions upon Which the Estimate is Based

This is not applicable to the process.

1.4 Provide One Copy of the Design Data Reports Separate from the Application

See Appendix A for complete Design Data Report.

1.5 Time Schedule

1.5.1 Certificate of Site Compatibility

ONEOK seeks a Certificate of Site Compatibility by October 31, 2012.

1.5.2 Land Acquisition

ONEOK purchased an 80 acre parcel from a private landowner for this Plant. The purchase agreement for this transaction was entered into on or about October 30, 2011, was closed with the recording of deeds and other appropriate documentation on or about November 15, 2011.

1.5.3 Construction Start Date

ONEOK will begin construction of the second phase of the Garden Creek Plant Site upon receipt of necessary authorizations. ONEOK anticipates that it will begin construction of the Garden Creek Plant no later than April 1, 2013.

1.5.4 Construction Completion Date

ONEOK anticipates that the Garden Creek Plant II commissioning activities will begin in July of 2014 with a planned full in service date by the end of the third quarter of 2014.

1.5.5 Test Operations

ONEOK anticipates testing for the Garden Creek Plant II will be completed before the end of December 2014.

1.6 Commercial Production Data for Garden Creek Plant

Product	Production
Inlet Gas Rate	100 MMscfd
Mole Percent Ethane+	39%
Residue Gas Production	81 MMscfd
NGL Production	2,170,000 lbs/day

1.7 100 Percent Capacity Factor

This is not applicable to this process.

1.8 Any Expansions or Additions

ONEOK does not have plans to expand the proposed Plant at this time. There is space delineated within the battery limits to add a small amine unit should business needs require it.

SECTION 2: STUDIES

2.1 Study Area

The Study Area is defined by the approximately 1-mile-wide buffer area centered upon the 80-acre Project Site. The Project Site and the Study Area are depicted on the maps found in Appendix B: Exclusion and Avoidance Area Maps. The environmental analysis was conducted for the entire Study Area with limits delineated by the dashed line.

2.2 Site

The Project Site is an 80-acre parcel as depicted in the maps found in Appendix B. A natural resource inventory was conducted that encompassed this entire parcel. Resources inventoried include habitat analysis, wetland delineation, and tree/shrub inventory. Cultural resource field studies were also conducted throughout the entire parcel.

ONEOK initiated consultations with the Federal and state agencies identified below for the purpose of environmental resource assessment relative to the potential impacts associated with the siting and construction of the proposed Plant at this location. Please refer to Appendix C for copies of these consultations.

- U.S. Fish and Wildlife Service (USFWS);
- U.S. Farm Service Agency (FSA);
- North Dakota Game and Fish Department (GFD);
- North Dakota Parks and Recreation Department (PRD);
- North Dakota State Historic Preservation Office (SHPO);
- North Dakota State Lands Department (SLD); and
- North Dakota Department of Health (NDDoH).

Consultations and field studies are summarized as follows in Section 2.3.

2.3 Environmental Analysis

2.3.1 Natural Resource Inventory

ONEOK retained SWCA, Inc. (SWCA) to conduct a natural resource inventory of the Project Site. A biological inventory of the Project Site was conducted to study the presence or absence of protected species and critical habitat. A tree/woody shrub inventory was completed. Field studies included a wetland and waterbody survey. The inventory and field studies were completed on December 21, 2011. A copy of the report can be found in Appendix D.

The Project Site land use is characterized as agricultural, with no trees or shrubs, and with no wetlands or waterbodies present.

2.3.1.1 Botanical Inventory

The Project Site is dominated by cultivated wheat (*Triticum sp.*), which occurs over roughly 98-99% of the Project Site. A greater variety of species was identified along an existing road at the eastern site perimeter including blue grama (*Bouteloua gracilis*), western wheatgrass (*Pascopyrum smithii*), needlegrass (*Nassella viridula*), little bluestem (*Schizachyrium scoparium*), and prairie sandreed (*Calamovilfa longifolia*). No Federal or state listed species or sensitive plant communities were observed on the Project Site.

2.3.1.2 Tree/Sapling/Shrub Inventory

No trees or shrubs were observed on the Project Site.

2.3.1.3 Wetland and Waterbodies Inventory

No wetlands or waterbodies were observed on the Project Site.

2.3.1.4 Wildlife Inventory

The wildlife observed on the Project Site are species commonly associated with agricultural communities. Various common avian and mammalian fauna were observed. No Federal or state species of concern were observed on the Project Site.

2.3.2 U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) administers several natural resource programs designed to identify and protect various plant and animal species of special status including habitats deemed critical. ONEOK's efforts thus far to engage the USFWS in consultation for purpose of identifying and addressing potential concerns are detailed in the following sections.

2.3.2.1 Federally Protected Species Review

Under the authority of the Endangered Species Act (ESA), the USFWS assess wildlife populations for viability throughout their current and historic ranges. Those species that have been characterized as threatened or endangered species as well as their critical habitats are managed by the USFWS under the authority of the ESA.

E3 Environmental, LLC (E3) provided ONEOK technical assistance with protected species review and subsequent consultations with the USFWS. A review of the USFWS published data identified the following listed species with the potential to occur within the study area:

- Whooping Crane (*Grus americana*) – Endangered
- Piping Plover (*Charadrius melodus*) – Threatened
- Least Tern (*Sterna antillarum*) – Endangered
- Pallid sturgeon (*Scaphirhynchus albus*) – Endangered
- Gray wolf (*Canis lupus*) – Endangered
- Black-footed ferret (*Mustela nigripes*) - Endangered

E3 has reviewed the available data describing the life history, critical habitat, and conservation measures associated with each species to evaluate the potential effects of the project on these resources. The results of this analysis are as follows:

Least Tern: The interior population(s) of the Least Tern has historically been associated with large river systems for breeding and migratory habitats. Breeding birds are known to breed colonies, utilizing sandbar habitat common to larger rivers. Regionally, the Missouri River, which is greater than 25 miles from the Project Site, is known to host remnant breeding populations of the Least Terns, additionally, a reservoir created by a dam in the Missouri River is located approximately 13 miles north of the Project Site and has the potential to host populations of this species. No Least Terns or their habitat were observed on the Project Site.

Whooping Crane: The Whooping Crane is a large-bodied marsh species that breeds primarily in Canada and winters in the Gulf of Mexico. This species has been closely studied and monitored in recent years due to its small population. North Dakota provides migratory habitat for the species, providing roosting and feeding opportunities during migration. This species prefers larger wetland complexes for roosting habitat, typically using adjacent uplands for foraging opportunities. The proposed Project Site contains previously cultivated cropland which may act as a viable stop over area; however, no significant wetlands were observed. As such, the proposed Project Site is unlikely to support Whooping Crane migratory stopover. Construction activities would likely serve as a deterrent, and once constructed, the proposed facility would present a fairly prominent feature to be avoided relative to its surrounding landscape.

Piping Plover: The Piping Plover is associated with shorelines along small alkaline lakes, large reservoir beaches, and river islands and adjacent sand pits. Breeding birds select wide beaches with highly clumped vegetation covering less than 25% of the area. Regionally, the Missouri River, which is greater than 25 miles from the Project Site, is known to host breeding populations of the Piping Plovers, additionally a reservoir created by a dam in the Missouri River is located approximately 13 miles north of the Project Site and has the potential to host populations of this species. It is unlikely that migrating Piping Plover would visit the Project Area during migration. The Project Site is not located within designated Piping Plover critical habitat.

Pallid sturgeon: Pallid sturgeon preferred habitat includes the benthic environment associated with swift waters of large turbid, free-flowing rivers with braided channels, dynamic flow patterns, periodic flooding of terrestrial habitats, and requiring extensive micro habitat diversity. The pallid sturgeon is known to occur in the Missouri River, which is located 25 miles from the proposed Project Site. This species is sensitive to changes in water quality due to turbidity, water temperature and flow. The proposed Project will not result in a loss of pallid sturgeon habitat, as it is not located within/adjacent to preferred habitat.

Gray wolf: The gray wolf is a large carnivore that, through conservation measures, has experienced strong population recovery, particularly in the Great Lakes states of the Upper Midwest. As populations rebound, individuals may break from packs to explore opportunities to establish packs in unoccupied territory. Roaming individuals can cover great distances without establishing viable breeding populations in previously unoccupied habitat(s). This species is not tolerant of human disturbance and will tend to avoid interaction with humans. The activities associated with construction and later Plant operations would likely serve as a deterrent to this species.

Black-footed ferret: Black-footed ferrets are nocturnal, solitary carnivores. Ferrets inhabit extensive prairie dog complexes typically composed of several smaller colonies in proximity to one another that provide a sustainable prey base. This species has not been observed in the wild for more than 20 years.

In the March 26, 2012 consultation response, the USFWS concurred that the proposed Project will not adversely impact federally protected species or their critical habitats. See Appendix C for a copy of the correspondence.

2.3.2.2 Migratory Bird Treaty Act

USFWS is responsible for the protection of migratory birds which the USFWS does through the implementation of the Migratory Bird Treaty Act (MBTA). Management of this responsibility has largely focused on protection of the birds while on their breeding grounds during the breeding season. It is generally understood that the USFWS defines the breeding season in this region as occurring annually from February 1 through July 15. Cultivated land provides marginal habitat for breeding birds and tilled fields lack the vegetative cover necessary to provide suitable habitat. The Project Site shall be cleared of vegetation prior to the growing season. These efforts are intended to avoid direct impacts to breeding migratory birds.

In the March 26, 2012 consultation response, the USFWS concurred that the proposed measures will adequately avoid and mitigate potential impacts to migratory birds. See Appendix C for a copy of the correspondence.

2.3.2.3 Bald and Golden Eagle Act

The Bald Eagle (*Haliaeetus leucocephalus*) was federally delisted in 2007 but remains protected by the MBTA and the Bald and Golden Eagle Protection Act (BGEPA). The Bald Eagle feeds on fish and carrion and typically roosts in large trees near a water source. Bald Eagle nesting habitat is typically any mature stands of conifer or cottonwood trees in association with rivers, streams, reservoirs, lakes, or any significant body of water. No Bald Eagles or nests were observed during the field surveys. Suitable nesting and roosting habitat may be available nearby but was not present within the 0.5 mile line-of-sight survey area. Therefore, the proposed Project will have no impact on this species.

The Golden Eagle (*Aquila chrysaetos*) is not federally listed and is protected under the MBTA and BGEPA. Golden Eagles have been documented near the survey area year-round; however, the majority of Golden Eagles migrate. The breeding season for Golden Eagles is from mid-March through late July. No nesting Golden Eagles were observed and no suitable nesting habitat exists within the survey area. Therefore, the proposed Project will have no impact on this species.

2.3.3 U.S. Fish and Wildlife Service Managed Lands

Conservation programs such as waterfowl production areas and wetland and grassland easements represent an important tool used by the USFWS to identify and manage high-quality wildlife habitat. A review of public records did not identify any of these USFWS-managed lands in the proposed Project Site.

In the March 26, 2012 consultation response, the Bismarck USFWS office confirmed the absence of USFWS-managed lands within the proposed Project Site. See Appendix C for a copy of the correspondence.

2.3.4 U.S. Farm Service Agency

Land conservation programs are administered at the county level through the local McKenzie County Farm Service Agency (FSA) office. These programs include the Conservation Reserve Program (CRP) and the Grassland Reserve Program (GRP), which are designed to compensate farmers for placing tillable lands into a non-agricultural conservation program. Landowner participation in these programs is voluntary, yet financial considerations are available for participants.

On ONEOK's behalf, E3 consulted with the local FSA office to confirm the presence or absence of CRP or GRP lands within the Project Site. On April 13, 2012, the McKenzie County FSA responded stating that there are no CRP or GRP lands located within the proposed Project Site.

2.3.5 North Dakota Game and Fish Department

The North Dakota Game and Fish Department (GFD) has oversight of the state's game species and certain state managed lands (i.e., PLOTS). In the February 23, 2012 consultation response, the GFD confirmed the absence of both state managed lands and wildlife concerns associated with the proposed Project Site. See Appendix C for a copy the correspondence.

2.3.6 North Dakota Parks and Recreation Department

The North Dakota Park and Rec Department's (PRD) scope of authority and expertise covers recreation and biological resources (in particular rare species and ecological communities). The PRD also maintains a database comprised of the location and recorded occurrences of plant and animal species of special concern.

In the February 23, 2012 consultation response, the PRD confirmed the absence of rare species and ecological communities within the proposed Project Site. The PRD also confirmed the absence of state lands or management projects under its

jurisdiction within the proposed Project Site. See Appendix C for a copy of the correspondence.

2.3.7 North Dakota State Historic Preservation Office

The North Dakota State Historical Preservation Office (SHPO) is responsible for managing the historic and archaeological resources of the state. SWCA was retained by ONEOK to survey the proposed Project Site and report the results to the SHPO.

On December 8, 2011, SWCA conducted a Class I Cultural Resources Literature Search of SHPO records to identify previously completed cultural resource investigations and previously recorded cultural resources within the proposed Project Site. The results of this inventory concluded that five (5) previous cultural resource inventories have been performed within 1 mile of the proposed Project Site, and three (3) previously recorded cultural resources occurred within 1 mile of the proposed Project Site. Two are prehistoric in age, and none have been evaluated with respect to eligibility for listing on the National Register of Historic Places (NRHP). No previously recorded resources were identified within the proposed Project Area boundary.

On December 21, 2011, SWCA conducted a Class III Cultural Resource inventory of the Project Site. Archaeologists completed a pedestrian survey supplemented with limited shovel testing of the 80-acre Project Site. The Project Site is generally described as an agricultural field. No cultural resources were identified by the Class III survey.

SWCA prepared a Class I and Class III Cultural Resource Inventory report that detailed results from the literature search and survey. The report recommended no further cultural resource work. See Appendix E for a copy of this report.

On March 29, 2012, SWCA submitted the survey report to the SHPO seeking concurrence with the results and recommendations of the report. The SHPO responded on March 30, 2012 and concurred with the conclusions and recommendations as presented. See Appendix C for a copy of the correspondence.

2.3.8 North Dakota State Lands Department

The North Dakota State Land Department (SLD) is in charge of managing surface acres and mineral interests held in trust for various schools and institutions.

On February 9, 2012, E3 initiated consultations with the SLD requesting comments regarding the presence of surface or mineral trust lands located within a 1-mile buffer of the Project Site. On February 13, 2012 and March 30, 2012, the SLD confirmed that no school trust or mineral trust lands are present in the proposed Project Area. See Appendix C for a copy of the correspondence.

2.3.9 North Dakota Department of Health

The North Dakota Department of Health (NDDoH) administers regulatory programs governing the state's interest in air quality and water discharges. ONEOK is currently engaged at various stages in the permitting process with the NDDoH with respect to air emissions and water discharges.

2.3.9.1 NDDoH Air Quality

The NDDoH administers the state's air quality protection programs. ONEOK is applying for the required permits for construction and operation of the new emission sources. Equipment such as electric-driven compressors, heat medium fluid heaters, storage vessels, flares, and other ancillary equipment could be regulated emission sources and will be included in the permit application required by the NDDoH for the construction and operation of air emission sources.

ONEOK's design plans include incorporating the necessary control measures to reduce total emissions for the Plant and ascertain compliance with all state and Federal rules.

ONEOK will obtain a NDDoH Air Pollution Control Permit to Construct that will address net potential emissions from the Plant. The permit is required prior to initiation of construction of a new stationary emission source. Once the Plant is constructed and begins operations, ONEOK will notify the NDDoH to procure an Operating Permit for the Plant, as required.

2.3.9.2 NDDoH Pollution Discharge Elimination System

The NDPDES is the regulatory program that regulates water discharges. ONEOK will procure the following NDPDES permits from the NDDoH for regulated discharges associated with the construction and operation of the Plants.

Construction Stormwater: ONEOK will be seeking coverage under NDR10-0000 *Authorization to Discharge Under the North Dakota Pollutant Discharge Elimination System* general permit for construction sites as required when disturbing an area greater than five (5) acres during construction. A project-specific erosion control plan referred to as Storm Water Pollution Prevention Plan (SWPPP) will be prepared and maintained on-site for the duration of the project. ONEOK will properly implement the SWPPP which will be designed to manage run-off in a manner that will minimize exposure to chemicals, waste, or petroleum products as well as describing erosion control measures designed to minimize off-site transfer of sediments.

Construction site dewatering: ONEOK will be seeking coverage under NDG07-0000 *Authorization to Discharge Under the North Dakota Pollutant Discharge Elimination* a general permit for various temporary discharges including both construction site dewatering and hydrostatic test water discharges. Site dewatering is required when groundwater infiltrated excavations (e.g., foundations and trenches) must be removed. Discharges are managed to minimize scouring and off-site transfer of sediments. Discharges are monitored and water quality samples will be collected, analyzed and reported as stipulated by the general permit. A project-specific Storm Water Pollution Prevention Plan (SWPPP) will be designed and implemented on site in accordance with all permit requirements.

Hydrostatic test water discharges: ONEOK will be seeking coverage under NDG07-0000 *Authorization to Discharge Under the North Dakota Pollutant Discharge Elimination*

a general permit for various temporary discharges including both construction site dewatering and hydrostatic test water discharges.

Industrial discharges: ONEOK understands that the Plant will be exempt from the requirement to obtain a permit for industrial discharge of stormwater. The Plant's Standard Industrial Classification (SIC) is 1321, which is exempt from stormwater permit requirements. Additionally, ONEOK has developed no-contact facilities which are also eligible for exempt status, but require a NDDoH review of the facilities and stormwater control measures.

SECTION 3: NEED FOR FACILITY

3.1 Analysis of Need Based on Present and Projected Demand, Including System Studies

Recent technological advances in drilling and completion associated with horizontal wells currently employed in the Bakken Shale and Three Forks formations of the Williston Basin have dramatically increased hydrocarbon production in the area. In addition to technological advances, area drilling activity has increased measurably of late. Over the past 3 years, the reported number of drill rigs operating in North Dakota has increased from less than 40 in June 2009, to 215 as of June 29, 2012. Studies conducted by the North Dakota Department of Mineral Resources and U.S. Geologic Survey (USGS) in 2008 and 2010 indicate that 4.0 to 6.3 billion barrels of recoverable crude oil reserves may be available in North Dakota's deep shale formations, likely leading to additional drill rigs in the area.

The increased production continues to be constrained by take away capacity for both crude and gas products. While near term demands associated with increased crude oil production can be readily addressed with the installation of tankage for temporary storage coupled with additional trucking or rail capacity to bring it to market, the associated natural gas production is typically lost to flaring until the required infrastructure is placed into service. The requisite infrastructure includes gathering systems and gas processing to refine the raw feed stock into commercial products. The function of the gas processing plant is to separate commercial grade NGL such as butane, propane and ethane from casinghead gas and produces a residue gas that is pipeline quality natural gas.

The Plant also prepares these products for delivery. The rapid increase in gas production from Bakken and Three Forks wells has exceeded the limited processing capacity available at existing facilities, and construction of additional processing capacity is required to meet the demand of area producers. Absent the construction of additional processing capacity, gas produced in association with oil from these wells must be flared, which is a loss of revenue to the producers, royalty owners, and the state of North Dakota. Gas gathering and processing is a non-discretionary service that is required for the marketing and sale of natural gas produced in association with oil from these wells.

3.2 Description of Feasible Alternative Methods of Serving the Need

A thorough analysis of all reasonable alternatives was conducted. Various factors were considered by ONEOK, including engineering, economic, and environmental factors in a multidisciplinary and iterative fashion. This process identified the following alternatives.

No Action Alternative: Overall regional production would continue to be constrained by gas processing capacity, resulting in increased flaring at well heads and loss of natural resources. This alternative is not desirable.

Alternative Plant Location(s): When siting Plant I, alternative locations were considered in the general vicinity of Watford City but were found to have greater direct impacts to the environment due to proximity to existing residences. Alternative locations near the current site with different landowners, and with different parcels from the same landowner, were also considered. However, these were found to have greater indirect impacts to area resources; each alternative site considered would require installation of additional infrastructure (e.g., access roads, utilities, and delivery pipelines) and an increased distance from ONEOK's existing gas gathering system which would deliver gas to the Plant. Now that Plant I and associated infrastructure are in place, it will be far more economical and will cause the least amount of environmental disturbance if Plant II is sited adjacent to the existing facility. Thus an alternative location is not desirable.

Expansion of Existing Processing Facilities: ONEOK considered the expansion of its Grasslands Gas Plant located near Sidney, Montana in western McKenzie County, North Dakota. The Grasslands Plant was expanded from 60 MMcfd to 100 MMcfd in 2009 when Bakken formation wells were first drilled in the Elm Coulee Field in Richland County, Montana. However, ONEOK concluded that further expansion of the Grasslands Plant was uneconomical due to: (i) a lack of sufficient space and limited capacity of peripheral equipment at Grasslands Plant to accommodate a major expansion; and (ii) a lack of capacity in ONEOK's high pressure gathering system to deliver significant volumes of gas production from eastern McKenzie County to the Grasslands Plant, which is approximately 70-80 miles from the area where the production is currently being developed. This alternative is not desirable.

ONEOK's gathering system is capable of delivering excess gas production from McKenzie County to the Stateline 1 & 2 facility in Williams County, which is near completion. However, doing so long term will be uneconomical for wells in the area due to the 50-60 mile distance between the two plants and reduced available processing capacity at the Stateline 1 & 2 facilities for production volumes from wells in Williams County and as other areas north of the Missouri River continue to increase, displacing the McKenzie County gas. This alternative may be used for temporary operations as Plant operating conditions require; however, this alternative is not desirable as a permanent solution.

3.3 ONEOK's Most Recent 10-Year Plan

ONEOK's most recent 10-year plan was filed August 6, 2012 (PU-12-673). The Garden Creek Plant I is discussed in the 10-year plan under Section A "Energy Conversion Facilities." Under Section C "Proposed Energy Conversion Facilities on Which Construction is Intended Within the Ensuing Five Years," the 10-year plan describes the process detail for the proposed Garden Creek Plant II.

SECTION 4: LOCATION

4.1 Study Area

ONEOK’s Study Area includes a 1-mile-wide buffer area surrounding the 80-acre Project Site as described in Appendix B. ONEOK initiated agency consultations, Geographic Information System (GIS) mapping, internet-based research, and desktop analysis of the Project Site. These efforts were augmented by site visits including natural and cultural resource field surveys of the Project Site.

4.2 Identify and Map Criteria

The information presented in this section was developed to demonstrate conformation with the Commission’s siting criteria for Energy Conversion Facilities. ONEOK has conducted a thorough inventory of and evaluated the resources that occur within the Study Area sufficiently to assess the compatibility of the Plant with the state’s siting criteria. The following sections identify and discuss the presence or absence of siting criteria within the Study Area or Project Site. Where siting criteria is identified, its location is shown on the maps in Appendix B.

4.3 Exclusion Area Inventory and Analysis

Exclusion areas are geographic areas that should be excluded from consideration when siting an energy conversion facility. The following table and text identify and discuss exclusion areas identified within the Study Area or Project Site.

Exclusion Area	Within Project Site	Within Study Area
Federal		
National Parks or Memorial Parks	No	No
Historic Sites, Districts and Landmarks	No	No
Natural Landmarks and Monuments	No	No
Wilderness Areas and Wildlife Areas	No	No
Wild, Scenic or Recreational Rivers	No	No
Wildlife Refuges and Grasslands	No	No
State		
Parks, Forest and Forest Management Lands	No	No
Historic Sites, Monuments, and Historical Markers	No	No
Archaeological Sites	No	No
Grasslands	No	No
Wild, Scenic or Recreational Rivers	No	No
Game Refuges and Game Management Areas	No	No
Management Areas	No	No
Nature Preserves	No	No
County		
Parks	No	No

Exclusion Area	Within Project Site	Within Study Area
Recreation Areas	No	No
Municipal Parks	No	No
Other		
Parks or public lands held by other government entities	No	No
Prime Farmland	No	No
Irrigated Farmland	No	No
Critical habitat for protected species	No	No

4.3.1 Federal Resource Review

Based upon a review of publicly available information, ONEOK has concluded that there are no national parks, memorial parks, historic sites and landmarks, monuments, or wilderness areas within the Study Area or Project Site. ONEOK has completed consultations with the appropriate Federal agencies to confirm this conclusion. See Section 2 for a comprehensive discussion of ONEOK’s consultations.

4.3.2 State Resource Review

Based upon a review of field surveys and publicly available information, ONEOK has concluded that there are no state parks, historic sites, monuments, historical markers, archaeological sites, or nature preserves within the Study Area or Project Site. ONEOK has completed consultations with various agencies to confirm this conclusion. See Section 2 for a comprehensive discussion of ONEOK’s efforts.

4.3.3 County Resource Review

Based upon a review of publicly available information ONEOK has concluded that there are no county parks, recreation areas, municipal parks, or parks owned by other subdivisions of government bodies within the Study Area or Project Site. ONEOK has completed consultations with various agencies to confirm this conclusion. See Section 2 for a comprehensive discussion of ONEOK’s efforts.

4.3.4 Prime Farmland

ONEOK conducted a review of published data to assess both the Study Area and Project Site for the presence of Prime Farmland. ONEOK confirmed the absence of Prime Farmland within the Study Area or Project Site.

4.3.5 Irrigated Farmland

ONEOK’s investigation found no evidence of irrigation within the Study Area or Project Site.

4.3.6 Protected Species Resource Review

ONEOK has conducted field surveys of the Project Site and reviewed published information and has concluded that there are no areas critical to the life stages of threatened or endangered animal or plant species within the Study Area or Project

Site. ONEOK has completed consultations with Federal and state agencies to confirm this conclusion. See Section 2 for a comprehensive discussion of ONEOK's efforts.

4.3.7 Critical Habitat for Protected Species

Based upon consultations with agencies and surveys of the Project Site, ONEOK has confirmed the absence of critical habitat within the Study Area and Project Site. See Section 2 of this document for a comprehensive discussion of ONEOK's efforts.

4.4 Avoidance Area Inventory and Analysis

Avoidance areas are geographical areas which shall not be impacted by a facility. ONEOK has conducted desktop and field efforts to confirm the absence of these avoidance areas within the Project Site.

Avoidance Area	Project Site	Within Study Area
Historic Resources not meeting Exclusion Areas criteria	No	No
Areas within City Limits or Military Installation Boundaries	No	No
Areas within Known 100-Year Floodplains	No	No
Areas of Known Geologic Instability	No	No
Woodlands and Wetlands	No	Yes
Areas of Recreational Significance not categorized as Exclusion Areas	No	No

4.4.1 Other Historical Resources Not Meeting Exclusion Area Criteria

ONEOK conducted a Class I study of the Study Area and Project Site and conducted a Class III cultural resource survey of the Project Site. These studies confirmed the absence of historical resources. ONEOK has submitted survey results to the SHPO for review and comment, and requested concurrence with this conclusion. On March 30, 2012, ONEOK received SHPO concurrence. See Section 2 for a comprehensive discussion of ONEOK's efforts.

4.4.2 Areas within City Limits or Military Installation Boundaries

ONEOK has confirmed that the Study Area and Project Site are not located within city limits or within the boundaries of military installations.

4.4.3 Areas Within Known 100-Year Floodplains

The Project Site and Study Area are located within an area that has not yet been mapped by Federal Emergency Management Administration (FEMA) and therefore no 100-year floodplain elevations are available. The average elevation of the Project Site is approximately 28 feet higher than the nearest waterbody. This difference in elevation suggests the site is clear of a 100-year floodplain.

4.4.4 Areas of Known Geologic Instability

There are no known areas of geological instability within the Study Area or Project Site. North Dakota has not experienced an earthquake of sufficient magnitude to

damage welded steel piping or structural steel in recorded history. Sink holes are known to occur in North Dakota but are more closely related to mining activities and no evidence of mining or sink holes were identified. Finally, the potential for landslides was evaluated. Earth movement of this nature is closely associated with areas of great topographic relief, high gradient slopes, recent deposits that have yet to reach a stable angle of repose, or where underground water movement may create a slurry of rock and mud resulting in a subsidence. Nothing of this sort was found.

4.4.5 Woodlands and Wetlands

Natural resource studies of the Project Site, GIS analysis and agency consultations were used to assess the Project Site and Study Area for the presence of wetland, waterbody and woodland resources. Woodlands associated with waterways and property/section lines occur within the Study Area but none were found within the Project Site. No wetlands were identified on the Project Site. ONEOK has conducted consultations with agencies to verify this conclusion. See Section 2 for a comprehensive discussion of ONEOK's efforts.

4.4.6 Areas of Recreational Significance Not Categorized as Exclusion Areas

No areas of recreational significance occur within the Study Area or project site.

4.5 Selection Criteria

The selection criteria require a study of environmental impacts and changes in land use that may result from the siting of the proposed facility. Through this process, ONEOK proposes that it has successfully avoided or minimized these effects to the maximum extent practicable, for Commission review and approval.

4.5.1 Agricultural Impact Assessment

Agricultural Production: The Plant will remove approximately 80 acres of tillable land from agricultural production. This parcel represents the minimum amount of surface area necessary to develop the gas processing capacity with current design specifications while maintaining minimum spacing requirements for the equipment, and installation of necessary peripheral equipment such as a flare, power substation, roads, and continually occupied office building.

Family Farms and Ranches: The property was acquired through a purchase agreement negotiated by ONEOK and the landowner. The Project Site will be converted from a family farm/rangeland to an industrial use. The Site is over three-quarters of a mile from the nearest farm structures, which are unoccupied and currently used by the landowner for storage. No other impacts to family farms or ranches are anticipated.

Lands Suitable for Irrigation: Construction activity will not impact irrigated lands. Land that is most efficient for irrigation is relatively level and has soils that are well drained and highly permeable. The combination of topographic relief and soil

characteristics at the Project Site indicate that the Project Site is not suitable for irrigation. No above-ground irrigation systems have been identified in the Study Area.

Surface Drainage: The existing surface drainage pattern of the Project Site is split into two primary directions. The eastern and western portions of the site drain toward the middle of the site, and from there, the north half drains north/northwest to Tobacco Garden Creek and the south half drains to the south/southwest toward Cherry Creek. ONEOK has studied the site and off-site introduction of stormwater run-off and has determined that the most effective means of controlling stormwater flows is to collect run-off originating off-site from the west, route it via a ditch around the plant, and discharge to vegetated green space on the eastern portion of the property which will promote natural filtration and infiltration of the run-off. Stormwater collected from areas within the Plant will be collected and directed to stormwater retention basins. The basins will collect a portion of the run-off to allow for later controlled discharges of the water. The closest waterbody is an unnamed intermittent stream located approximately 2,100 feet north of the Project Site. Cherry Creek is located approximately 2,700 feet southwest of the Project Site.

Ground Water: Ground water suitable for domestic and livestock supplies in McKenzie County is available from three aquifer systems. The Fox Hills and basal Hell Creek aquifer system, located at a depth of approximately 1,100 to 1,800 feet, is used as a source for livestock and domestic supplies. The Ludlow aquifer underlies all of McKenzie County at depths greater than 500 feet. The Tongue River aquifer is also suitable for domestic and livestock use and is found at depths between 140 and 500 feet.

The 1985 study “Groundwater Resources in McKenzie County” conducted by the US Geological Survey reported an estimated 150 wells in the area tapping into the Fox Hills and basal Hell Creek aquifer system and the Ludlow aquifer system to provide a low volume source of stock water and other uses.

Ground excavation associated with the Project will generally be limited to depths no greater than 8 feet. Water demands during and after construction are anticipated to be minimal. A groundwater well has been installed to provide water during construction for Garden Creek Plant I and will provide utility water during operations to both Plants I and II.

Agricultural Quality of the Cropland: Land acquired for the Plant will be permanently removed from agricultural production. No other impact to agricultural lands is anticipated.

4.5.2 Impact upon the Availability and Adequacy of Local Public Services

The potential impacts to local public services including law enforcement, fire department, health care, public schools, transportation facilities and networks, utility services and recreational facilities are anticipated to be temporary in duration and minimal in their overall effect to existing programs and systems.

Construction activities are anticipated to occur over an 18- to 24-month period. During this period, there will be an influx of employees ranging from laborers, skilled trades, technicians, engineers and environmental professionals. The work force will typically engage 75 individuals, with periods where the workforce will increase to levels of up to 200 individuals for periods of high construction.

Area resources may experience increased demand on services with the addition of construction workers temporarily residing in the area. The peak demands will likely occur at the end of 2013 and early in 2014. The most noticeable impact may be due to an increase in vehicle traffic associated with the Plant.

Prior to construction, ONEOK will coordinate with local health care providers and emergency responders to discuss emergency response coordination.

4.5.3 The Impacts Upon:

Local Institutions: Due to its proximity to the Project Site, Watford City may see the greatest impact from the Project. Watford City is located approximately 4.3 miles southwest of the Garden Creek Plant I and planned Plant II which is adjacent to the existing Plant I. These impacts from facility construction will be temporary as the majority of the construction will be completed in 2014. Once operational, the Plant will employ approximately 10 to 15 additional full time employees and will conduct business with many local contractors and businesses. Generally, the impacts will be beneficial to the local economy due to the addition of revenues from outside of the community being spent on goods and services locally. The beneficial impacts of the additional workforce associated with permanent workforce required to operate the facility will have long term benefits on the economy that are anticipated to be greater than the demands placed upon the institutions.

Noise-Sensitive Land Uses: There are no noise-sensitive resources located within 500 feet of the Project Site. The closest occupied dwelling is located approximately 0.75 miles from the Site. The Project has been sited approximately 4.3 miles from Watford City in a rural setting, effectively isolating the Project from the majority of sensitive receptors. Local residents may experience additional motor vehicle volumes on area roadways, but the noise associated with vehicles will be similar to existing background levels and occur largely during normal business hours.

Rural Residences and Businesses: The Project is located approximately 4.3 miles from Watford City. Residents may experience additional traffic congestion and an increase in commerce in response to the influx of temporary workers purchasing goods and services. The Plant will provide job creation for the City and will benefit the local economy for both the near and long term.

Aquifers: Water demands during and after construction are anticipated to be minimal. A groundwater well has been installed to provide water during construction for Garden Creek Plant I and will provide utility water during operations of both Plants I and II.

Human Health and Safety: ONEOK promotes a safe and healthy workplace during construction and operations of all its assets. A corporate policy that meets or exceeds federal and state laws, rules and regulations is enforced and adhered to by all regular and contract employees. ONEOK governs operations and construction activities with various safe work procedures designed to protect property and personnel and maintaining regulatory compliance.

Animal Health and Safety: The wildlife currently inhabiting the Project Site is common and is generally mobile. The local wildlife inhabitants will be displaced by the Project without a measurable impact to the viability of these populations. No species of special concern are anticipated to experience direct impacts due to construction or operation of the Plant.

Plant Life: The Project will result in the loss of negligible amount of pasture land, when measured on a county- or state-wide basis. No species of special concern will be impacted by the Project.

Temporary and Permanent Housing: The region has experienced increased demand for permanent and temporary housing as the result of the continued expansion of resource production. The area has witnessed this increased activity since the early 2000's and as a result has steadily increased lodging resources in response. ONEOK and its construction contractor believe there is sufficient temporary housing already built or under construction in the Watford City area to accommodate temporary housing requirements for this Project; as such ONEOK does not anticipate a need to construct additional temporary housing. The temporary work force is expected to be well aware of the situation and willing to accept non-traditional lodging opportunities such as work camps if necessary.

Temporary and Permanent Skilled and Unskilled Labor: Construction of the Plant will require a work force of approximately 100 to 200 temporary employees. The construction employees will be comprised of both skilled and unskilled personnel. Skilled labor will include craft workers such as operating engineers, iron workers, welders, electricians, carpenters and boilermakers. The unskilled workforce will be comprised of common laborers who work closely with the skilled trades.

Once the Garden Creek Plant II is operational, it will require an additional 10 to 15 full-time employees. These personnel will be responsible for day-to-day operations, maintenance, and support of local gathering assets that supply the Plant.

4.5.4 Cumulative Effects of the Location of the Facility in Relation to Existing and Planned Facilities and Other Industrial Development

ONEOK is not aware of any new planned facilities or industrial developments at the Project Site. The introduction of additional gas processing capacity may result in development of additional gathering capacity to accommodate demands. Also as a

result of new processing capacity, there may be development of additional take-away capacity to bring the product to market.

4.6 Policy Criteria

The Commission may give preference to an applicant that will maximize benefits that result from the adoption of the following policies and practices, and in proper case may require the adoption of such policies and practices. The Commission may also give preference to an applicant that will maximize interstate benefits.

4.6.1 Policies and Commitments to Limit Environmental Impact

ONEOK is committed to conducting its business in compliance with all applicable environmental laws and regulations. These laws, regulations and standards are designed to safeguard the environment, human health, wildlife, and natural resources. Our commitment to observe them faithfully is an integral part of our business and our values.

ONEOK will make environmental considerations contained in the permits and authorizations received for this Project a priority. ONEOK will conduct its activities with the objectives of providing a healthful and safe workplace for our employees, preventing accidents and environmental incidents, and controlling emissions and wastes to below harmful levels.

ONEOK will require all persons and firms providing service to it to conduct their work in compliance with environmental conditions, permit authorizations, and regulations, and will hold them accountable for their actions in that regard.

4.6.2 Recycling of the Conversion Byproducts and Effluents

There are no direct conversion byproducts for this gas process. Garden Creek Plant II is designed to separate wellhead gas and any accompanying fluids into various commercial product streams with the exception of produced water that is entrained with the untreated feed stock. Produced water is removed from the Plant inlet separators, which operate at 600 psig, to a secondary vessel operating at 60 psig. This reduced pressure allows any remaining entrained volatile components to separate as a gas from the water prior to transferring the remaining water to a storage tank at atmospheric pressure. The Plant will have 3 zeolite mole sieve beds for dehydrating the associated gas upstream of the cryo-thermal portion of the Plant. The zeolite has a limited operational life span and will require periodic replacement. The frequency of zeolite replacement will vary depending upon the qualities of the gas entering the Plant for processing. The zeolite will be removed, as necessary, and processed (e.g., recover recyclable portions and dispose of the remainder properly) by the vendor. The water vapor is condensed at 600 psig and moved to the same secondary vessel that treats the produced water from the inlet separators. From there, the produced water is removed by a third party vendor for treatment and disposal. Used lube oils from operating compressors are stored in an atmospheric storage tank prior to being removed by a third party vendor for treatment and recycling.

4.6.3 Energy Conservation Through Location, Process and Design

The siting of the Plant in close proximity to wellhead and gathering systems reduces emissions associated with shipping raw feed gas over greater distances. Waste energy is generated in the expansion of cooled inlet gas to the cryo-thermal gas plant. The gas is first chilled to condense liquids. After separation, the temperature of the gas is lowered further via the process of throttling expansion in the expander section of the turbo-expander. The expander is tied by an integral shaft to a compressor to compress gas from the stabilizer overhead prior to the residue compressors. The mechanical efficiencies of the turbo-expanders can achieve 90 percent.

4.6.4 Training and Utilization of Available Labor in This State for the General and Specialized Skills Required

Gas plant construction is a specialized niche construction market and the labor force needed to build the Plants will be primarily comprised of a non-local workforce. The primary contractor will be a non-local contractor, supplying specialized skilled labor. ONEOK will draw upon the local labor force to supply general laborers. The workforce is anticipated to reach a peak of approximately 200 personnel of which up to 10 percent could be drawn upon locally.

4.6.5 Use of a Primary Energy Source or Raw Material Located Within the State

The raw feed gas supplying the proposed Plant will be produced and processed primarily in this state with some additional gas being supplied from eastern Montana. The Plant products will be shipped to delivery points in-state and will then be transported out-of-state.

4.6.6 Nonrelocation of Residents

No residences shall be displaced or require relocation due to the Project.

4.6.7 The Dedication of an Area Adjacent to the Facility to Land Uses Such As Recreation, Agriculture, or Wildlife Management

ONEOK does not own property adjacent to the proposed Project suitable for recreation, agricultural, or wildlife management purposes. The current land use of properties adjacent to the Project is agricultural/range land (see aerial photograph in Appendix B).

4.6.8 Economies of Construction and Operation

ONEOK has designed the Plant to take advantage of the Project Site's proximity to existing electrical supply and gathering system piping for its location. The Plant will use an existing gathering line system to deliver raw feed stock to the Plant from the gathering fields and generate new delivery points for processed natural gas and Y-grade (unfractionated) NGL. The Plant's location and design are clear examples of creating an economy of scale project concept, achieving additional production capacity in the most minimally intrusive and most efficient way possible, in terms of new infrastructure development.

4.6.9 Secondary Uses of Appropriate Associated Facilities for Recreation and the Enhancement of Wildlife

Construction of the Plant will result in the development of an industrial facility and a setting not typically suitable for recreational or wildlife application.

4.6.10 Use of Citizen Coordinating Committees

ONEOK has established and maintained a good relationship with the local residents through its present operating gathering systems in the area and Garden Creek Gas Plant I. Through these relationships ONEOK has maintained several grass roots communication channels to inform local residents regarding the developments associated with the Plant.

4.6.11 A Commitment of a Portion of the Transmitted Product for Use in This State

The raw feed gas supplying the proposed Plant will be supplied and processed entirely in-state. The products of the Plant will be transported to delivery or transfer points located both in-state and out-of-state. Natural gas, NGL and natural gasoline end users in North Dakota may contact marketers to arrange purchase and delivery to their location using existing ONEOK points of sale.

4.6.12 Labor Relations

ONEOK does not anticipate encountering any adverse labor relations on this Project. The labor market in the Project area is supportive of the oil and gas industry.

4.6.13 The Coordination of Facilities

ONEOK, through its corporate parent, ONEOK Partners, L.P. is actively pursuing natural gas gathering and processing development projects in northwestern North Dakota. ONEOK will coordinate the construction of the Plant with its other gas gathering/processing construction projects. Coordinating construction activities will result in greater efficiencies by using much of the same labor pool and often the same construction equipment.

4.6.14 Monitoring of Impacts

ONEOK will coordinate with its primary contractor, Linde Process Plants, the oversight responsibilities for construction activities at the Project Site. Environmental responsibilities shall be coordinated in the same manner.

4.6.15 Problems Raised by Federal Agencies, Other State Agencies, and Local Entities

ONEOK has initiated consultations with several Federal, state, and local authorities who have environmental oversight authority. The purpose of these consultations is the identification of potential natural resource issues related to the Plant construction. Responding agencies have not raised any concerns. ONEOK will remain responsive to agency input through construction, restoration and operations.

SECTION 5: Mitigative Measures

ONEOK's commitment to minimize environmental impacts is a key mitigation element. As described previously, ONEOK's design took into consideration various elements to maximize efficiencies while minimizing impacts to the environment. This combination of actions effectively mitigates the impacts of the Plant.

SECTION 6: List of Preparers

Russ Clark, P.E.

Project Engineer

ONEOK Partners, 100 W. Fifth Street, Tulsa, OK 74103

B.S. Chemical Engineering, Montana State University - Bozeman

Mr. Clark has worked as an engineer in the petroleum and natural gas industries for 10 years. As a process engineer, he has designed and overseen the implementation of several natural gas projects in the past two years. Mr. Clark is a licensed Professional Engineer by examination in the State of Colorado.

Joseph Soerries, P.E.

Project Manager

ONEOK Partners, 100 W. Fifth Street, Tulsa, OK 74103

B.S. Mechanical Engineering, University of Tulsa.

Mr. Soerries has worked in many different positions in the petroleum and natural gas industries for over 30 years. As a project manager, he has managed over 10 natural gas processing plants in the past twenty years. Since 1982, Mr. Soerries has been a licensed Professional Engineer by examination in the State of Oklahoma.

William McCarthy, C.W.B.

Senior Environmental Compliance Analyst

E3 Environmental, LLC, 817 Vandalia Street, St. Paul, MN 55114

B.S. Wildlife Biology, Michigan State University and M.S. Wildlife Biology, University of Minnesota – Twin Cities

Mr. McCarthy is an environmental compliance analyst with over 15 years of environmental consulting experience working with various energy assets and regulatory agencies. As a compliance analyst he has managed the environmental requirements for facility siting, pipeline routing, federal licensing, and various federal, state and local permits. Mr. McCarthy is a certified wildlife biologist and in this role conducts and coordinates field studies, agency consultations, mitigation and avoidance plans.

Katie Schmidt, EIT

Environmental Engineer and Compliance Analyst

E3 Environmental, LLC, 817 Vandalia Street, St. Paul, MN 55114

B.S. Civil Engineering with an emphasis in Environmental Engineering-Iowa State University. Ms. Schmidt has pursued a career focused on regulatory compliance. Her experience includes providing permitting and compliance support associated with maintaining assets for safe and reliable distribution and transmission of energy throughout the continent. Ms. Schmidt has developed a broad working knowledge of NPDES construction stormwater compliance by working with distribution systems

located in MN, OK, TX, LA and AR. Ms Schmidt also has extensive experience working with transmission assets involving COE permitting, ESA and SHPO consultations.

Judith Cooper, Ph.D.

Archaeologist/ Principle Investigator

SWCA, Inc., 116 North 4th Street, Suite 200, Bismarck, ND 58501

B.A. Anthropology, Pennsylvania State University and Ph.D. and M.A. Anthropology, Southern Methodist University

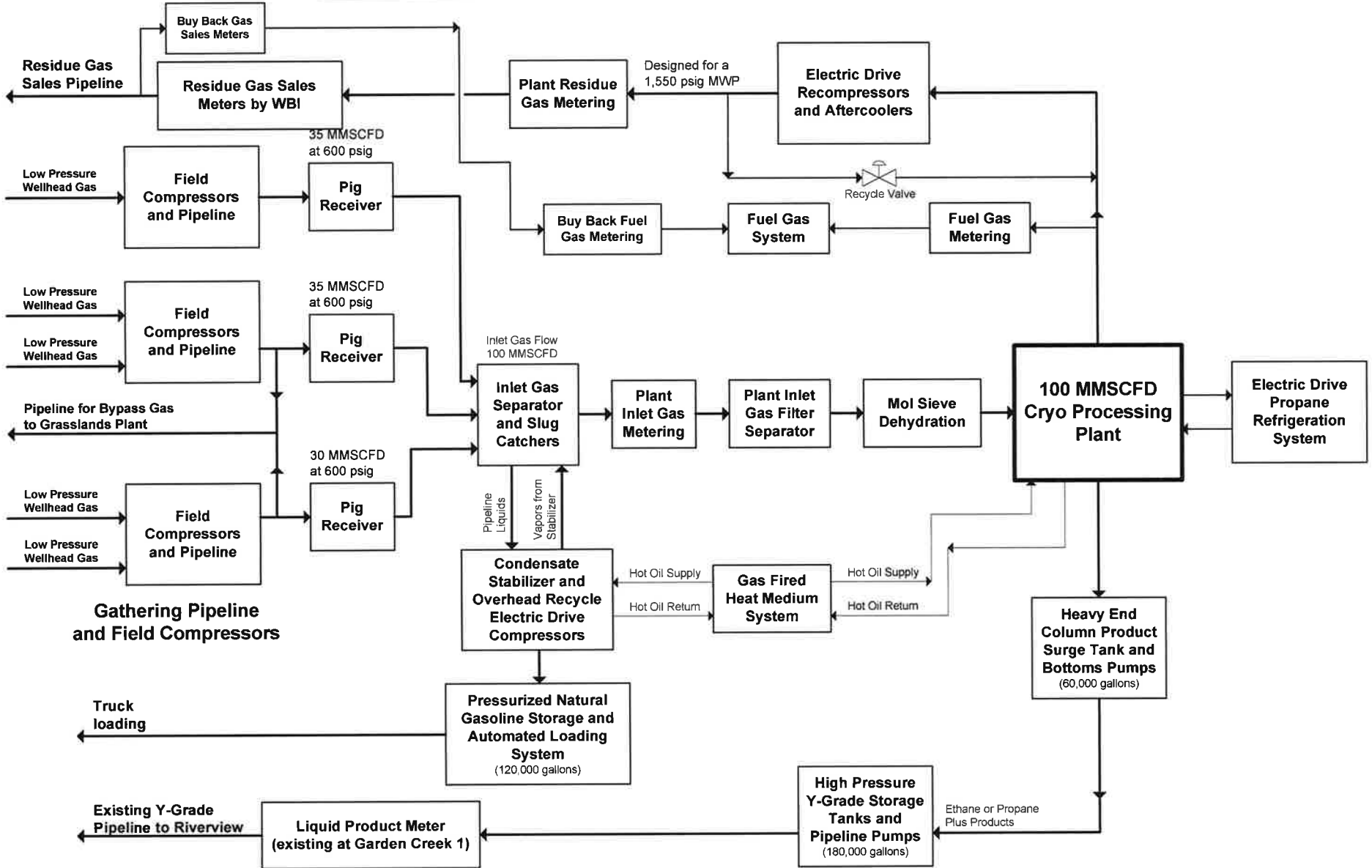
Dr. Cooper has over ten years of experience in North American archaeology and has worked on field (survey, testing, and recovery) and research projects in the northern Great Plains and Rocky Mountains. Dr. Cooper is experienced in federal and state cultural resources law and regulations, including Section 106 of the National Historic Preservation Act. As the Cultural Resources Lead in the SWCA's Bismarck office, she serves as a member of multi-disciplinary project teams to assure cultural resource concerns are appropriately addressed during the regulatory process.

APPENDIX A: ENGINEERING DOCUMENTS

Garden Creek 2 Plant

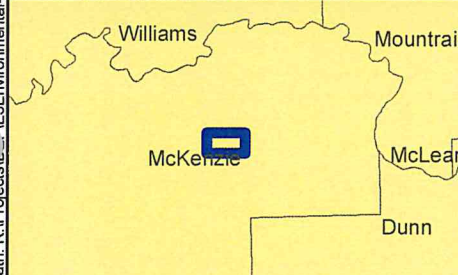
Block Diagram for a New 100 MMSCFD Processing Plant

August 20, 2012

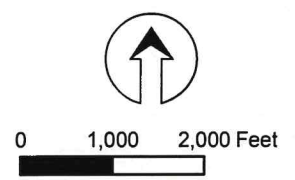


APPENDIX B: EXCLUSION AND AVOIDANCE MAPS

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- Project Area
- Section Boundary
- 0.5-mile Buffer
- Stream/River
- Waterbody
- NWI Wetland



**Garden Creek Gas Plant
Phase II**
McKenzie County, North Dakota

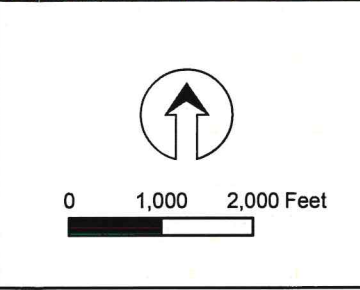
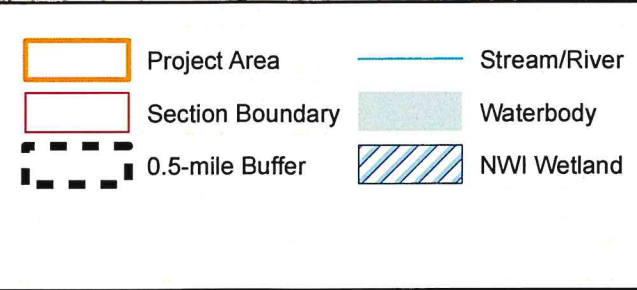
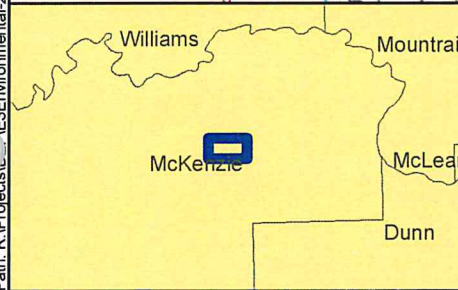
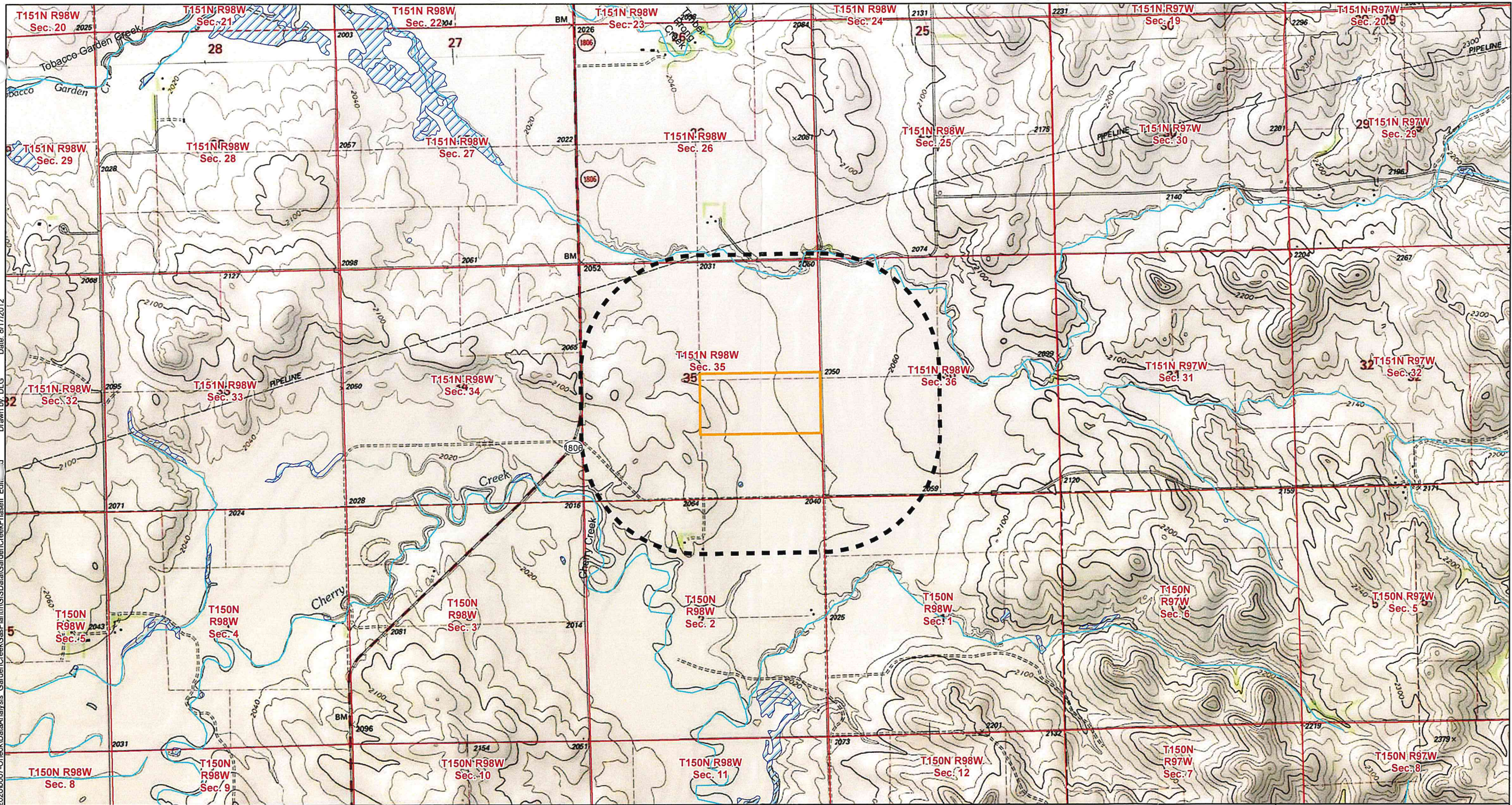


Enhancing Execution
with Experience



ONEOK
ROCKIES MIDSTREAM
A SUBSIDIARY OF ONEOK PARTNERS

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**Garden Creek Gas Plant
Phase II**
McKenzie County, North Dakota

APPENDIX C: CONSULTATIONS



817 Vandalia Street
Suite 100
St Paul, MN 55114

February 9, 2012

Mr. Jeffrey Towner, Field Supervisor
U.S. Fish and Wildlife Service
North Dakota Field Office
3425 Miriam Avenue
Bismarck, ND 58501-7926

RE: ONEOK Rockies Midstream, L.L.C. – Commercial Property Development
Federally Listed Species, USFWS Managed Lands, and Migratory Bird
Consultation

ONEOK Rockies Midstream, L.L.C. (ORM), a subsidiary of ONEOK Partners, L.P., Tulsa, Oklahoma, is considering further commercial development of the property adjacent to its existing Garden Creek Gas Plant. The parcel under consideration is the 80 acre plot as depicted on the attached map. Currently the project under consideration would be constructed during the 2nd or 3rd quarter of 2012 and would require approximately 18 months to complete.

The development ORM is considering is located in the SE 1/4 of Section 35, Township 151N, and Range 98W of McKenzie County, North Dakota. Aerial photographs and topographic maps of the project location are attached.

The purpose of this request is to compile U.S. Fish and Wildlife Service's (USFWS) comments on environmental topics that are relevant to the North Dakota Public Service Commission's (PSC) siting requirements for Energy Conversion facilities. On February 8th, 2012, E3 conducted a web-based consultation using USFWS's IPaC system. This request has been prepared to augment that effort and facilitate a thorough project review.

Federally Listed Species Analysis:

The results of the search on February 9th, 2012 found the following:


Whooping crane (*Grus americana*) – Endangered
Sprague's pipit (*Anthus spagueii*) - Candidate
Piping plover (*Charadrius melodus*) – Threatened
Least tern (*Sternula antillarum*) – Endangered
Pallid sturgeon (*Scaphirhynchus albus*) – Endangered
Dakota skipper (*Hesperia dacotae*) – Candidate
Black-footed ferret (*Mustela nigripes*) - Endangered
Gray wolf (*Canis lupus*) – Endangered

ORM also understands that in North Dakota, the breeding season is typically defined as occurring annually from February 1 through July 15.

In recognition of these facts, ORM is considering construction during the 2nd and 3rd quarter of 2012 and maintain an active construction site through plan commissioning and final restoration which is anticipated to occur approximately 18 months later. The proposed project schedule would take place during the 2012 breeding season, however is directly adjacent to the existing Garden Creek Gas Plant. Migrants returning to this area have already encountered an active site which serves as a deterrent to breeding birds. ORM seeks confirmation that the proposed measures adequately avoid and mitigate potential impacts to migratory birds.

E3 Environmental, LLC has been retained by ORM to provide environmental consulting support for this project. Should you have any questions or require additional information, please contact me at 651.282.0650 or wmcCarthy@go2e3.com.


Sincerely,



William F. McCarthy
Project Manager
E3 Environmental, LLC

Enclosures: Project maps – USGS topographic
Aerial photograph

cc: E3 Project Files

U.S. FISH AND WILDLIFE SERVICE ECOLOGICAL SERVICES ND FIELD OFFICE	
Project as described will have no significant impact on fish and wildlife resources. No endangered or threatened species are known to occupy the project area and/or are not likely to be adversely affected. IF PROJECT DESIGN CHANGES ARE MADE, PLEASE SUBMIT PLANS FOR REVIEW.	
3-26-12	
Date	Jeffrey K. Towner Field Supervisor



817 Vandalia Street
Suite 100
St Paul, MN 55114

February 9, 2012

Mr. Jeffrey Towner, Field Supervisor
U.S. Fish and Wildlife Service
North Dakota Field Office
3425 Miriam Avenue
Bismarck, ND 58501-7926

RE: ONEOK Rockies Midstream, L.L.C. – Commercial Property Development
Federally Listed Species, USFWS Managed Lands, and Migratory Bird
Consultation

ONEOK Rockies Midstream, L.L.C. (ORM), a subsidiary of ONEOK Partners, L.P., Tulsa, Oklahoma, is considering further commercial development of the property adjacent to its existing Garden Creek Gas Plant. The parcel under consideration is the 80 acre plot as depicted on the attached map. Currently the project under consideration would be constructed during the 2nd or 3rd quarter of 2012 and would require approximately 18 months to complete.

The development ORM is considering is located in the SE 1/4 of Section 35, Township 151N, and Range 98W of McKenzie County, North Dakota. Aerial photographs and topographic maps of the project location are attached.

The purpose of this request is to compile U.S. Fish and Wildlife Service's (USFWS) comments on environmental topics that are relevant to the North Dakota Public Service Commission's (PSC) siting requirements for Energy Conversion facilities. On February 8th, 2012, E3 conducted a web-based consultation using USFWS's IPaC system. This request has been prepared to augment that effort and facilitate a thorough project review.

Federally Listed Species Analysis:

The results of the search on February 9th, 2012 found the following:

Whooping crane (*Grus americana*) – Endangered
Sprague's pipit (*Anthus spagueii*) - Candidate
Piping plover (*Charadrius melodus*) – Threatened
Least tern (*Sternula antillarum*) – Endangered
Pallid sturgeon (*Scaphirhynchus albus*) – Endangered
Dakota skipper (*Hesperia dacotae*) – Candidate
Black-footed ferret (*Mustela nigripes*) - Endangered
Gray wolf (*Canis lupus*) – Endangered

E3 has reviewed the available data describing the life history, critical habitat, and conservation measures associated with each species to evaluate the potential effects of the project on these resources. The results of this analysis are as follows:

Whooping crane: The whooping crane is a large bodied marsh species that breeds primarily in Canada and winters in the Gulf of Mexico. This species has been closely studied and monitored in recent years due to its small population. North Dakota provides migratory habitat for the species, providing roosting and feeding opportunities during migration. This species prefers larger wetland complexes for roosting habitat, typically using adjacent uplands for foraging opportunities. The project under consideration will not result in a loss of crane habitat. Gas plant construction involves temporary impacts, with a post-construction restoration standard of restoring disturbed areas to their original pre-construction condition. Potential impacts are anticipated to be limited to the time period during active construction should it coincide with the spring migration period. Spring migration by the Aransas/Wood Buffalo population from the Texas Gulf Coast begins between the end of March and mid-April, with the last birds generally leaving Texas by the first of May. Experienced breeders are among the first to arrive in Canadian nesting areas in late April, with the rest of the birds arriving throughout the following 6-8 weeks.

Project precautionary measures would be implemented if a whooping crane is sighted in or near the project area. ORM would voluntarily suspend all heavy equipment operation activities and notify the USFWS should a whooping crane be spotted within 0.5 mile of the project area. Heavy equipment activities would resume upon the departure of the individual(s). The proposed project will not result in a loss of crane habitat; construction activities would present a fairly prominent feature to be avoided relative to its surrounding landscape.

Piping plover: The piping plover is associated with shorelines along small alkaline lakes, large reservoir beaches, and river islands and adjacent sand pits. Breeding birds select wide beaches with highly clumped vegetation covering less than 25% of the area. Current breeding range on the Northern Great Plains extends south along major prairie rivers including the Yellowstone and Missouri, and in alkali wetlands including those in northeastern Montana and North Dakota. The proposed project will not result in a loss of Piping plover habitat, as it is not located within/adjacent to preferred habitat.

Least tern: The interior population(s) of the least tern has historically been associated with large river systems for breeding and migratory habitats. Breeding birds are known to breed in colonies, utilizing sandbar habitat common to larger rivers. The Missouri River is known to host remnant breeding populations of terns, which is greater than 25 miles from the project site. The proposed project will not result in a loss of Least tern habitat, as it is not located within/adjacent to preferred habitat

Pallid sturgeon: The pallid sturgeon preferred habitat includes the benthic environment associated with swift waters of large turbid, free-flowing rivers with braided channels, dynamic flow patterns, periodic flooding of terrestrial habitats, and requiring extensive micro habitat diversity. The species inhabits the Missouri and Mississippi Rivers from Montana to Louisiana. The proposed project will not result in a loss of Pallid sturgeon habitat, as it is not located within/adjacent to preferred habitat.

Gray wolf: The gray wolf is a large carnivore that through conservation measures has experienced strong population recovery, particularly in the Great Lakes states of the upper Midwest. As populations rebound, individuals may break from packs to explore opportunities to establish packs in unoccupied territory. Roaming individuals can cover great distances without establishing viable breeding populations in previously unoccupied habitat(s). This species is not tolerant of human disturbance and will tend to avoid interaction with humans. The activities associated with construction and later plant operations would likely serve as a deterrent to this species. Therefore, this project will have no effect on the species.

Black-footed ferret: The black-footed ferret is limited to open grasslands, steppe and shrub steppe habitat in close association with prairie dogs. They use underground burrows, typically made by prairie dogs, for resting and birthing. There is no known population in McKenzie County, North Dakota.

Based upon this analysis it is concluded that the proposed project will not result in the taking of or adverse impact to these listed species. Species that USFWS has listed as “candidate” or populations identified as “experimental” are not yet considered threatened or endangered and were not included in this study. ORM request your comments regarding this analysis.

USFWS Managed Lands:

Conservation programs such as Waterfowl Production Areas and wetland and grassland easements represent an important tool used by USFWS to identify and manage high quality wildlife habitat. A review of public records failed to identify any of these USFWS managed lands in the project study area. ORM requests confirmation regarding the presence or absence of USFWS managed lands within the proposed study area.

Migratory Bird Consultation:

USFWS administers various wildlife related mandates of national concern including the Migratory Bird Treaty Act (MBTA). ORM understands that unlike the Endangered Species Act, the MBTA has no provisions for the allowance of a take and therefore compliance may best be achieved by avoiding or minimizing the potential to interact with migratory species during the active breeding season.

ORM Rockies Midstream L.L.C.
Commercial Property Development
February, 2012



ORM also understands that in North Dakota, the breeding season is typically defined as occurring annually from February 1 through July 15.

In recognition of these facts, ORM is considering construction during the 2nd and 3rd quarter of 2012 and maintain an active construction site through plan commissioning and final restoration which is anticipated to occur approximately 18 months later. The proposed project schedule would take place during the 2012 breeding season, however is directly adjacent to the existing Garden Creek Gas Plant. Migrants returning to this area have already encountered an active site which serves as a deterrent to breeding birds. ORM seeks confirmation that the proposed measures adequately avoid and mitigate potential impacts to migratory birds.

E3 Environmental, LLC has been retained by ORM to provide environmental consulting support for this project. Should you have any questions or require additional information, please contact me at 651.282.0650 or wmcCarthy@go2e3.com.

Sincerely,

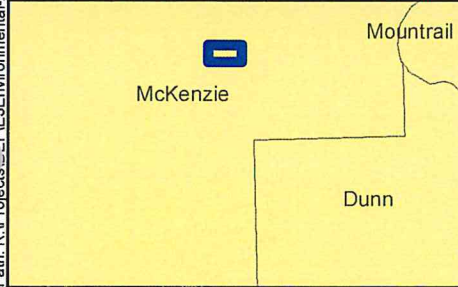
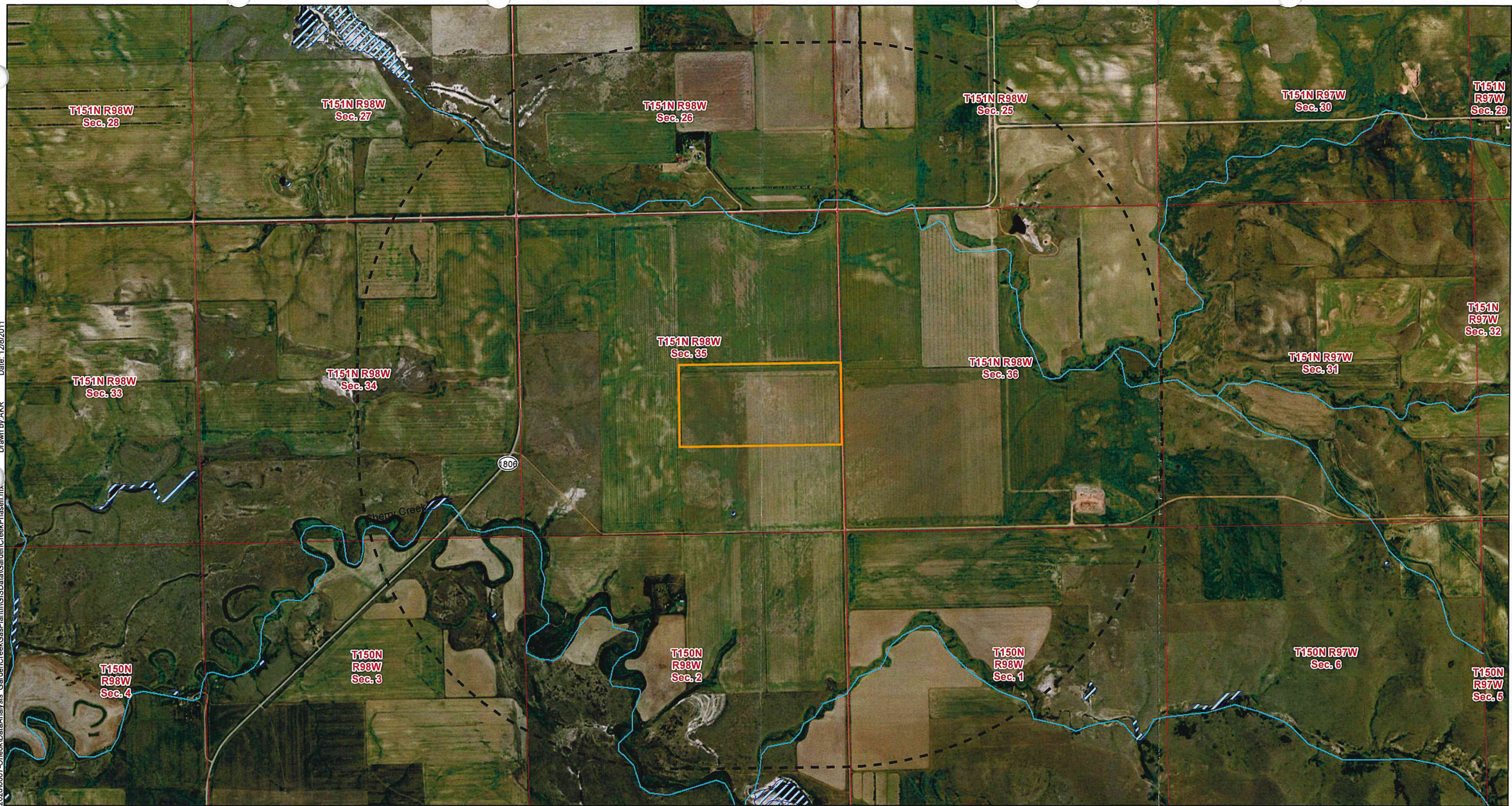








William F. McCarthy
Project Manager
E3 Environmental, LLC

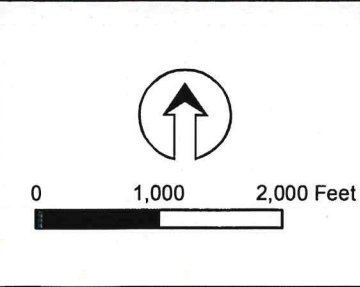
Enclosures: Project maps – USGS topographic
Aerial photograph

cc: E3 Project Files

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 Project Area	 Stream/River
 1-mile Buffer	 Waterbody
 Section Boundary	 NWI Wetland

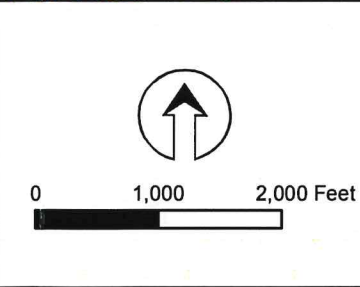
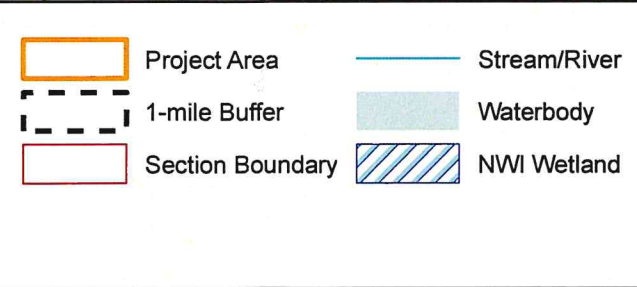
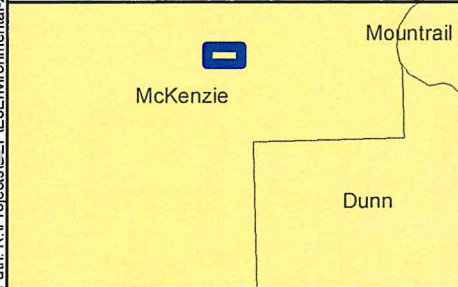
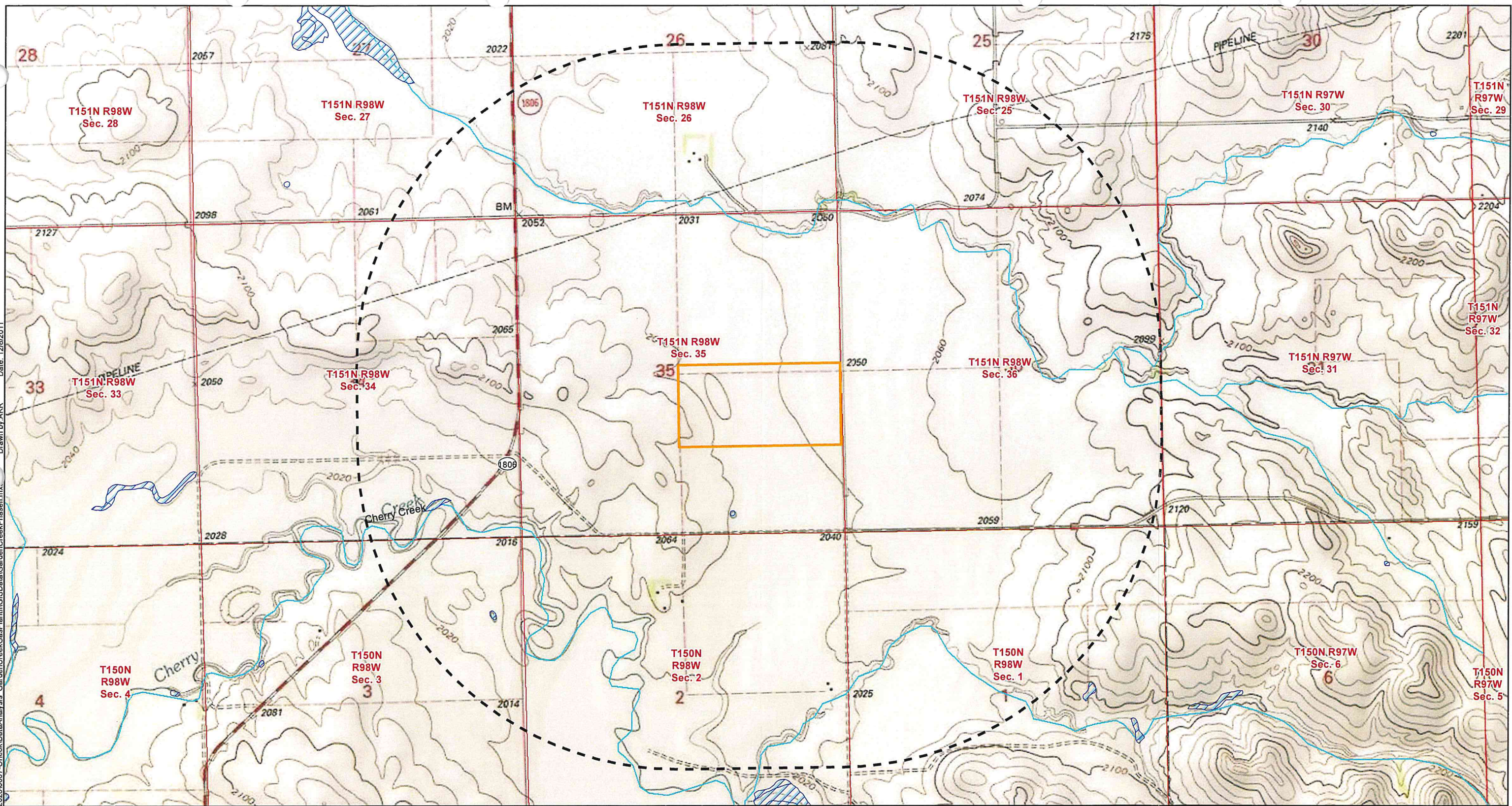


**Garden Creek Gas Plant
Phase II**
McKenzie County, North Dakota


**Enhancing Execution
with Experience**

**ONEOK
ROCKIES MIDSTREAM**
A SUBSIDIARY OF ONEOK PARTNERS

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**Garden Creek Gas Plant
Phase II**
McKenzie County, North Dakota

From: [Feilmeier, Marcy - FSA, Watford City, ND](mailto:Marcy.Feilmeier@nd.usda.gov)
To: [amanda.bergstrom](mailto:amanda.bergstrom@go2e3.com)
Subject: RE: ONEOK Rockies Midstream, L.L.C. - Commercial Property Development - FSA Consultation
Date: Friday, April 13, 2012 11:18:05 AM

Sorry, no GRP either!

Marcy L Feilmeier, CED
McKenzie County FSA Office
PO Box 604
Watford City, ND 58854-0604
PH: (701) 842-3628 Fax: (701) 842-6324
marcy.feilmeier@nd.usda.gov

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From: Amanda Bergstrom [mailto:abergstrom@go2e3.com]
Sent: Friday, April 13, 2012 11:11 AM
To: Feilmeier, Marcy - FSA, Watford City, ND
Subject: RE: ONEOK Rockies Midstream, L.L.C. - Commercial Property Development - FSA Consultation

Thank you Marcy. Were you also able to check whether there is any Grassland Reserve Program (GRP) within the area as well?

Amanda Bergstrom, EIT, LEED AP, CPESC
E3 Environmental, LLC
Office: 651-282-0656
Mobile: 952-454-5534
www.go2e3.com

From: Feilmeier, Marcy - FSA, Watford City, ND [mailto:Marcy.Feilmeier@nd.usda.gov]
Sent: Friday, April 13, 2012 10:49 AM
To: [amanda.bergstrom](mailto:amanda.bergstrom@go2e3.com)
Subject: RE: ONEOK Rockies Midstream, L.L.C. - Commercial Property Development - FSA Consultation

Amanda,

I conducted a review of the area requested. There is no CRP in the area encompassed by the dashed line.

Marcy L Feilmeier, CED
McKenzie County FSA Office

PO Box 604
Watford City, ND 58854-0604
PH: (701) 842-3628 Fax: (701) 842-6324
marcy.feilmeier@nd.usda.gov

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From: Amanda Bergstrom [<mailto:abergstrom@go2e3.com>]
Sent: Friday, March 30, 2012 3:41 PM
To: Feilmeier, Marcy - FSA, Watford City, ND
Cc: Ryan Ledin
Subject: ONEOK Rockies Midstream, L.L.C. - Commercial Property Development - FSA Consultation

Dear Ms. Feilmeier,

ONEOK Rockies Midstream, L.L.C. (ORM), a subsidiary of ONEOK Partners, LP, Tulsa, Oklahoma, is considering commercial development of the property adjacent to its existing Garden Creek Gas Plant. The parcel under consideration is an 80-acre plot as depicted by an orange line on the attached aerial and topographic maps. The site is located in the SE ¼ of Section 35, Township 151N, and Range 98W of McKenzie County, North Dakota. The project is anticipated to be constructed during the 2nd or 3rd quarter of 2012 and would require approximately 18 months to complete.

The purpose of this correspondence is to request a review of the 80-acre project site for the presence of lands that are enrolled in the FSA's Conservation Reserve Program (CRP) or Grassland Reserve Program. E3 Environmental, LLC has been retained by ORM to provide environmental consulting support for this project. Please contact me if you have any questions or require additional information.

Thank you,

Amanda Bergstrom, EIT, LEED AP, CPESC
E3 Environmental, LLC
817 Vandalia Street, Suite 100
St. Paul, MN 55114
Office: 651-282-0656
Mobile: 952-454-5534
www.go2e3.com



Enhancing Execution
with Experience



Please consider the environment before printing this e-mail.

From: Feilmeier, Marcy - FSA, Watford City, ND
To: amanda.bergstrom
Subject: RE: ONEOK Rockies Midstream, L.L.C. - Commercial Property Development - FSA Consultation
Date: Friday, April 13, 2012 10:49:54 AM

Amanda,

I conducted a review of the area requested. There is no CRP in the area encompassed by the dashed line.

Marcy L Feilmeier, CED
McKenzie County FSA Office
PO Box 604
Watford City, ND 58854-0604
PH: (701) 842-3628 Fax: (701) 842-6324
marcy.feilmeier@nd.usda.gov

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Thank you,

Amanda Bergstrom, EIT, LEED AP, CPESC

E3 Environmental, LLC

817 Vandalia Street, Suite 100

St. Paul, MN 55114

Office: 651-282-0656

Mobile: 952-454-5534

www.go2e3.com



Please consider the environment before printing this e-mail.

Amanda Bergstrom

From: Amanda Bergstrom <abergstrom@go2e3.com>
Sent: Friday, March 30, 2012 3:41 PM
To: 'Feilmeier, Marcy - FSA, Watford City, ND'
Cc: Ryan Ledin (rledin@go2e3.com)
Subject: ONEOK Rockies Midstream, L.L.C. - Commercial Property Development - FSA Consultation
Attachments: GardenCreekPhaseII_Topo.pdf; GardenCreekPhaseII_Aerial.pdf

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Thank you,

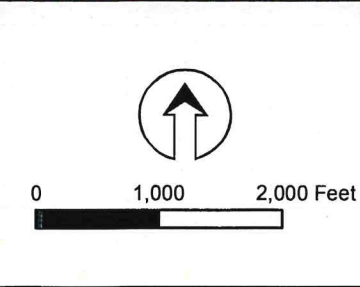
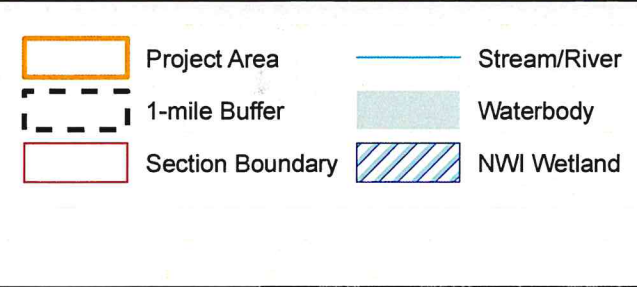
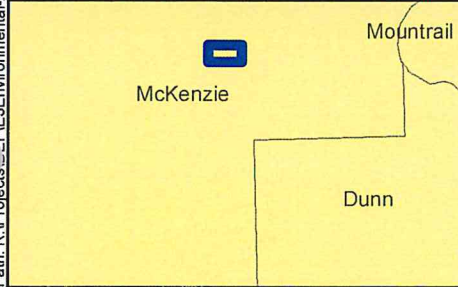
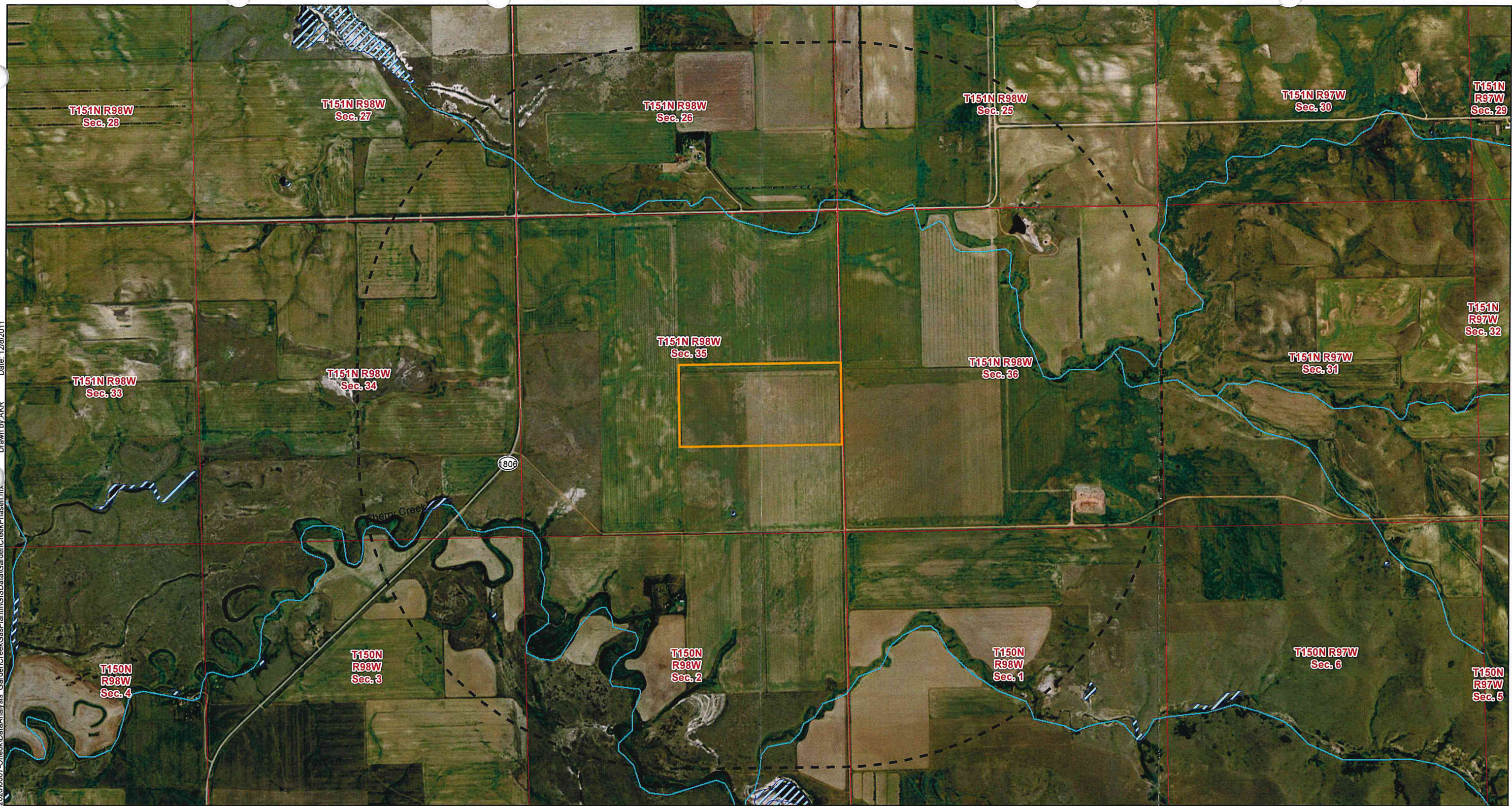
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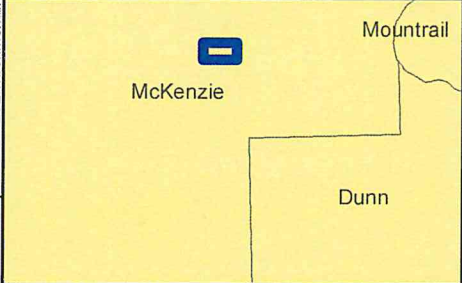
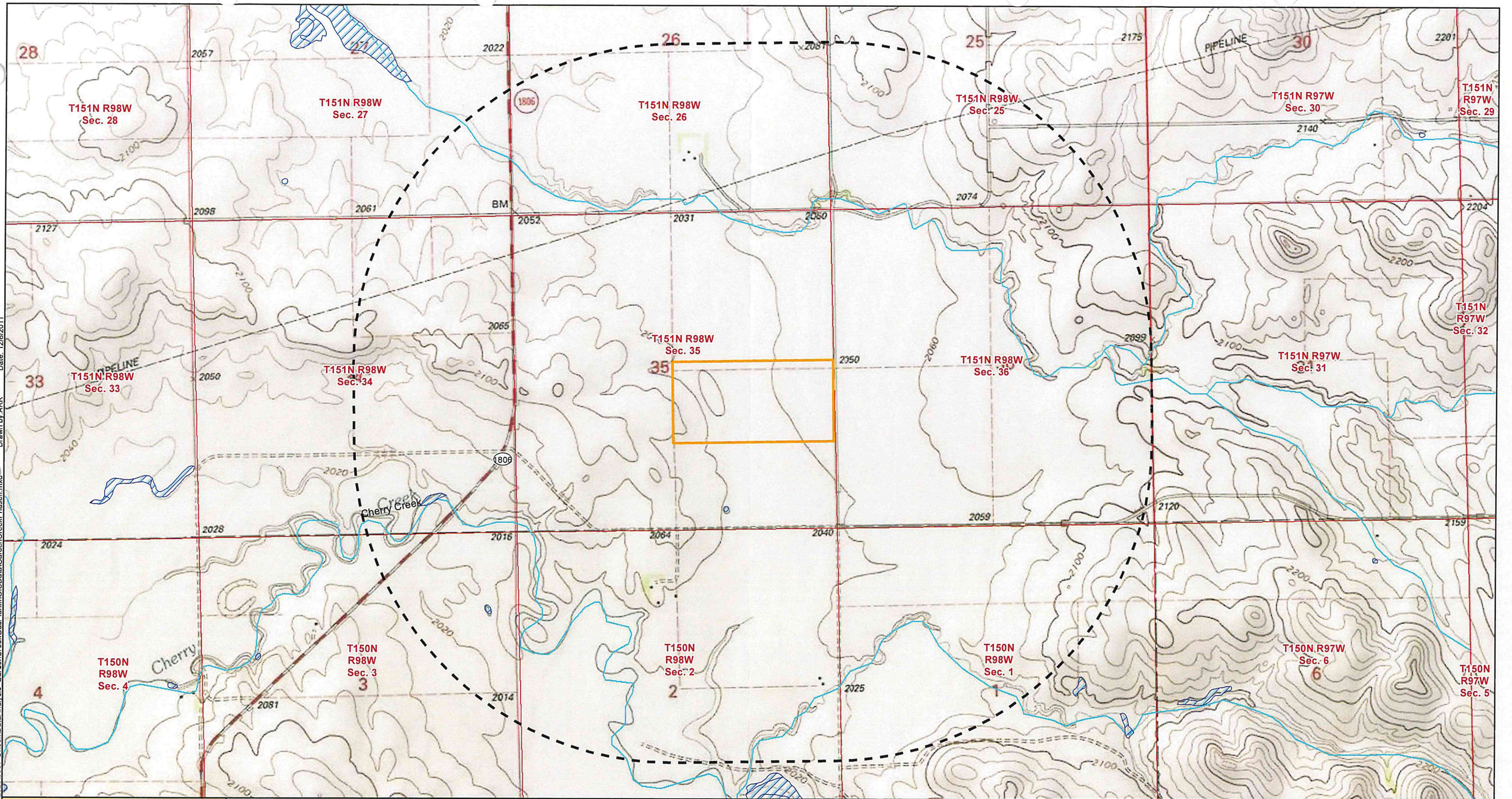
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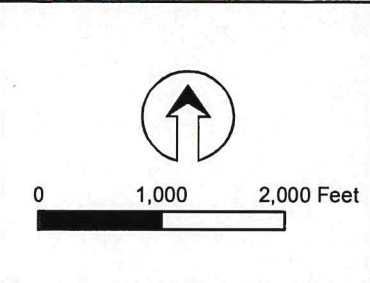


**Garden Creek Gas Plant
Phase II**
McKenzie County, North Dakota

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	Project Area		Stream/River
	1-mile Buffer		Waterbody
	Section Boundary		NWI Wetland



**Garden Creek Gas Plant
Phase II**
McKenzie County, North Dakota



Enhancing Execution
with Experience



ONEOK
ROCKIES MIDSTREAM
A SUBSIDIARY OF ONEOK PARTNERS



**STATE
HISTORICAL
SOCIETY
OF NORTH DAKOTA**

Jack Dalrymple
Governor of North Dakota

**North Dakota
State Historical Board**

Gereld Gerntholz
Valley City - President

Calvin Grinnell
*New Town - Vice
President*

A. Ruric Todd III
Jamestown - Secretary

Albert I. Berger
Grand Forks

Diane K. Larson
Bismarck

Chester E. Nelson, Jr.
Bismarck

Margaret Puetz
Bismarck

Sara Otte Coleman
*Director
Tourism Division*

Kelly Schmidt
State Treasurer

Alvin A. Jaeger
Secretary of State

Mark Zimmerman
*Director
Parks and Recreation
Department*

Francis Ziegler
*Director
Department of
Transportation*

Merlan E. Paaverud, Jr.
Director

*Accredited by the
American Association
of Museums since 1989*

March 30, 2012

Judith R. Cooper
Principal Investigator
SWCA Environmental Consultants
116 North 4th Street, Suite 200
Bismarck, North Dakota 58501

NDSHPO REF.: 12-0839 PSC ONEOK Rockies Midstream 80-Acre Potential
Commercial Development Project, McKenzie County, North Dakota, Class I and Class
III CRI Report and Unanticipated Discovery Plan
[T151N R98W Section 35, N1/2-SE1/4]

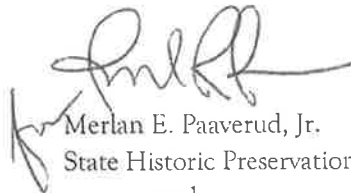
Dear Judy:

We have reviewed correspondence and project documents for 12-0839 PSC Class I and
III CRI Report: "A Class I and Class III Cultural Resource Inventory of the ONEOK
Rockies Midstream 80-Acre Potential Commercial Development Project, McKenzie
County, North Dakota," by Adam D. Leroy (SWCA, March 2012), and "Unanticipated
Discovery Plan for Cultural Resources Identified During Construction of the ONEOK
Rockies Midstream 80-Acre Potential Commercial Development Project, McKenzie
County, North Dakota," by Adam D. Leroy (SWCA, March 2012), and find them both
acceptable.

We concur with "*No Historical Properties Affected*" and "*No Significant Sites
Affected*" determinations, provided the project is of the nature stated and it takes place
in the location plotted and mapped in the project documentation.

Thank you for the opportunity to review this project. If you have questions please
contact either Paul Picha at ppicha@nd.gov or (701) 328-3574 or Susan Quinnell at
squinnell@nd.gov or (701) 328-3576.

Sincerely,



Merlan E. Paaverud, Jr.
State Historic Preservation Officer (North Dakota)
and

Director, State Historical Society of North Dakota
c: Patrick Fahn, ND PSC



March 29, 2012

Paul R. Picha, Chief Archeologist
State Historical Society of North Dakota
Archeology & Historic Preservation Division
612 East Boulevard Avenue
Bismarck, ND 58505-0830

RE: The ONEOK Rockies Midstream 80-Acre Potential Commercial Development Project, Section 35, Township 151 North, Range 98 West, McKenzie County, North Dakota

Dear Mr. Picha:

Enclosed are two reports prepared by SWCA Environmental Consultants (SWCA) for the proposed ONEOK Rockies Midstream (ONEOK) 80-Acre Potential Commercial Development Project. The first, entitled *A Class I and Class III Cultural Resource Inventory of the ONEOK Rockies Midstream 80-Acre Potential Commercial Development Area, Section 35, Township 151 North, Range 98 West, McKenzie County, North Dakota*, documents the results of a pedestrian inventory performed by SWCA for the project. The second, entitled *Unanticipated Discovery Plan for Cultural Resources Identified During Construction of the ONEOK Rockies Midstream 80-Acre Potential Commercial Development Area, Section 35, Township 151 North, Range 98 West, McKenzie County, North Dakota*, documents the procedures to be followed by ONEOK in the event cultural resources are inadvertently discovered during construction of the project.

SWCA performed the cultural resources inventory on behalf of E3 Environmental, LLC (E3). E3 has been contracted by ONEOK to prepare a permit application for the project to be submitted to the North Dakota Public Service Commission.

No cultural resources were found within the project area. It is recommended that the project be granted a determination of *No Historic Properties Affected* and *No Significant Sites Affected*. Please notify SWCA of the results of your review at the address listed below.

Sincerely,

A handwritten signature in black ink, appearing to read "Judith R. Cooper".

Judith R. Cooper, Ph.D.
Principal Investigator
SWCA Environmental Consultants
116 North 4th Street, Suite 200
Bismarck, ND 58501
(701) 258-6622

Cc: William McCarthy, E3 Environmental, 817 Vandalia Street, St. Paul, Minnesota 55114



Jack Dalrymple, Governor
Mark A. Zimmerman, Director

1600 East Century Avenue, Suite 3
Bismarck, ND 58503-0649
Phone 701-328-5357
Fax 701-328-5363
E-mail parkrec@nd.gov
www.parkrec.nd.gov

Ryan Ledin
E3 Environmental, LLC
www.go@e3.com

Re: ONEOK Rockies Midstream, LLC Commercial Property Development

Mr. Ledin,

The North Dakota Parks and Recreation Department (the Department) has reviewed the above referenced proposed project to develop property adjacent to the existing Garden Creek Gas Plant in McKenzie County, North Dakota.

Our agency scope of authority and expertise covers recreation and biological resources (in particular rare plants and ecological communities). The project as defined does not affect state park lands that we manage or Land and Water Conservation Fund recreation projects that we coordinate.

The North Dakota Natural Heritage biological conservation database has been reviewed to determine if any plant or animal species of concern or other significant ecological communities are known to occur within an approximate one-mile radius of the project area. Based on this review, there are no documented occurrences in our database within or adjacent to project area. Because this information is not based on a comprehensive inventory, there may be species of concern or otherwise significant ecological communities in the area that are not represented in the database. The lack of data for any project area cannot be construed to mean that no significant features are present. The absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources.

The Department recommends that the project be accomplished with minimal impacts and that all efforts be made to ensure that critical habitats not be disturbed in the project area to help secure rare species conservation in North Dakota. Regarding any reclamation efforts, we recommend that any impacted areas be revegetated with species native to the project area.

We appreciate your commitment to rare plant, animal and ecological community conservation, management and inter-agency cooperation to date. For additional information please contact Kathy Duttonhefner (701-328-5370 or kgduttonhefner@nd.gov) of our staff. Thank you for the opportunity to comment on this proposed project.

Sincerely,

Kathy Duttonhefner

Kathy Duttonhefner
Coordinator/Biologist
ND Parks and Recreation
Natural Resource Division
Natural Heritage/Nature Preserves

R.USNDNHI*2011-030 KD2/22/2012DL2.22.2012

.....
Play in our backyard!

Chris Schmidt

From: Ryan Ledin [rledin@go2e3.com]
Sent: Thursday, February 09, 2012 2:26 PM
To: 'kgduttonhefner@nd.gov'
Cc: 'William McCarthy'
Subject: ONEOK Rockies Midstream, L.L.C. – Commercial Property Development - Parks and Rec Consultation
Attachments: GardenCreekPhaseII_Aerial.pdf; GardenCreekPhaseII_Topo.pdf

Dear Ms. Duttonhefner,

ONEOK Rockies Midstream, L.L.C. (ORM), a subsidiary of ONEOK Partners, LP, Tulsa, Oklahoma, is considering further commercial development of the property adjacent to its existing Garden Creek Gas Plant. The parcel under consideration is the 80 acre plot as depicted on the attached map. Currently the project under consideration would be constructed during the 2nd or 3rd quarter of 2012 and would require approximately 18 months to complete.

The development ORM is considering is located in the SE 1/4 of Section 35, Township 151N, and Range 98W of McKenzie County, North Dakota. Aerial photographs and topographic maps of the proposed project location are attached.

The purpose of this request is to compile the North Dakota Parks and Recreation Department's (Department) comments on environmental topics that are relevant to the North Dakota Public Service Commission's (PSC) siting requirements for Energy Conversion facilities. It is our understanding that the Department administers the following state programs:

- State Park Lands
- Land and Water Conservation Fund
- Natural Heritage Inventory

We request a review of the area the project under consideration would take place (see attached maps) for the presence or absence of any lands, projects, and sensitive species that fall under the purview of these programs.

E3 Environmental, LLC has been retained by ORM to provide environmental consulting support for this project. Should you have any questions or require additional information, please contact me at 651.282.0651 or rledin@go2e3.com.

Sincerely,

Ryan Ledin, Associate Consultant
E3 Environmental, LLC
651-282-0651 (o)
612-868-9039 (m)
rledin@go2e3.com
www.go2e3.com

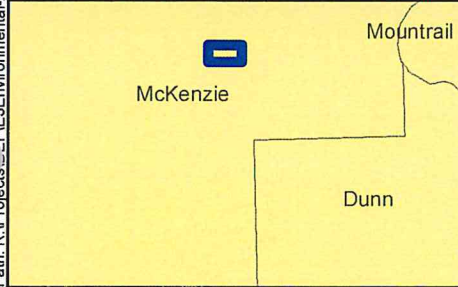
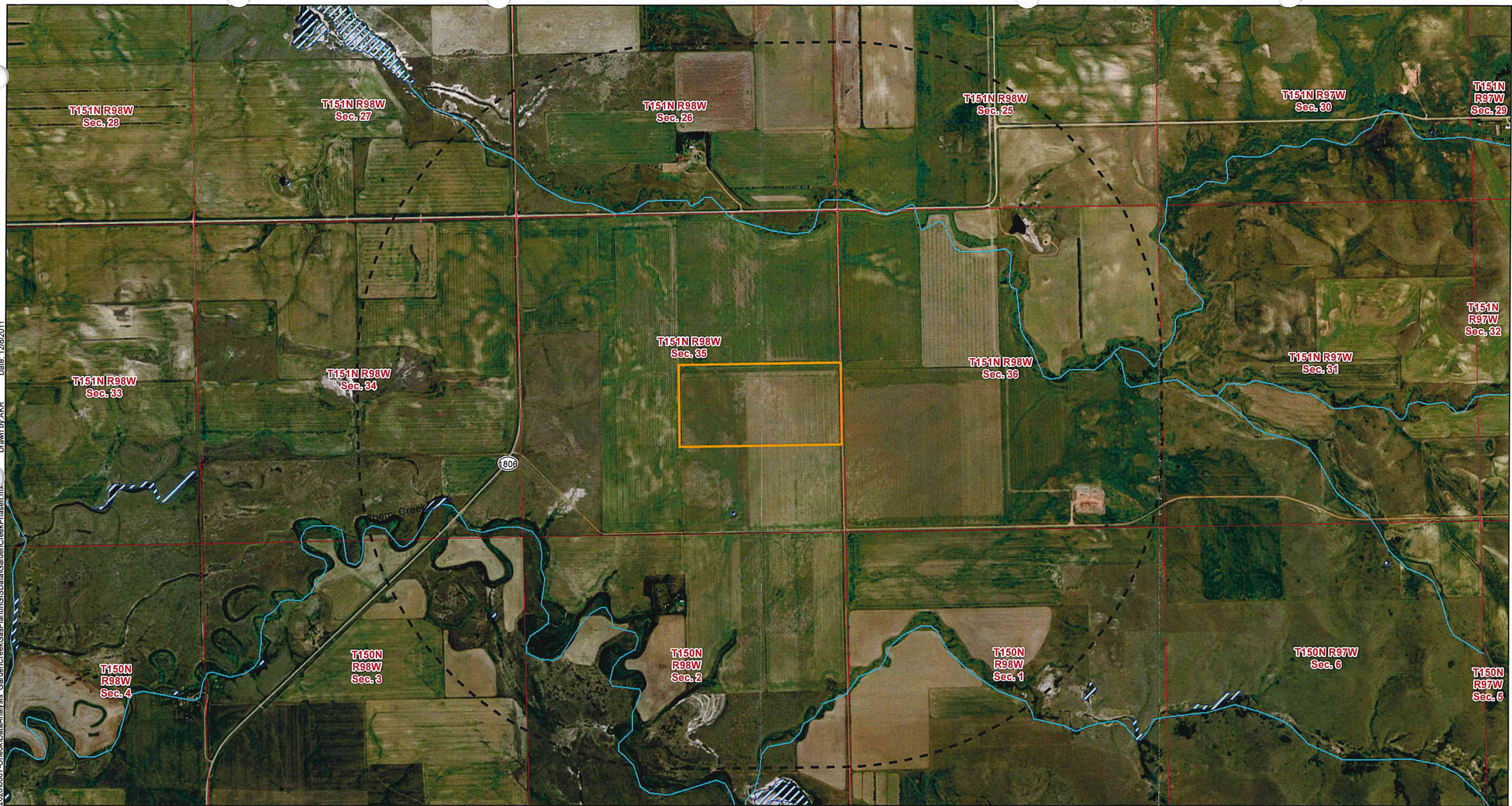


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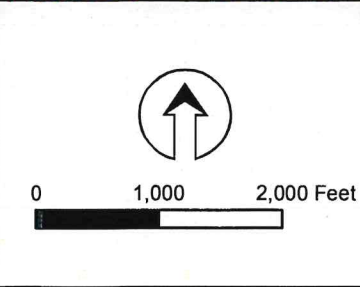


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Project Area	Stream/River
1-mile Buffer	Waterbody
Section Boundary	NWI Wetland

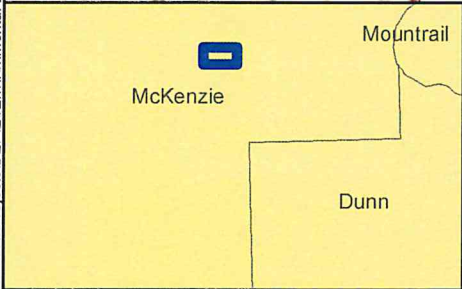
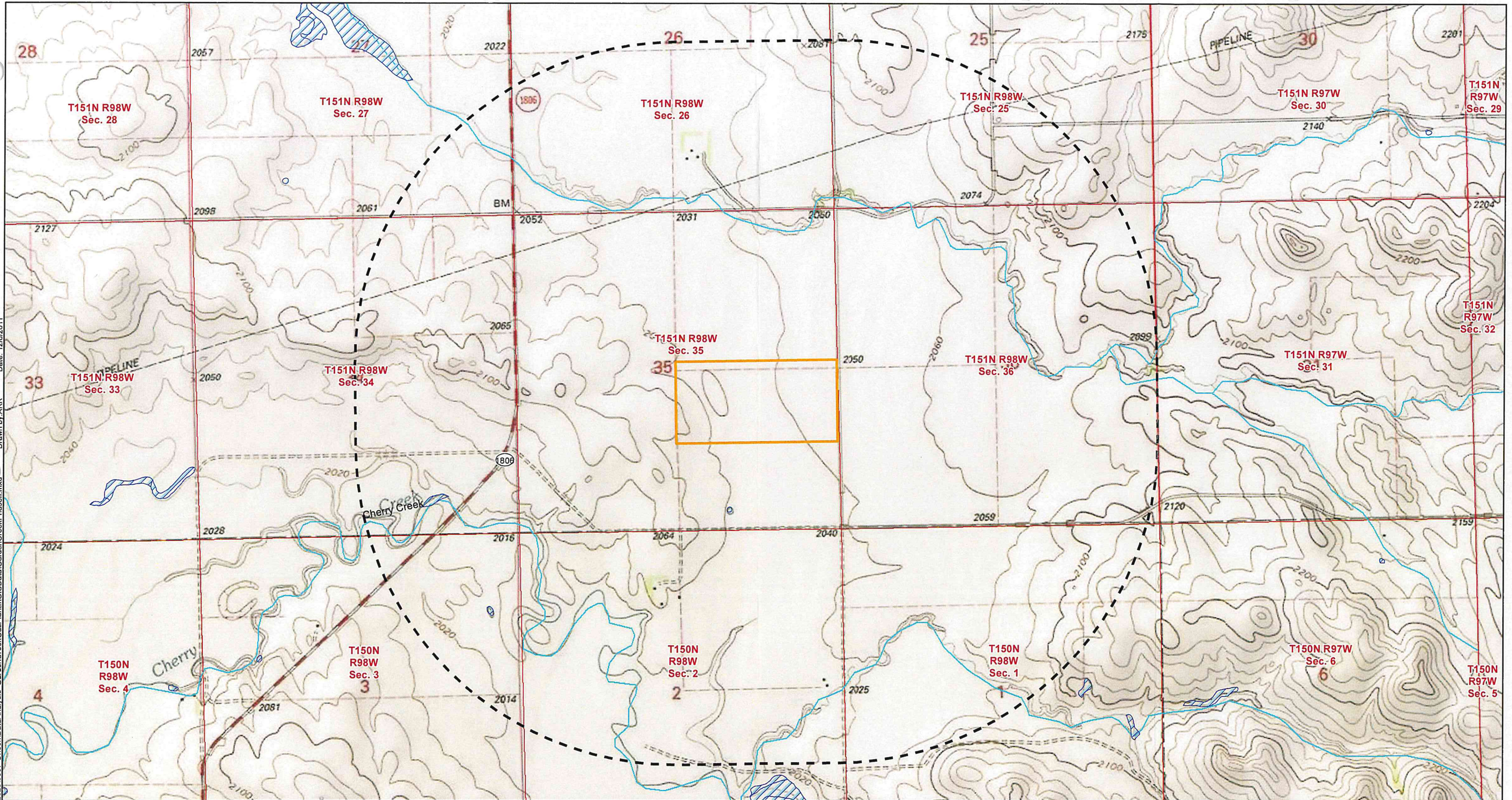








**Garden Creek Gas Plant
Phase II**
McKenzie County, North Dakota

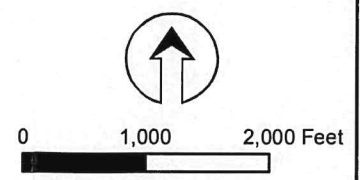
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ONEOK
ROCKIES MIDSTREAM
A SUBSIDIARY OF ONEOK PARTNERS


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-  Project Area
-  1-mile Buffer
-  Section Boundary
-  Stream/River
-  Waterbody
-  NWI Wetland



**Garden Creek Gas Plant
Phase II**
McKenzie County, North Dakota



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ONEOK
ROCKIES MIDSTREAM
A SUBSIDIARY OF ONEOK PARTNERS

From: [Haupt, Michael L.](#)
To: [Ryan Ledin](#)
Cc: [William McCarthy](#)
Subject: RE: ONEOK Rockies Midstream, L.L.C. - Commercial Property Development - State Lands School Trust Consultation
Date: Monday, February 13, 2012 2:08:33 PM

Ryan,

Good afternoon! There is no school trust surface within the proposed project area.
Thanks.

Michael L. Haupt

Land Management Professional, CPRM
North Dakota Department of Trust lands
PO Box 5523, Bismarck ND 58506-5523
701-328-1916
mhaupt@nd.gov

Note: You can track the real time status of your right-of-way application 24/7 at <http://www.land.nd.gov/surface/row/>, using either the ROW number or by entering at least the first three letters of the company name. By checking this site you can find the name, telephone number and email address of the person working on the application as well as its current status in real time.

From: Ryan Ledin [mailto:rledin@go2e3.com]
Sent: Thursday, February 09, 2012 2:28 PM
To: Haupt, Michael L.
Cc: 'William McCarthy'
Subject: ONEOK Rockies Midstream, L.L.C. - Commercial Property Development - State Lands School Trust Consultation

Dear Mr. Haupt,

ONEOK Rockies Midstream, L.L.C. (ORM), a subsidiary of ONEOK Partners, LP, Tulsa, Oklahoma, is considering further commercial development of the property adjacent to its existing Garden Creek Gas Plant. The parcel under consideration is the 80 acre plot as depicted on the attached map. Currently the project under consideration would be constructed during the 2nd or 3rd quarter of 2012 and would require approximately 18 months to complete.

The development ORM is considering is located in the SE 1/4 of Section 35, Township 151N, and Range 98W of McKenzie County, North Dakota. Aerial photographs and topographic maps of the proposed project location are attached.

The purpose of this correspondence is to request a review of the project area under consideration (see attached) for the presence or absence of State School Trust Lands. This information will be included in a Public Service Commission application for the project.

E3 Environmental, LLC has been retained by ORM to provide environmental consulting support for this project. Should you have any questions or require additional information, please contact me at 651.282.0651 or rledin@go2e3.com.

Sincerely,

Ryan Ledin, Associate Consultant

E3 Environmental, LLC

651-282-0651 (o)

612-868-9039 (m)

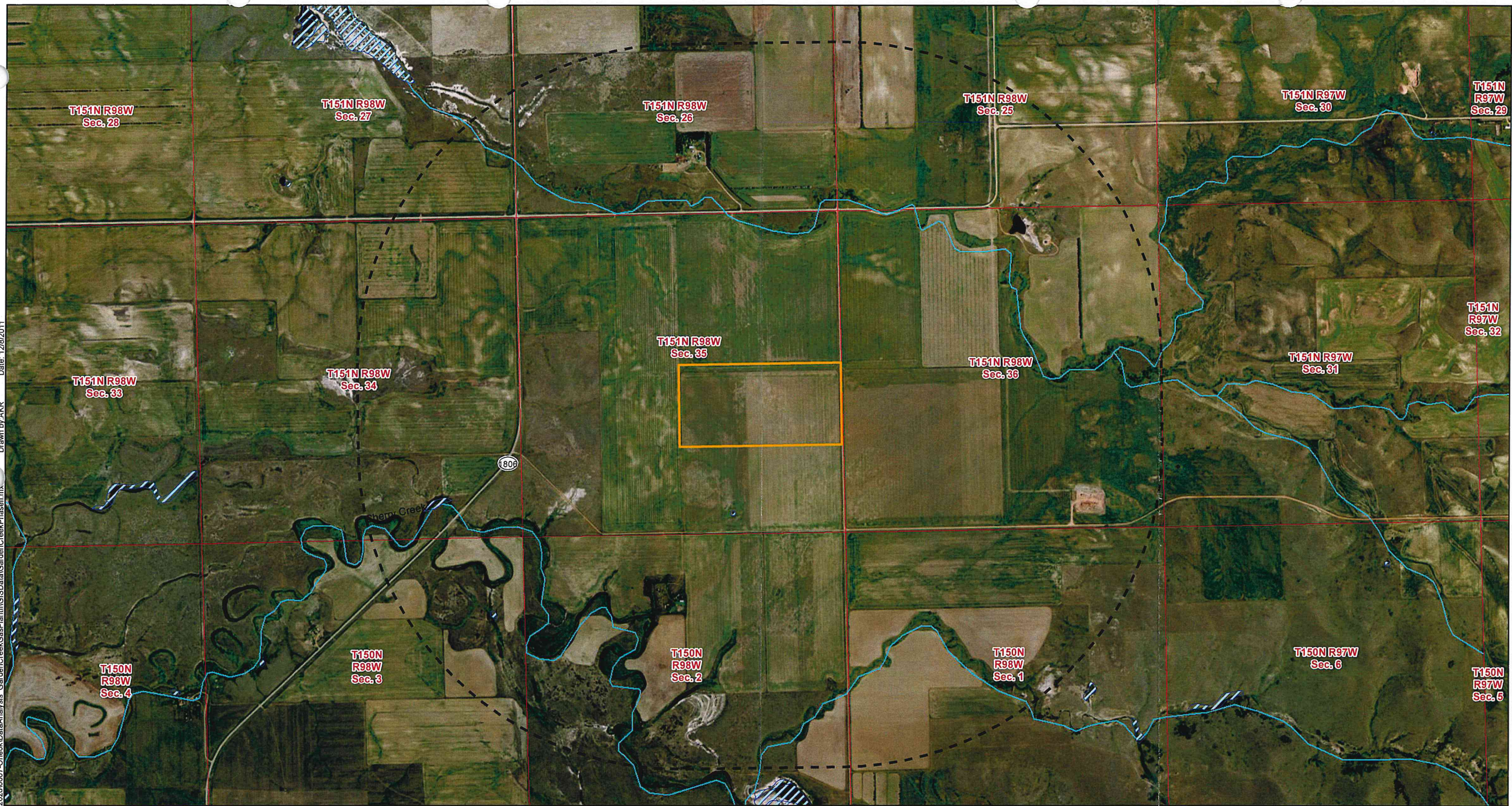
rledin@go2e3.com

www.go2e3.com



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T151N R98W
Sec. 28

T151N R98W
Sec. 27

T151N R98W
Sec. 26

T151N R98W
Sec. 25

T151N R97W
Sec. 30

T151N
R97W
Sec. 29

T151N R98W
Sec. 33

T151N R98W
Sec. 34

T151N R98W
Sec. 35

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Sec. 36

T151N R97W
Sec. 31

T151N
R97W
Sec. 32

T150N
R98W
Sec. 4

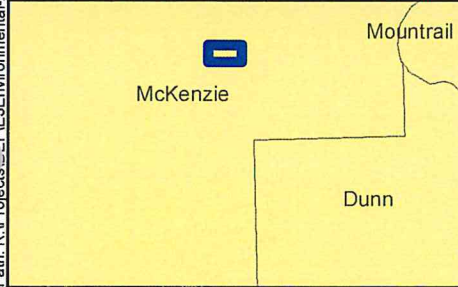
T150N
R98W
Sec. 3




T150N
R98W
Sec. 2

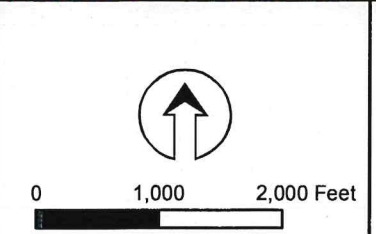
T150N
R98W
Sec. 1

T150N R97W
Sec. 6

T150N
R97W
Sec. 5



-  Project Area
-  1-mile Buffer
-  Section Boundary
-  Stream/River
-  Waterbody
-  NWI Wetland

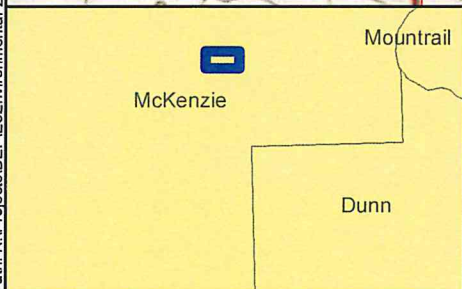
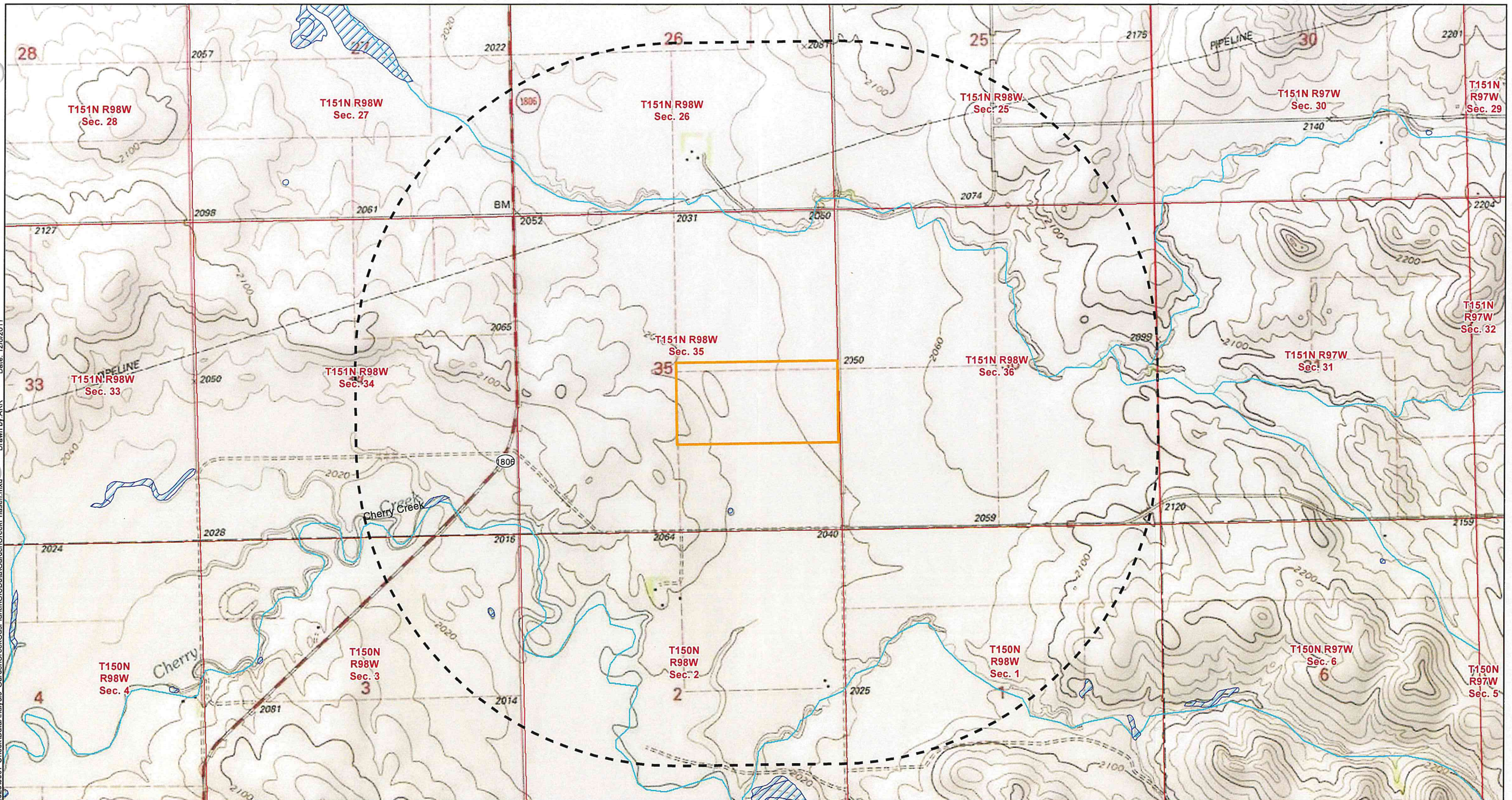








**Garden Creek Gas Plant
Phase II**
McKenzie County, North Dakota

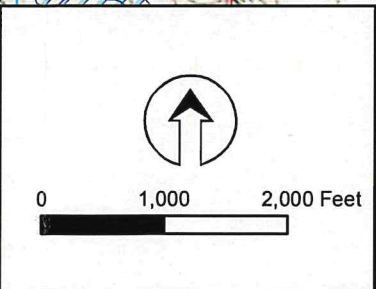
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 **ONEOK**
ROCKIES MIDSTREAM
A SUBSIDIARY OF ONEOK PARTNERS


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-  Project Area
-  1-mile Buffer
-  Section Boundary
-  Stream/River
-  Waterbody
-  NWI Wetland



**Garden Creek Gas Plant
Phase II**
McKenzie County, North Dakota



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ROCKIES MIDSTREAM
A SUBSIDIARY OF ONEOK PARTNERS

Amanda Bergstrom

From: Ryan Ledin <rledin@go2e3.com>
Sent: Friday, March 30, 2012 4:21 PM
To: amanda bergstrom
Subject: FW: ONEOK Rockies Midstream, L.L.C. - Commercial Property Development
Attachments: 151-98-35 SE4.pdf

From: Nelson, Diane M. [<mailto:dianenelson@nd.gov>]
Sent: Friday, March 30, 2012 3:58 PM
To: Ryan ledin
Subject: RE: ONEOK Rockies Midstream, L.L.C. - Commercial Property Development

Ryan,

I have attached a pdf of this area depicting the areas of state owned minerals outlined in gold. These areas are producing properties, but you are correct that the State does not have mineral ownership in minerals associated with 35-151-98 in McKenzie County.

Thank you for your patience while and consideration in this review.

Diane

From: Ryan Ledin [<mailto:rledin@go2e3.com>]
Sent: Friday, March 30, 2012 2:57 PM
To: Nelson, Diane M.
Cc: abergstrom@go2e3.com
Subject: RE: ONEOK Rockies Midstream, L.L.C. - Commercial Property Development

Ms. Nelson,

I'm inquiring about the status of the consultation that I sent on February 9th, 2012 (see e-mail below). Please let me know if there is any additional information you need in order to move forward with this consultation. Please let me know what your thoughts are at your earliest convenience. As always if you have any questions or concerns feel free to contact me.

Thanks,

Ryan Ledin, Associate Consultant

E3 Environmental, LLC

651-282-0651 (o)

612-868-9039 (m)

rledin@go2e3.com

www.go2e3.com



 Please consider the environment before printing this e-mail.

From: Ryan Ledin [<mailto:rledin@go2e3.com>]
Sent: Thursday, February 09, 2012 2:41 PM
To: 'dianenelson@nd.gov'
Cc: 'William McCarthy'
Subject: ONEOK Rockies Midstream, L.L.C. – Commercial Property Development

Dear Ms. Nelson,

ONEOK Rockies Midstream, L.L.C. (ORM), a subsidiary of ONEOK Partners, LP, Tulsa, Oklahoma, is considering further commercial development of the property adjacent to its existing Garden Creek Gas Plant. The parcel under consideration is the 80 acre plot as depicted on the attached map. Currently the project under consideration would be constructed during the 2nd or 3rd quarter of 2012 and would require approximately 18 months to complete.

The development ORM is considering is located in the SE 1/4 of Section 35, Township 151N, and Range 98W of McKenzie County, North Dakota. Aerial photographs and topographic maps of the proposed project location are attached.

E3 has accessed www.land.nd.gov to review the current parcel for State Mineral Trust Lands. This review has concluded that there are no such lands crossed by the project in consideration. The purpose of this consultation is to seek your concurrence with this analysis. For your convenience, please refer to the attached maps which depict the project location.

E3 Environmental, LLC (E3) has been retained by ORM to provide environmental consulting support for this project. Should you have any questions or require additional information, please contact me at 651.282.0651 or rledin@go2e3.com.

Sincerely,

Ryan Ledin, Associate Consultant

E3 Environmental, LLC

651-282-0651 (o)

612-868-9039 (m)

rledin@go2e3.com

www.go2e3.com

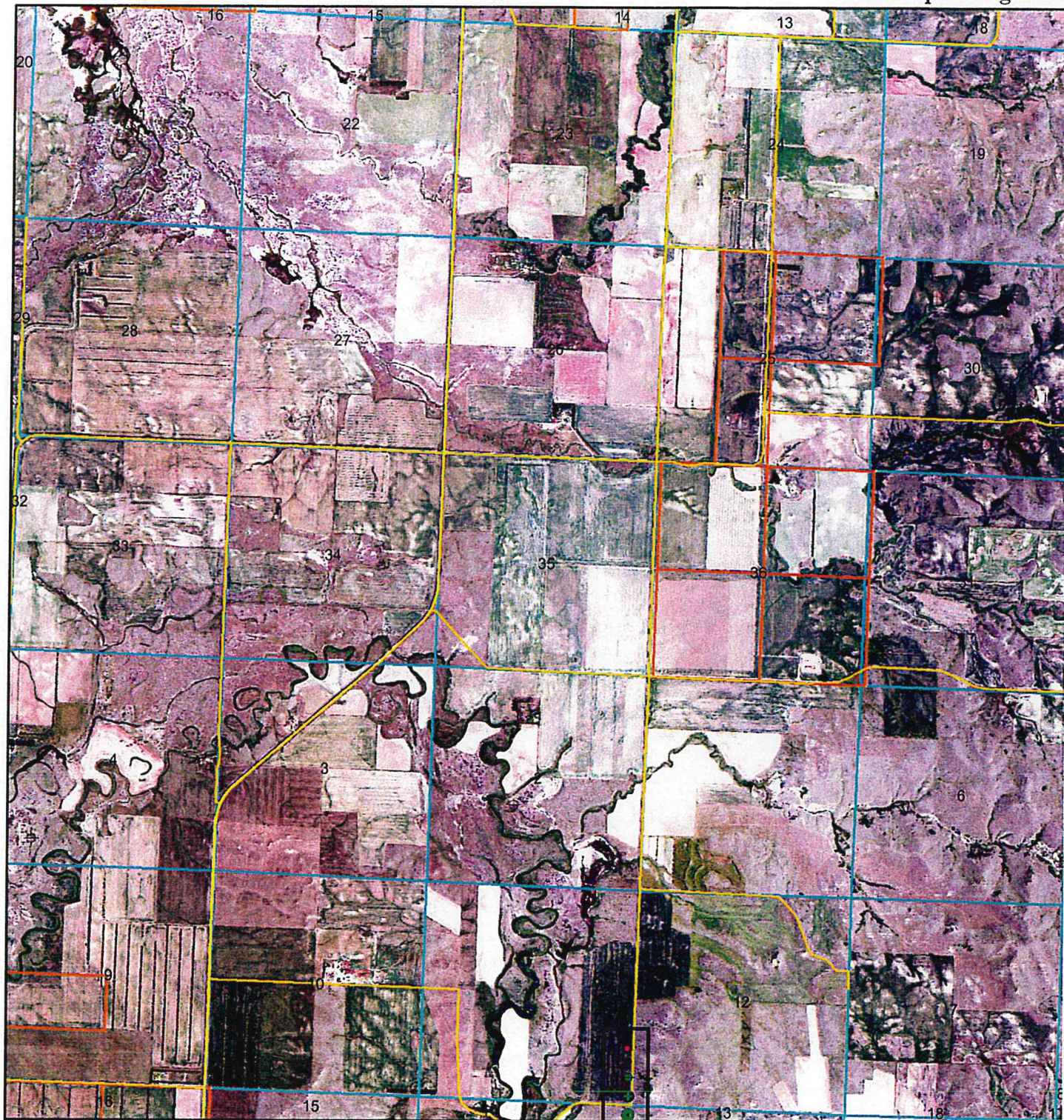


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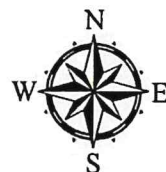
McKenzie County

Township: Unorganized



Map Datum is WGS 84 (same as NAD 83)

0 0.5 1 Miles



Printed: 3/30/2012 -- ND State Land Dept

Chris Schmidt

From: Ryan Ledin [rledin@go2e3.com]
Sent: Thursday, February 09, 2012 2:41 PM
To: 'dianenelson@nd.gov'
Cc: 'William McCarthy'
Subject: ONEOK Rockies Midstream, L.L.C. – Commercial Property Development
Attachments: GardenCreekPhasell_Aerial.pdf; GardenCreekPhasell_Topo.pdf

Dear Ms. Nelson,

ONEOK Rockies Midstream, L.L.C. (ORM), a subsidiary of ONEOK Partners, LP, Tulsa, Oklahoma, is considering further commercial development of the property adjacent to its existing Garden Creek Gas Plant. The parcel under consideration is the 80 acre plot as depicted on the attached map. Currently the project under consideration would be constructed during the 2nd or 3rd quarter of 2012 and would require approximately 18 months to complete.

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E3 Environmental, LLC (E3) has been retained by ORM to provide environmental consulting support for this project. Should you have any questions or require additional information, please contact me at 651.282.0651 or rledin@go2e3.com.

Sincerely,

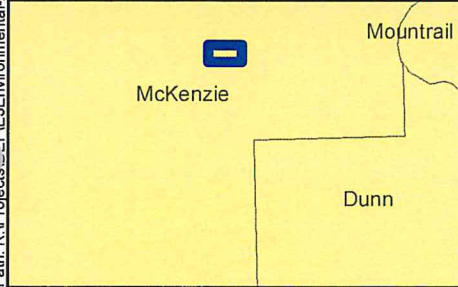
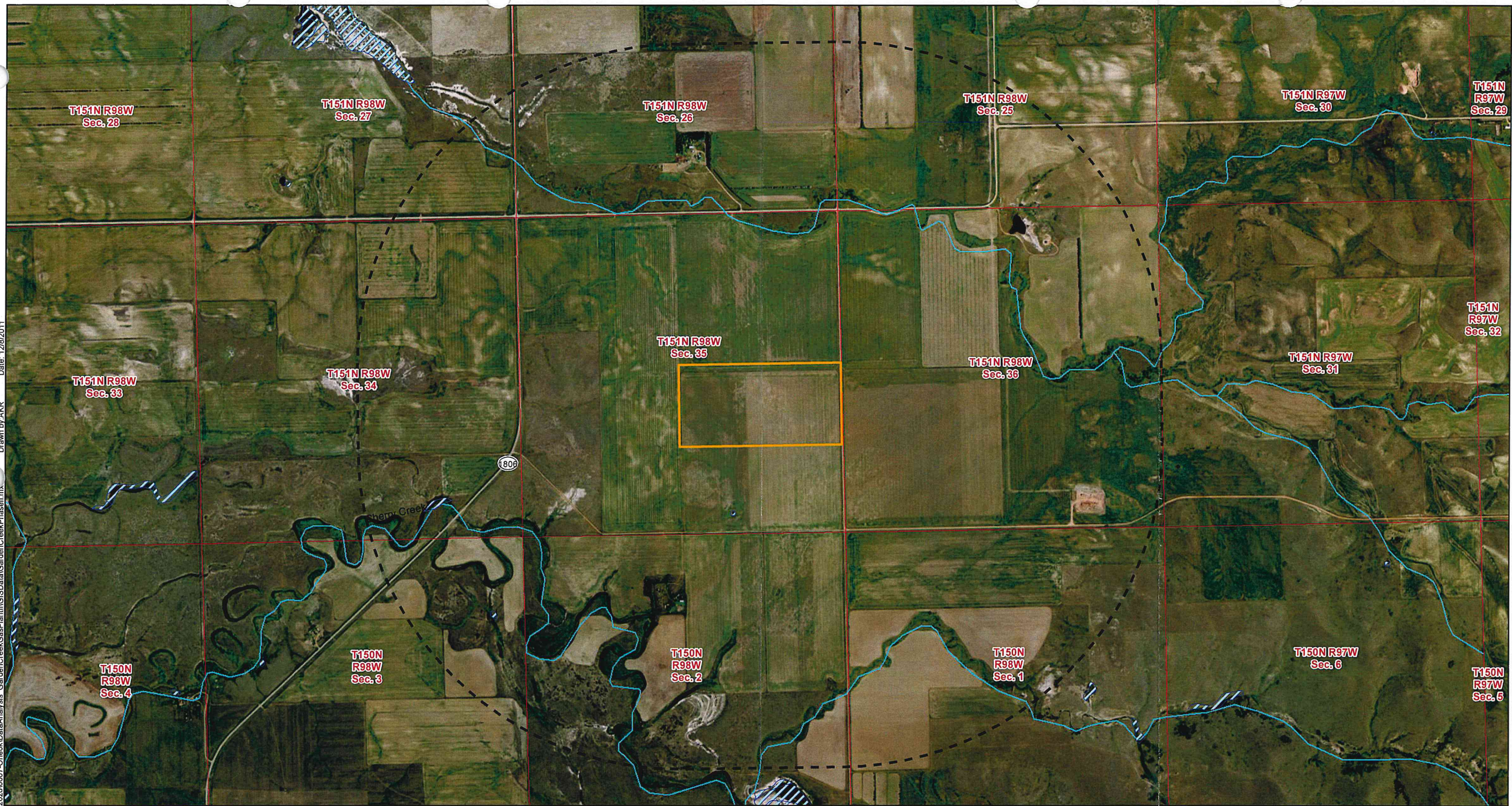
Ryan Ledin, Associate Consultant







E3 Environmental, LLC
651-282-0651 (o)
612-868-9039 (m)
rledin@go2e3.com
www.go2e3.com

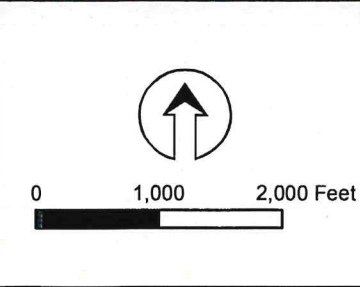


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 Project Area	 Stream/River
 1-mile Buffer	 Waterbody
 Section Boundary	 NWI Wetland

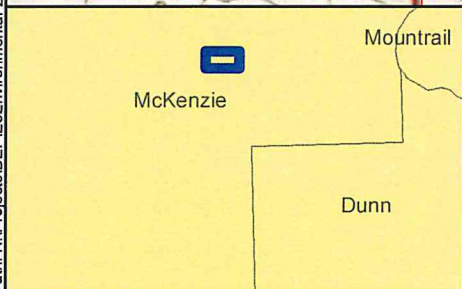
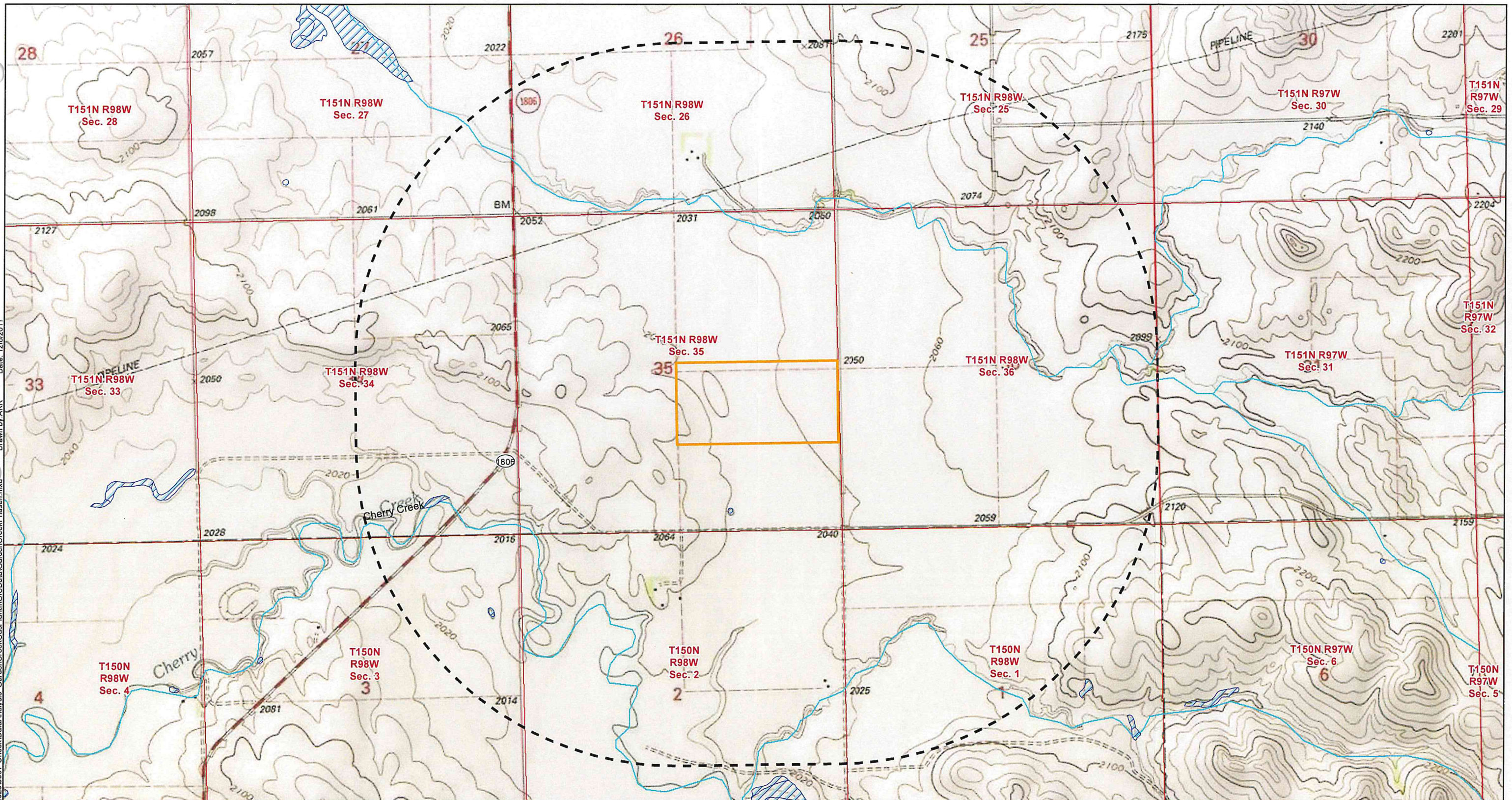


**Garden Creek Gas Plant
Phase II**
McKenzie County, North Dakota

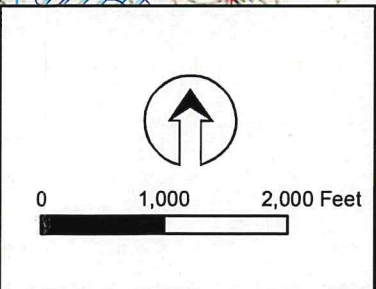
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 **ONEOK**
ROCKIES MIDSTREAM
A SUBSIDIARY OF ONEOK PARTNERS

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- Project Area
- 1-mile Buffer
- Section Boundary
- Stream/River
- Waterbody
- NWI Wetland



**Garden Creek Gas Plant
Phase II**
McKenzie County, North Dakota

From: [William McCarthy](#)
To: [Ryan Iedin](#)
Subject: FW: ONEOK Rockies Midstream, LLC -- Commercial Property Development
Date: Sunday, March 04, 2012 10:04:38 PM

From: Schumacher, John D. [mailto:jdschumacher@nd.gov]
Sent: Thursday, February 23, 2012 2:58 PM
To: William McCarthy
Subject: ONEOK Rockies Midstream, LLC -- Commercial Property Development

Mr. McCarthy,

The North Dakota Game and Fish Department has reviewed this project for wildlife concerns. We do not believe it will have any significant adverse effects on wildlife or wildlife habitat based on the information provided.

JOHN SCHUMACHER
RESOURCE BIOLOGIST
ND GAME AND FISH DEPT
701.328.6321

=



817 Vandalia Street
Suite 100
St Paul, MN 55114

February 9, 2012

Mr. Greg Link, Division Chief
Conservation and Communication Division
North Dakota Game and Fish Department
100 N. Bismarck Expressway
Bismarck, ND 58501-5095

RE: ONEOK Rockies Midstream, L.L.C. – Commercial Property Development
State Conservation Priority Species Consultation, State Plots Land Review.

ONEOK Rockies Midstream, L.L.C. (ORM), a subsidiary of ONEOK Partners, L.P., Tulsa, Oklahoma, is considering further commercial development of the property adjacent to its existing Garden Creek Gas Plant. The parcel under consideration is the 80 acre plot as depicted on the attached map. Currently the project under consideration would be constructed during the 2nd or 3rd quarter of 2012 and would require approximately 18 months to complete.

The development ORM is considering is located in the SE 1/4 of Section 35, Township 151N, and Range 98W of McKenzie County, North Dakota. Aerial photographs and topographic maps of the proposed project location are attached.

The purpose of this correspondence is twofold: to request a review of the area the project under consideration would take place for presence or absence of State Conservation Priority Species; and to request confirmation of the presence or absence of North Dakota Game and Fish Department PLOTS Lands within the proposed development (see attached).

E3 Environmental, LLC (E3) has been retained by ORM to provide environmental consulting support for this project. Should you have any questions or require additional information, please contact me at 651.282.0650 or wmcCarthy@go2e3.com

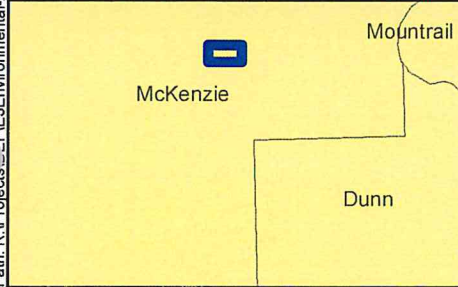
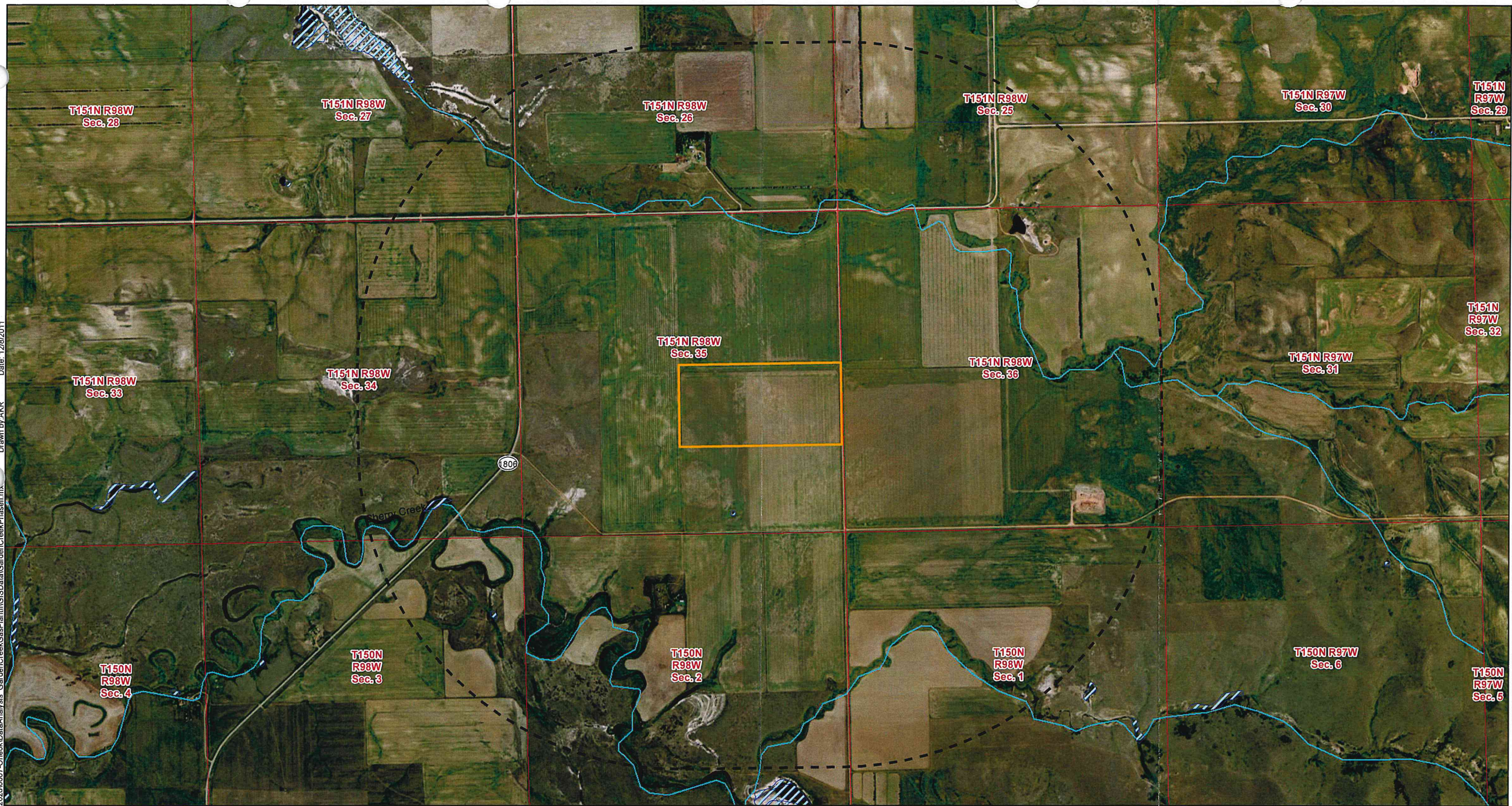
Sincerely,

William F. McCarthy
Project Manager
E3 Environmental, LLC

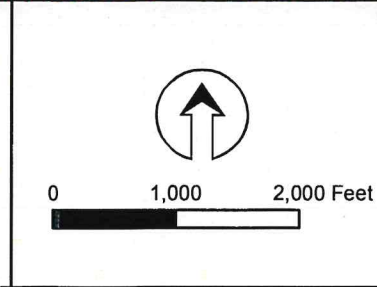
Enclosures: Project map – USGS topographic
Project aerial photograph

cc: E3 Project Files

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Project Area	Stream/River
1-mile Buffer	Waterbody
Section Boundary	NWI Wetland

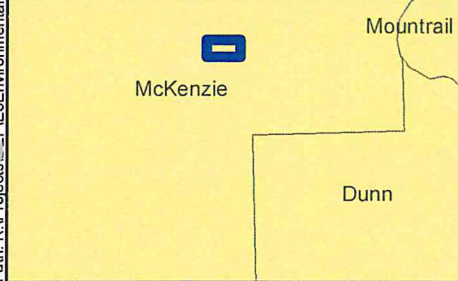
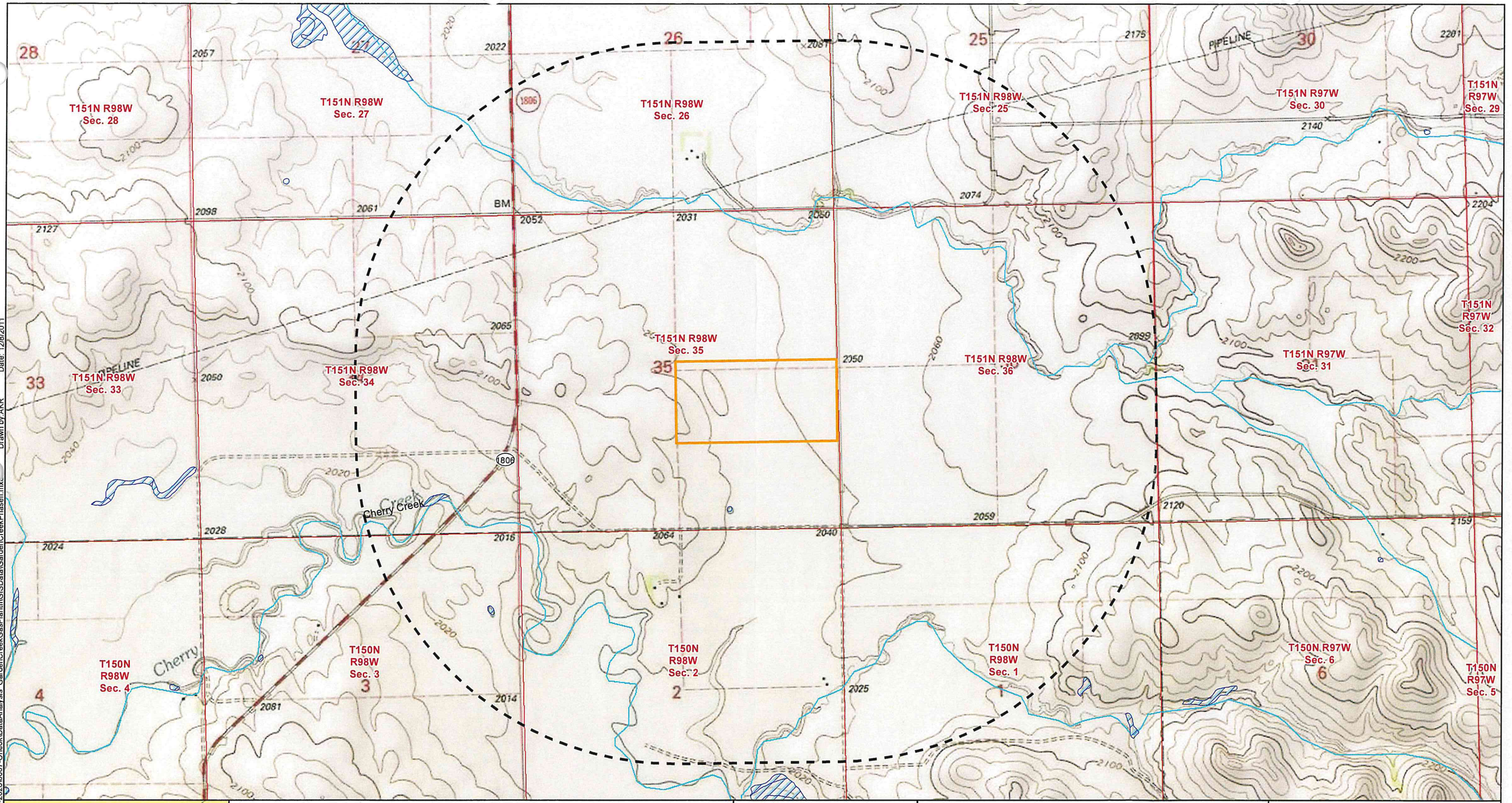








**Garden Creek Gas Plant
Phase II**
McKenzie County, North Dakota

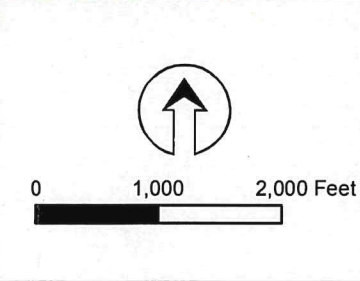
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	Project Area		Stream/River
	1-mile Buffer		Waterbody
	Section Boundary		NWI Wetland



**Garden Creek Gas Plant
Phase II**
McKenzie County, North Dakota



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APPENDIX D: NATURAL RESOURCE REPORT

**Natural Resources and Wetland
Determination Report for an 80-Acre
Potential Commercial Development
Area, Section 35, Township 151
North, Range 98 West, McKenzie
County, North Dakota**

Prepared for

E3 Environmental, LLC

Prepared by

SWCA Environmental Consultants

March 2012

**Natural Resources and Wetland Determination Report
for an 80-Acre Potential Commercial Development Area, Section 35,
Township 151 North, Range 98 West, McKenzie County, North Dakota**

Prepared for:

**E3 Environmental, LLC
817 Vandalia Street
St. Paul, Minnesota 55114**

Prepared by:

Kyle McLean, Environmental Specialist

Reviewed by:

Michael Cook, Natural Resources Lead

**SWCA Environmental Consultants
116 N. 4th Street, Suite 200
Bismarck, North Dakota 58501
(701) 258-6622, Fax (701) 258-5957**

SWCA Project No. 22655

March 23, 2012

TABLE OF CONTENTS

		<u>Page</u>
1.0	INTRODUCTION	1
2.0	METHODS	1
2.1	Survey area	1
2.2	Pre-field Review	3
2.3	Climate Data	3
2.4	Wetlands	3
2.5	Waterbodies	3
2.6	Tree, Sapling, and Shrub count	4
2.7	Wildlife Including Threatened and Endangered Species	4
2.8	Mapping	4
3.0	RESULTS	4
3.1	Vegetation	4
3.2	Wetlands	5
3.3	Waterbodies	5
3.4	Shrubland and Woody Vegetation	5
3.5	Wildlife	5
3.5.1	Endangered Species Act	5
3.5.2	Migratory Bird Treaty Act / Bald and Golden Eagle Protection Act	8
4.0	CONCLUSIONS AND RECOMMENDATIONS	9
5.0	LITERATURE CITED	10

LIST OF TABLES

		<u>Page</u>
1	Climatic Data Summary for the Survey Area.	3

LIST OF FIGURES

		<u>Page</u>
1	Overview depicting general topography of survey area, facing northeast.	2
2	General topography and vegetative characteristics of the survey area, facing north.	2

LIST OF APPENDICES

	<u>Appendix</u>
A	Vicinity and Site Layout Maps

1.0 INTRODUCTION

E3 Environmental, LLC, on behalf of ONEOK Rockies Midstream (ONEOK), requested SWCA Environmental Consultants (SWCA) conduct a natural resources survey of a privately owned 80-acre area slated for potential commercial development, located immediately to the north of the existing Garden Creek Gas Plant. SWCA conducted a wetland determination and threatened/endangered species habitat review of the proposed location on December 21, 2011. ONEOK proposes to develop a privately owned 80-acre parcel in Section 35, Township 151 North, Range 98 West, approximately 5.6 miles northeast of Watford City, North Dakota.

2.0 METHODS

2.1 SURVEY AREA

Overall, northwest North Dakota is characterized by a moderate to cool climate, with cold, dry winters and mild to warm summers. Mean annual precipitation for the area is 14 to 16 inches (Bryce et al. 1998).

The survey area is located in the Missouri Plateau ecoregion of the Northwestern Great Plains physiographic province in northwest North Dakota (Fenneman 1931). The Missouri Plateau ecoregion is a semi-arid rolling plain of shale, siltstone, and sandstone punctuated by occasional buttes and badlands (Fenneman 1931). The Missouri River is approximately 15 miles north of the survey area.

The elevation in the survey area ranges from approximately 2,040 to 2,065 feet, with the highest elevations in the western portions. The general topography of the survey area is unglaciated and retains its original soils and complex stream drainage pattern (Bryce et al. 1998) (Figures 1 and 2). This ecoregion is composed of moderately dissected level to rolling plains with isolated sandstone buttes (Bryce et al. 1998). The survey area consists of flat to gently rolling cropland used for small grains (Figures 1 and 2) with an average slope between 0 and 3 percent.



Figure 1. Overview depicting general topography of survey area, facing northeast.



Figure 2. General topography and vegetative characteristics of the survey area, facing north.

2.2 PRE-FIELD REVIEW

Prior to conducting field surveys, SWCA reviewed the applicable U.S. Fish and Wildlife Service (USFWS) threatened and endangered species list for McKenzie County, North Dakota (USFWS 2012). Additionally, SWCA reviewed applicable National Wetland Inventory data as well as preliminary National Weather Service climatic data.

2.3 CLIMATE DATA

Based on a review of the National Weather Service climatic data for the region, northwest North Dakota experienced drier winter conditions than normal at the time the natural resources survey was conducted. Table 1 summarizes the precipitation levels and temperatures for November and December 2011.

Table 1. Climatic Data Summary for the Survey Area.

Month	2011 Recorded Precipitation (inches)	Normal Precipitation (inches)	Difference (inches)	Average High Temperature (°F)
November 2011	0.39	0.65	-0.26	33
December 2011	0.18	0.62	-0.44	33
Total	0.57	1.27	-0.70	

Source: National Oceanic and Atmospheric Administration 2011

°F = degrees Fahrenheit

2.4 WETLANDS

SWCA ecologists searched the survey area for areas exhibiting wetland criteria as specified in the *1987 Corps of Engineers Wetlands Determination Manual* (Manual) (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetlands Determination Manual: Great Plains Region Version 2.0* (Supplement) (U.S. Army Corps of Engineers 2010). According to the Manual and Supplement, an area is a wetland if three mandatory wetland indicators are present in a given area, with special exceptions. These criteria include the presence of a plant community dominated (i.e., greater than 50%) by hydrophytic vegetation; one primary or two secondary indicators of wetland hydrology; and an indication of the presence of hydric soils. Prior to the field survey, SWCA assumed that all areas that met the hydrophytic vegetation and wetland hydrology criteria also satisfied the hydric soil criterion. Therefore, SWCA did not excavate soil pits to determine whether any indicators of hydric soils were present.

2.5 WATERBODIES

SWCA searched the survey area for any potential jurisdictional waterbodies (i.e., ponds, creeks, streams, rivers) exhibiting an ordinary high water mark. Common identifiable indicators of an ordinary high water mark include open water or evidence of a clear, natural line visible on the bank; shelving; changes in soil characteristics; the destruction of terrestrial

vegetation; the presence of litter and debris; and watermarks on structures that are inundated during normal high water conditions.

2.6 TREE, SAPLING, AND SHRUB COUNT

SWCA ecologists determined the total number of trees, saplings, and shrubs present within the survey area by employing several different techniques depending on the type of woody vegetation habitat (i.e., forested upland, shrubland, or shelterbelt) encountered and the overall extent of each habitat within the survey area. The boundary of all forested upland, shrubland, and shelterbelt habitat was geographically referenced using a Trimble GeoXT series handheld global positioning system (GPS) unit. In forested upland and shrubland habitat, SWCA counted or estimated the number of all woody stemmed vegetation with a DBH of ≥ 1 inch. In shelterbelt areas, all woody stemmed vegetation was inventoried via direct count. Ecologists taxonomically identified all recorded individuals to the species level within each habitat type.

2.7 WILDLIFE INCLUDING THREATENED AND ENDANGERED SPECIES

Information regarding the presence of threatened or endangered species, which may occur within the survey area, was obtained from the USFWS list of threatened and endangered species in North Dakota counties (USFWS 2011). This document does not represent a comprehensive survey, but rather acknowledges the past and/or current presence of listed species. The lack of discovery of threatened or endangered species does not signify their non-existence within the area, but only that no primary or secondary indications of these species were recorded.

SWCA completed a cursory survey for habitat suitable for supporting common as well as threatened/endangered species that may be impacted by construction activities within the survey area. Additionally, a line-of-sight survey for potential raptor nests was conducted for a distance of approximately 0.5 mile with the aid of binoculars.

2.8 MAPPING

Navigation and data mapping in the field was completed using a Trimble GeoXT global positioning system (GPS) unit capable of recording geographic data with sub-meter accuracy. SWCA used Universal Transverse Mercator Zone 13 North as the projected coordinate system and North American Datum 1983 as the datum. ArcGIS v10.0 (ESRI Redlands, California) was used to navigate/mark the boundaries of the survey area and generate the maps provided in Appendix A. Please note that all data collected using the GPS unit, and displayed on the attached maps, are for review purposes only and do not represent a professional civil survey.

3.0 RESULTS

3.1 VEGETATION

SWCA ecologists noted the entire survey area consisted of cultivated cropland comprised mainly of small grain species such as wheat (*Triticum aestivum*).

3.2 WETLANDS

SWCA did not observe any wetlands within the survey area.

3.3 WATERBODIES

SWCA did not observe any waterbodies within the survey area.

3.4 SHRUBLAND AND WOODY VEGETATION

SWCA did not observe any shrubs or woody vegetation within the survey area.

3.5 WILDLIFE

SWCA conducted a cursory threatened and endangered species habitat evaluation concurrently with the wetland determination. Suitable foraging habitat for whooping crane (*Grus americana*) was observed within and nearby the survey area, which was comprised of cultivated small grain crops. Such cultivated fields may provide foraging opportunities to common wildlife species; however, these species are not likely to be directly impacted as a result of construction activities.

3.5.1 Endangered Species Act

The proposed project would have no effect on black-footed ferret (*Mustela nigripes*), gray wolf (*Canis lupus*), and pallid sturgeon (*Scaphirhynchus albus*) populations. Piping plover (*Charadrius melodus*) and interior least tern (*Sterna antillarum*) have the potential to migrate through the survey area, but foraging, breeding, and roosting habitat is unavailable within or nearby the survey area. Therefore, the project would have no effect on either piping plover or interior least tern populations.

The proposed project would have no effect on piping plover critical habitat predicated on the absence of such habitat within or nearby the survey area. Whooping cranes have the potential to migrate over and possibly forage within or nearby the survey area during their spring and fall migration; therefore, the proposed project may affect, but is not likely to adversely affect, whooping crane populations.

3.5.1.1 Whooping Crane

Federal Status: Endangered

Affect Determination: May Affect, Is Not Likely to Adversely Affect

The whooping crane was listed as endangered in 1970 in the United States by the USFWS and in 1978 in Canada (USFWS 1978). Historically, population declines were caused by shooting and destruction of nesting habitat in the prairies from agricultural development. Current threats to the species include habitat destruction, especially suitable wetland habitats that support breeding and nesting, as well as feeding and roosting during their fall and spring migration (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007).

The July 2010 total wild population was estimated at 383 (USFWS 2010a). There is only one self-sustaining wild population, the Aransas-Wood Buffalo National Park population, which

nests in Wood Buffalo National Park and adjacent areas in Canada, where approximately 83% of the wild nesting sites occur (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007; USFWS 2010a). McKenzie County, including the survey area, is within the primary migratory flyway of whooping cranes.

Whooping cranes probe the soil subsurface with their bills for foods on the soil or vegetation substrate (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007). Whooping cranes are omnivores and foods typically include agricultural grains, as well as insects, frogs, rodents, small birds, minnows, berries, and plant tubers. The largest amount of time during migration is spent feeding in harvested grain fields (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007). Studies indicate that whooping cranes use a variety of habitats during migration, in addition to cultivated croplands, and generally roost in small palustrine (marshy) wetlands within 0.6 mile (1 kilometer) of suitable feeding areas (Howe 1987, 1989). Whooping cranes have been recorded in riverine habitats during their migration, with eight sightings along the Missouri River in North Dakota (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007:18). In these cases, they roost on submerged sandbars in wide, unobstructed channels that are isolated from human disturbance (Armbruster 1990).

Suitable whooping crane foraging habitat (i.e., cultivated cropland) was observed within and nearby the survey area. Therefore, the proposed project **may affect, but is not likely to adversely affect**, the endangered whooping crane.

3.5.1.2 Piping Plover

Federal Status: Threatened

Affect Determination: No Effect

The piping plover is a small shorebird which breeds only in three geographic regions of North America: the Atlantic Coast, the Northern Great Plains, and the Great Lakes. Piping plover populations were federally listed as threatened and endangered in 1985, with the Northern Great Plains and Atlantic Coast populations listed as threatened, and the Great Lakes population listed as endangered (USFWS 1985a).

Plovers in the Great Plains make their nests on open, sparsely vegetated sand or gravel beaches adjacent to alkali wetlands, and on beaches, sand bars, and dredged material islands of major river systems (USFWS 2002, 2010b). The shorelines of lakes of the Missouri River constitute significant nesting areas for the bird. Piping plovers nest on the ground, making shallow scrapes in the sand, which they line with small pebbles or rocks (USFWS 1988). Anthropogenic alterations of the landscape along rivers and lakes where piping plover nest have increased the number and type of predators, subsequently decreasing nest success and chick survival (USFWS 2002, 2010b).

The birds fly south by mid to late August to areas along the Texas coast and Mexico (USFWS 2002). The Northern Great Plains population has continued to decline despite federal listing, with population estimates of 1,500 breeding pairs in 1985 reduced to fewer than 1,100 in 1990. Low survival of adult birds has been identified as a factor (Root et al. 1992). Current conservation strategies include identification and preservation of known nesting sites, public

education, and limiting or preventing shoreline disturbances near nests and hatched chicks (USFWS 1988, 2010b).

No suitable nesting, foraging, or roosting habitat was observed within or near the survey area. Therefore, the proposed project will have **no effect** on piping plover.

3.5.1.3 Designated Critical Habitat of Piping Plover

Affect Determination: No Effect

The USFWS has designated critical habitat for the Great Lakes and Northern Great Plains populations of piping plover (USFWS 2002). Designated critical habitat does not occur in the survey area.

Since the proposed project would not modify, alter, disturb, or affect the any critical habitat, **no effect** to designated critical habitat of the piping plover would occur.

3.5.1.4 Interior Least Tern

Federal Status: Endangered

Affect Determination: No Effect

The interior population of the least tern is listed as endangered by the USFWS (1985b). This bird is the smallest member of the gull and tern family, measuring approximately 9 inches in length. Terns remain near flowing water, where they feed by hovering over and diving into standing or flowing water to catch small fish (USFWS 2010c).

The interior population of least terns breeds in isolated areas along the Missouri, Mississippi, Ohio, Red, and Rio Grande river systems, where they nest in small colonies. From late April to August, terns nest in a shallow hole scraped in an open sandy area, gravel patch, or exposed flat and bare sandbars along rivers, sand and gravel pits, or lake and reservoir shorelines. The adults continue to care for chicks after they hatch. Least terns in North Dakota will often be found sharing sandbars with the piping plover, a threatened species (USFWS 2010c).

Census data indicate over 8,000 least terns in the interior population. In North Dakota, the least tern is found mainly on the Missouri River from Garrison Dam south to Lake Oahe, and on the Missouri and Yellowstone rivers upstream of Lake Sakakawea (USFWS 1990a, 2010c). Approximately 100 pairs breed in North Dakota (USFWS 2010c). Details of their migration are not known, but their winter range is reported to include the Gulf of Mexico and Caribbean Islands (USFWS 1990a, 2010c).

Loss of suitable breeding and nesting habitat for terns has resulted from dam construction and river channelization on major rivers throughout the Mississippi, Missouri, and Rio Grande river systems. River and reservoir changes have led to reduced sandbar formation and other shoreline habitats for breeding, resulting in population declines. In addition, other human shoreline disturbances affect the species (USFWS 1990a). Critical habitat has not been designated for the species (USFWS 2010c). Current conservation strategies include identification and avoidance of known nesting areas, public education, and limiting or preventing shoreline disturbances near nests and hatched chicks (USFWS 2010c).

Suitable shoreline habitat for breeding and nesting terns does not occur in the survey area, and the Missouri River is a minimum of 15 miles north of the survey area. Therefore, the proposed project will have **no effect** endangered least terns.

3.5.1.5 Pallid Sturgeon

Federal Status: Endangered

Affect Determination: No Effect

The pallid sturgeon was listed as endangered in 1990 in the United States by the USFWS (1990b). The primary factor leading to the decline of this species is the alteration of habitat through river channelization, creation of impoundments, and alteration of flow regimes (USFWS 1990b). These alterations within the Missouri River have blocked movements to spawning, feeding, and rearing areas; destroyed spawning habitat; altered flow conditions which can delay spawning cues; and reduced food sources by lowering productivity (USFWS 2007). The fundamental elements of pallid sturgeon habitat are defined as the bottom of swift waters of large, turbid, free-flowing rivers with braided channels, dynamic flow patterns, flooding of terrestrial habitats, and extensive microhabitat diversity (USFWS 1990b).

The pallid sturgeon populations occur in the Missouri River below Fort Peck Dam to the headwaters of Lake Sakakawea and the lower Yellowstone River up the confluence of the Tongue River, Montana (USFWS 2007). This population consists of approximately 136 wild adult pallid sturgeon (USFWS 2007). Hatchery-reared sturgeon have also been stocked since 1998. The pallid sturgeon has been found to utilize the 15.5 miles (25 kilometers) of riverine habitat that would be inundated by Lake Sakakawea at full pool (Bramblett 1996 per USFWS 2007). Larval pallid sturgeons have also been found to drift into Lake Sakakawea. While the majority of pallid sturgeons are found in the headwaters of Lake Sakakawea, North Dakota Game and Fish have caught and released pallid sturgeon in nets set in 80 to 90 feet of water between the New Town and Van Hook area. Based on this information, pallid sturgeon could be found throughout Lake Sakakawea (personal communication, email from Steve Krentz, Pallid Sturgeon Project Lead, U.S. Fish and Wildlife Service, to Mike Cook, Aquatic Ecologist, SWCA Environmental Consultants, September 3, 2010).

Suitable habitat for pallid sturgeon is not present in the survey area, and the Missouri River is a minimum of 15 miles north of the survey area. Therefore, the proposed project will have **no effect** on pallid sturgeon.

3.5.2 **Migratory Bird Treaty Act / Bald and Golden Eagle Protection Act**

3.5.2.1 Bald Eagle (*Haliaeetus leucocephalus*)

Federal Status: Delisted in 2007; protected under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA)

Effects of Project: No Impact

The bald eagle feeds on fish and carrion and typically roosts in large trees near a water source. Bald eagle nesting habitat is typically any mature stands of conifer or cottonwood trees in association with rivers, streams, reservoirs, lakes, or any significant body of water. Bald eagles frequently migrate through the grassland habitats; however, no bald eagles or nests were observed during the field surveys. Suitable nesting and roosting habitat may be available

nearby but was not present within 0.5 mile line-of-sight of the survey area. Therefore, the proposed project will have **no impact** on this species at this time.

3.5.2.2 Golden Eagle (*Aquila chrysaetos*)

Federal Status: Unlisted; protected under the MBTA and BGEPA

Effects of Project: No Impact

Golden eagles nest on steep cliff faces and in large cottonwood trees along intermittent creeks. Golden eagles have been documented near the survey area year-round; however, the majority of golden eagles migrate. The breeding season for golden eagles is from mid-March through late July. However, no nesting golden eagles were observed, and no suitable nesting habitat exists within the survey area. Therefore, the proposed project will have **no impact** on this species at this time.

4.0 CONCLUSIONS AND RECOMMENDATIONS

1. The project may affect, but is not likely to adversely affect, the whooping crane.
2. The project will have no effect on the black-footed ferret, gray wolf, piping plover, interior least tern, pallid sturgeon, or designated critical habitat of piping plover.
3. The proposed commercial development project will not impact any wetlands or waterbodies predicated on the absence of such features within the survey area.

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APPENDIX A
Vicinity Maps and Site Layout Map

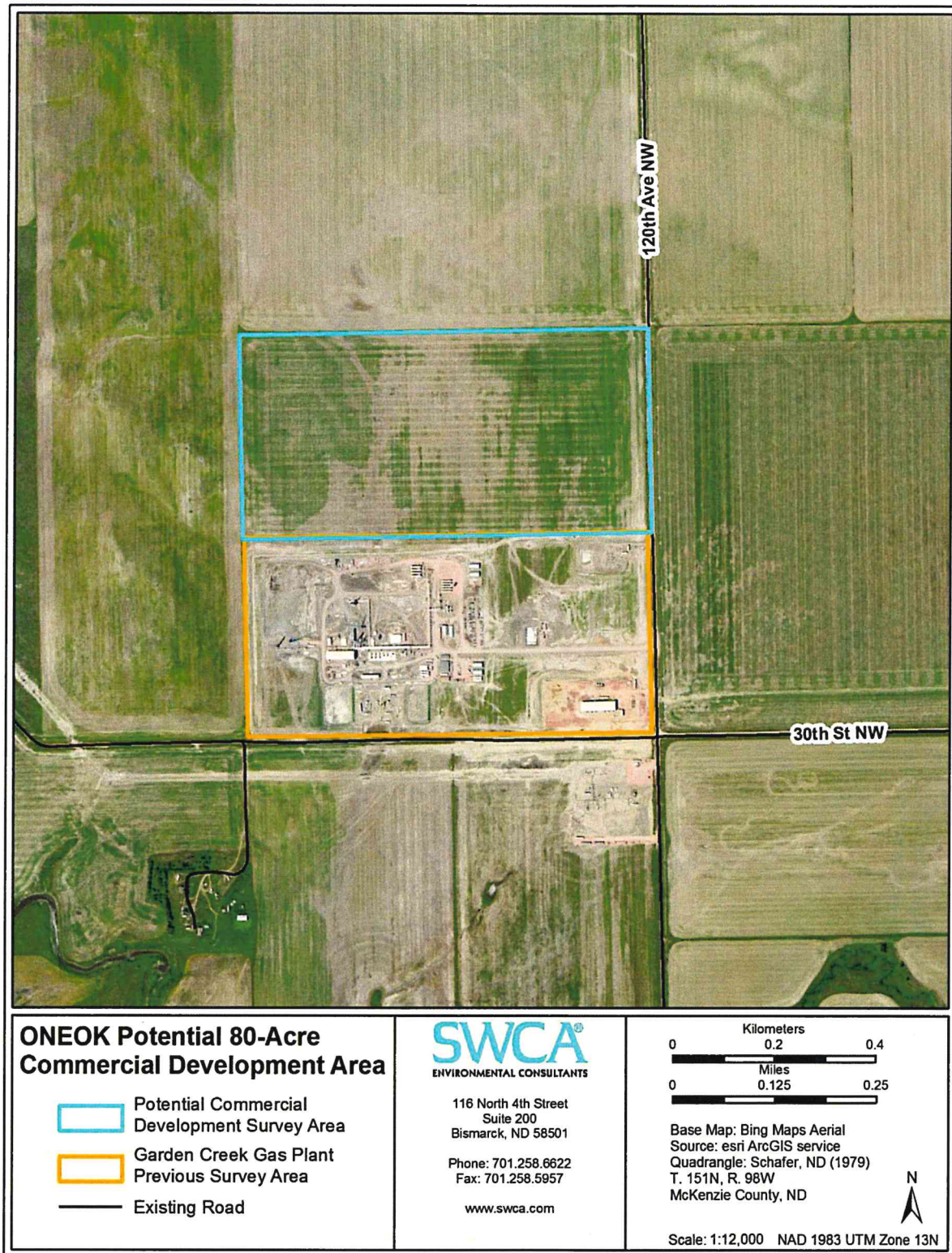


Figure A-1. Site Layout Map for the Potential Commercial Development Area.

**APPENDIX E: CULTURAL RESOURCE REPORT &
UNANTICIPATED FINDS PLAN**

**A Class I and Class III Cultural
Resource Inventory of the
ONEOK Rockies Midstream 80-
Acre Potential Commercial
Development Area, Section 35,
Township 151 North, Range 98
West, McKenzie County, North
Dakota**

Prepared for

E3 Environmental, LLC

Prepared by

SWCA Environmental Consultants

March 2012

MANUSCRIPT DATA RECORD FORM

1. Manuscript Number:
2. SHPO Reference #:
3. Author(s): Adam D. Leroy
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5. Report Date: March 28, 2012
6. Number of Pages: 36
7. Type – I, T, E, O: I
8. Acres: 80
9. Legal Location(s) (no quarter sections) with Historic Context Study Unit(s):
Consult the township tables in *The North Dakota Comprehensive Plan for Historic Preservation: Archeological Component*, (SHSND 2008; available online at <http://history.nd.gov/hp/hpforms.html>) for Study Unit assignments.
Study Units: LM, CB, KN, HE, SM, GA, JA, GR, NR, SR, SO, SH, YE

<u>COUNTY</u>	<u>TWP</u>	<u>RNG</u>	<u>SEC</u>	<u>SU</u>
McKenzie	151N	98W	35	GA

**A Class I and Class III Cultural Resource Inventory of the ONEOK
Rockies Midstream 80-Acre Potential Commercial Development Area,
Section 35, Township 151 North, Range 98 West, McKenzie County, North
Dakota**

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SWCA Cultural Resource Report Number 12-35

March 28, 2012

ABSTRACT

This report outlines the results of a Class I and intensive Class III cultural resource inventory conducted by SWCA Environmental Consultants (SWCA) on December 8 and 21, 2011, respectively, of an 80 acre area slated for potential commercial development, located immediately north of the existing Garden Creek Gas Plant. ONEOK Rockies Midstream (ONEOK) proposes to develop a privately owned 80-acre parcel in Section 35, Township 151 North, Range 98 West, approximately 5.6 miles northeast of Watford City, North Dakota.

On behalf of ONEOK, E3 Environmental, LLC (E3) requested that SWCA perform a cultural resource survey to assess the potential effect of activities associated with the proposed commercial development project on cultural resources. The area of project impact will not exceed 80 acres.

SWCA inventoried 80 acres for the potential commercial development project. No cultural resources were identified during the course of the inventory. It is recommended that the project be granted determinations of *No Historic Properties Affected* and *No Significant Sites Affected* and clearance to proceed as planned.

*A Class I and Class III Cultural Resource Inventory of the ONEOK Rockies Midstream 80-Acre
Potential Commercial Development Area, Section 35, Township 151 North, Range 98 West, McKenzie
County, North Dakota*

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TABLE OF CONTENTS

	<u>Page</u>
ABSTRACT	ii
INTRODUCTION	1
PROJECT SETTING	4
Topography	4
Climate	4
Hydrology	5
Geology	5
Soils	5
Flora and Fauna	6
Environmental Constraints	7
CULTURAL/HISTORIC OVERVIEW	7
Prehistoric Contexts	7
Paleoindian Tradition (ca. 11,500–7,900 years before present [B.P.])	7
Plains Archaic Tradition (ca. 8000–1500 B.P.)	9
Plains Woodland Tradition (ca. 2000–450 B.P.)	10
Plains Village Tradition (ca. 1050–350 B.P.)	12
Historic Contexts	13
European Trade and Exploration (A.D. 1738–1858)	13
Post-Contact Tribal Overview (A.D. 1780–1900)	14
Homesteading in the Dakotas (A.D. 1860–1930)	15
BACKGROUND RESEARCH	15
FIELDWORK METHODS	17
Site Evaluation	18
Prehistoric Archaeological Sites	18
Historic Archaeological Sites or Components	19
Non-Archaeological Historic Sites or Components	19
INVENTORY RESULTS AND RECOMMENDATIONS	20
CONCLUSION	20
REFERENCES CITED	21

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1 Summary of Soil Series within the Project Area.	5
2 Bibliographic Listing of Previous Archaeological and Historic Studies within 1 Mile of the Project Area.	15
3 Previously Recorded Resources.	16

TABLE OF CONTENTS (continued)

LIST OF FIGURES

<u>Figure</u>		<u>Page</u>
1	Project area topographic map.....	2
2	Project area aerial map showing previous disturbances.....	3
3	Project area overview depicting general topography, facing southwest, showing existing Garden Creek Gas Plant in background.	4
4	Overview of the vegetation characteristic of the project area, facing southeast.	6
5	1902 GLO survey plat showing Section 32 of T151N, R98W (GLO 1902).	17

INTRODUCTION

This report outlines the results of a Class I and intensive Class III cultural resource inventory conducted by SWCA Environmental Consultants (SWCA) on December 8 and 21, 2011, respectively, for the proposed ONEOK Rockies Midstream (ONEOK) 80-acre potential commercial development project. ONEOK proposes to develop an 80-acre parcel of privately owned lands located 5.6 miles northeast of Watford City, North Dakota. The project area is in agricultural fields immediately north of the existing Garden Creek Gas Plant (Smith 2010). The project area is in the N $\frac{1}{2}$ SE $\frac{1}{4}$ of Section 35, Township (T) 151 North (N), Range (R) 98 West (W) (Figures 1 and 2).

On behalf of ONEOK, E3 Environmental, LLC (E3) requested that SWCA perform a Class I and Class III cultural resource inventory to assess the potential effects on cultural resources of activities associated with the proposed commercial development project. The area of project impact will not exceed 80 acres and will fall entirely within the inventoried area, as proposed.

For the cultural resource inventory, Judith Cooper served as Principal Investigator. Adam D. Leroy, SWCA archaeologist permitted in both archaeology and history within the State of North Dakota, completed the fieldwork. All field notes and photographs are on file at SWCA's Bismarck, North Dakota, office under the project number 22655.

A Class I and Class III Cultural Resource Inventory of the ONEOK Rockies Midstream 80-Acre Potential Commercial Development Area, Section 35, Township 151 North, Range 98 West, McKenzie County, North Dakota

Contains Privileged Information -- Do Not Release

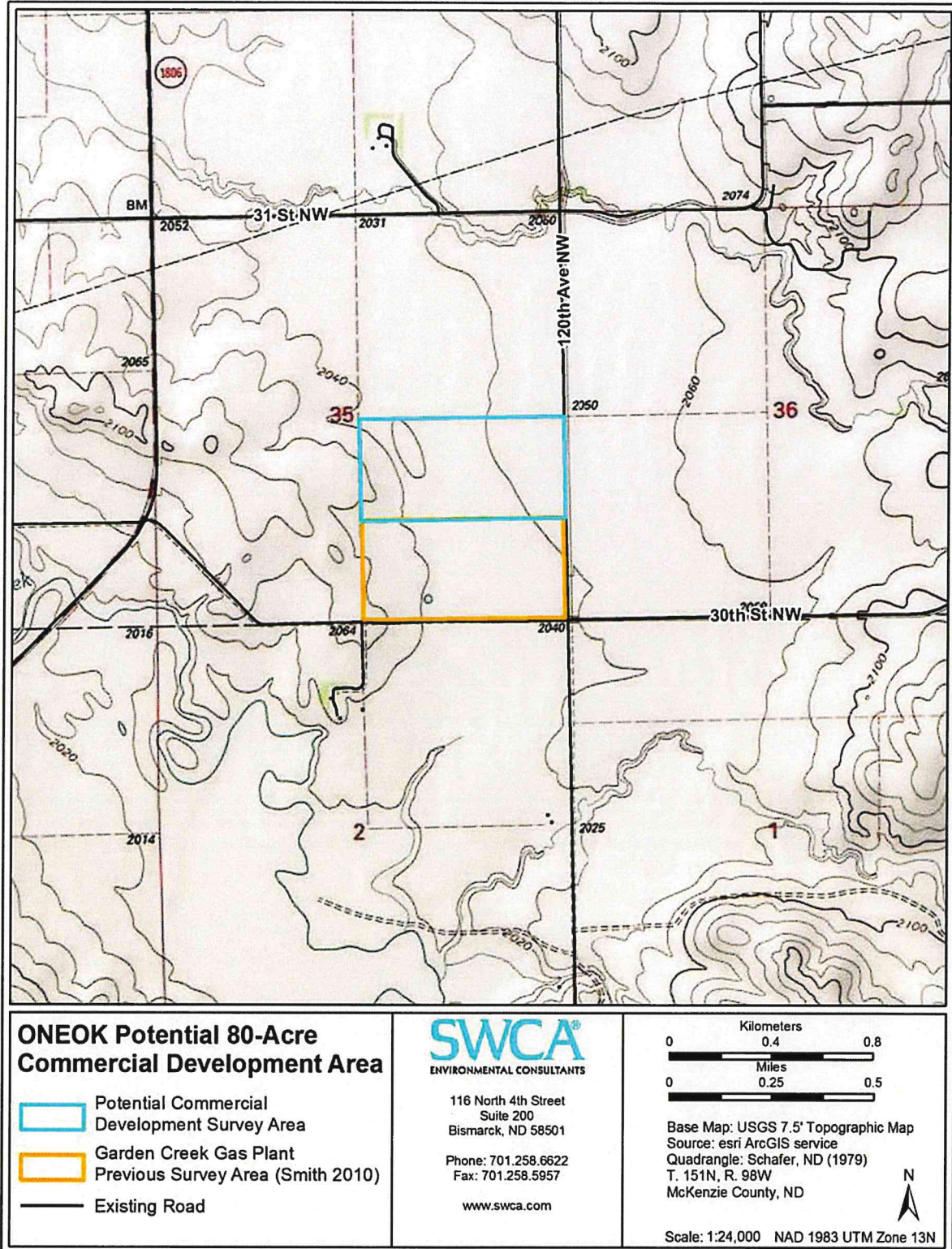


Figure 1. Project area topographic map.

A Class I and Class III Cultural Resource Inventory of the ONEOK Rockies Midstream 80-Acre Potential Commercial Development Area, Section 35, Township 151 North, Range 98 West, McKenzie County, North Dakota

Contains Privileged Information -- Do Not Release

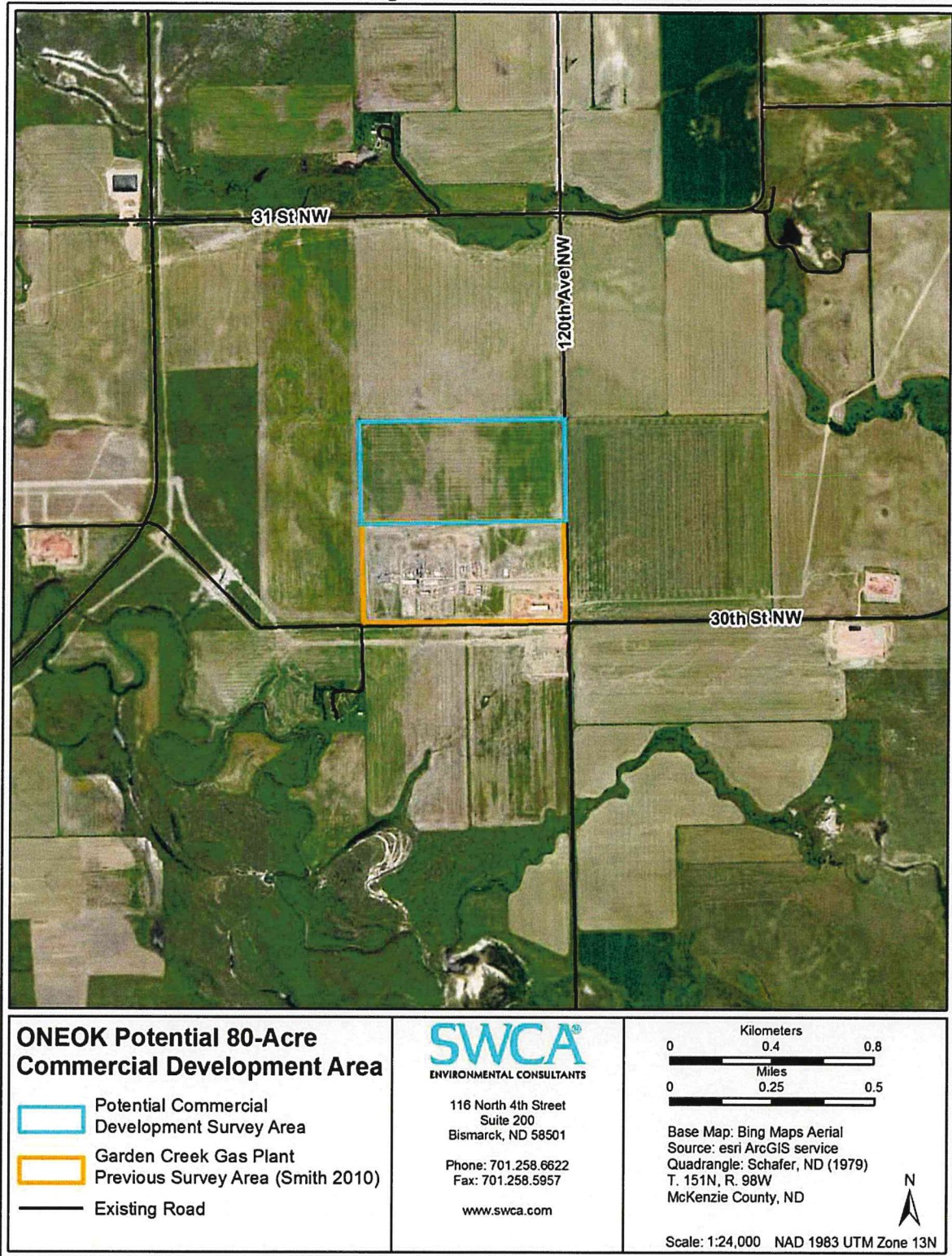


Figure 2. Project area aerial map showing previous disturbances.

PROJECT SETTING

TOPOGRAPHY

The project area is located in the Missouri Plateau ecoregion of the Northwestern Great Plains physiographic province in northwest North Dakota (Fenneman 1931). The Missouri Plateau ecoregion is a semiarid rolling plain of shale, siltstone, and sandstone punctuated by occasional buttes and badlands (Fenneman 1931). While there are sparse drainages in the immediate project area, the Missouri River is approximately 15 miles directly to the north. The elevation in the project area ranges from approximately 2,040 to 2,065 feet, with the highest elevations in the western portions of the project area. The general topography of the proposed project area is unglaciated and retains its original soils and complex stream drainage pattern (Bryce et al. 1998) (Figure 2). This ecoregion is composed of moderately dissected level to rolling plains with isolated sandstone buttes (Bryce et al. 1998).



Figure 3. Project area overview depicting general topography, facing southwest, showing existing Garden Creek Gas Plant in background.

CLIMATE

The climate for northwest North Dakota is temperate. Based on climatic data collected from Watford City, North Dakota, between 1971 to 2000, January is the coldest month with a mean daily temperature of 8.2 degrees Fahrenheit (°F) while July is the warmest month with a mean daily temperature of 68.6°F (National Climatic Data Center [NCDC] 2009). Temperature extremes on record range from -43°F at the coldest to 111°F at the warmest. On average, 141 days are frost-free (28°F or above) and the average date of the first fall frost is September 25

and the average date of the last spring frost is May 6 (North Dakota Agricultural Statistics Service 2005). Per annum, Watford City receives 14.41 inches of precipitation (NCDC 2009). The wettest month is June, with an average of 3.05 inches of precipitation received; February is the driest, with only 0.39 inch of precipitation received on average. Thirty-five inches of snow are received annually, on average, with the highest accumulations (7.5 inches, on average) received in November (NCDC 2009). The highest monthly snow fall on record occurred in January at which time 22.3 inches of snow fell. Overall, northwest North Dakota, like much of the northwestern Great Plains, is characterized by a moderate to cool climate, with cold, dry winters and mild to warm, dry to moderately wet summers.

HYDROLOGY

The project area is located 17.68 miles south of the Missouri River and 0.37 mile northeast of Cherry Creek, a northwest/southeast-trending perennial stream that drains the Little Missouri River approximately 13.50 miles to the south-southeast. There are no intermittent or perennial waterbodies in the project area.

GEOLOGY

In general, the geology of the project area is characterized by Oahe Formation – River Sediment. The Oahe Formation – River Sediment consists of a mixture of dark, obscurely bedded clay and silt (overbank sediment); generally overlying cross-bedded sand (channel sediment) on floodplains of modern streams, up to 30 feet (10 meters [m]) thick (Clayton 1980).

SOILS

Six soil series are present in the project area (Natural Resources Conservation Service 2010); however, the dominant soil type is clayey alluvium derived from shale and siltstone. Table 1 summarizes the soils within the project area.

Table 1. Summary of Soil Series within the Project Area.

Soil Series	Parent Material	Drainage	Slope	Landform
Farnuf loam	Fine-loamy alluvium	Well drained	0%–2%	Alluvial flats, terraces
Belfield-Grail silty clay loams	Clayey alluvium	Moderately well drained	0%–2%	Flats
Rhoades-Daglum complex	Clayey alluvium	Moderately well drained	0%–6%	Alluvial fans, alluvial flats
Williams-Zahl loams	Fine-loamy till	Well drained	3%–9%	Rises, knolls
Niobell-Williams loams	Fine-loamy till	Moderately well drained	0%–6%	Rises
Zahl-Williams-Cabba complex	Fine-loamy till	Well drained	6%–9%	Knolls

Source: Natural Resources Conservation Service (2010).

FLORA AND FAUNA

The project area is situated in a cultivated hay field within the Missouri Plateau ecoregion, characterized by a complex stream drainage pattern (Figure 3). Present vegetation includes such species as blue grama (*Bouteloua gracilis*), western wheatgrass (*Pascopyrum smithii*), needlegrass (*Nassella viridula*), little bluestem (*Schizachyrium scoparium*), and prairie sandreed (*Calamovilfa longifolia*) (Bryce et al. 1998).



Figure 4. Overview of the vegetation characteristic of the project area, facing southeast.

Approximately 160 wildlife species are resident or seasonal visitors to the Missouri River ecosystem, and hundreds of native fish species live in the mainstem and tributaries. Some of the animal species that would have been common and available for human use in the Missouri River Valley area—both prehistorically and historically—include fur bearing mammals such as beaver (*Castor canadensis*), muskrat (*Ondatra zibethicus*), eastern cottontail (*Sylvilagus floridanus*), elk (*Cervus elaphus*), moose (*Alces alces*), mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), pronghorn (*Antilocapra americana*), and bison (*Bison bison*); and bird and waterfowl species such as mallard (*Anas platyrhynchos*), Canada goose (*Branta canadensis*), sharp-tailed grouse (*Pedioecetes phasianellus campestris*), golden eagle (*Aquila chrysaetos*), and bald eagle (*Haliaeetus leucocephalus*) (Seabloom et al. 1978).

Currently, one federally listed threatened species—the piping plover (*Charadrius melodus*)—resides in the area, and five federally listed endangered species inhabit the area including the interior least tern (*Sterna antillarum*), pallid sturgeon (*Scaphirhynchus albus*), whooping crane (*Grus americana*), black-footed ferret (*Mustela nigripes*), and gray wolf (*Canis lupus*) (U.S. Fish and Wildlife Service 2011). Additionally, the greater sage-grouse (*Centrocercus urophasianu*), sprague’s pipit (*Anthus spragueii*), and dakota skipper (*Hesperia dacotae*)

reside in the area and are federal candidates for endangered species listing (U.S. Fish and Wildlife Service 2011).

ENVIRONMENTAL CONSTRAINTS

Preservation of archaeological materials within or adjacent to the project area has been impacted largely by natural erosion including ongoing eolian and colluvial processes. Secondary sources of impact to archaeological resources include livestock grazing, agriculture, and oil and gas development. In fact, the project area is located entirely within an agricultural field currently planted with a hay crop. The continuous plowing and cultivation of this field would have had a dramatic impact on the preservation of any archaeological and/or historic resources that may have been present in the past. Additionally, the Garden Creek Gas Plant has been constructed and is currently in operation immediately south of the project area.

CULTURAL/HISTORIC OVERVIEW

PREHISTORIC CONTEXTS

The following discussion incorporates a variety of sources to develop a prehistoric overview for the work conducted for the potential commercial development project and includes information from the Garrison Study Unit (GSU) in which the project area is located (Gregg and Bleier 2008). As of 2007, 3,303 archaeological sites were identified in the GSU, the majority of which were identified on ridges (40.5 percent); hills, bluffs, and knolls (24.0 percent); and terraces (10.4 percent) (Gregg and Bleier 2008).

Paleoindian Tradition (ca. 11,500–7,900 years before present [B.P.]

Although speculation exists regarding the possibility of earlier habitation of the Great Plains, the Paleoindian tradition is the oldest of the region, and, in general, is associated with a hunting and gathering adaptation (Gregg 1985). The Paleoindian tradition is subdivided here into six main complexes: Clovis, Goshen, Folsom, Hell Gap/Agate Basin, Alberta/Cody, and Parallel Oblique Flaked. Fourteen Paleoindian archaeological resources have been identified in the GSU (Gregg and Bleier 2008). Paleoindian sites in the GSU include, but are not limited to, the Beacon Island site (32MN234A), the Beacon Island Agate Basin site (32MN234), the Moe site (32MN101), and 32ME946.

The Clovis complex (ca. 11,500–10,800 B.P.), defined by large, fluted lanceolate projectile points, is the earliest unequivocal complex in North America. Clovis artifacts have been found with megafauna, such as mammoth, in buried contexts in the Southwest and Great Plains (Grayson and Meltzer 2002); however, although megafauna were probably dietary constituents, it is debated to what degree Early Paleoindians pursued large game (Cannon and Meltzer 2004; Grayson and Meltzer 2002). In the South Dakota Badlands, the Lange-Ferguson site yields the best evidence for proboscidean exploitation (Hannus 1990). Here, modified mammoth bones are directly associated with a flake and three projectile points were recovered from deposits similar to those containing mammoth, indicating that Clovis hunter-gatherers either killed the animals or scavenged their carcasses (Hannus 1990). Skeletal

remains from a single mammoth were unearthed during building construction in 1988 near Powers Lake within the GSU. These remains were shallowly buried, were not radiocarbon dated, and were not appraised for the potential of associated cultural remains (Gregg and Bleier 2008). Few Clovis sites have been recorded in the region. Clovis artifacts were recovered from two sites, a single Clovis point base was recovered from 32ME946 (Floodman 1988) and Clovis points have been recovered from the Beacon Island Agate Basin site (Ahler 2003).

Goshen (ca. 10,900–10,100 B.P.) is a technological complex first identified at Hell Gap, Wyoming (Irwin 1967, 1971), but it is also found at Mill Iron, Montana, Carter-Kerr/McGee, Wyoming, and the Jim Pitts site, located in the South Dakota Black Hills (Sellet 2001). Goshen is poorly understood—the basally thinned, unfluted projectile points share affinities with both Clovis and Folsom, but are also similar to Southern Plains Plainview points. In stratified deposits, Goshen materials typically underlie Folsom (Frison et al. 1996). Plainview or Goshen points were recovered from the Moe site in the GSU (Gregg and Bleier 2008).

The Folsom complex (ca. 10,900–10,200 B.P.) is typified by distinctive fluted lanceolate projectile points. With most large grazers extinct by Folsom times and grasslands dominating the Great Plains, bison populations flourished, providing resources for Folsom hunters (Frison 1991). However, many high-elevation Folsom sites, especially in the intermontane basins of the Rocky Mountains, also demonstrate broad diets of diverse small prey (Hill 2007). Probable structures recorded at the Mountaineer and Barger Gulch sites in Colorado suggest long-term occupations in mountain settings (Stiger 2006; Surovell and Waguespack 2007). In North Dakota, there are numerous documented Folsom sites (Gregg 1985), including the Bobtail Wolf (32DU955A), Big Black (32DU955C), and Young-Man-Chief (32DU955D) sites (Root 2000; Shifrin 2000; William 2000). These sites are interpreted as camps, quarries, and lithic workshops where Knife River flint was procured and used for tool production. In the GSU, Folsom points were recovered from the Moe (32MN101) and Beacon Island Agate Basin (32MN234) sites (Gregg and Bleier 2008).

Both the Agate Basin (ca. 10,500–10,000 B.P.) and Hell Gap (ca. 10,000–9,500 B.P.) technocomplexes are typified by lanceolate projectile points with thick lenticular cross-sections (Frison 1991). Based on morphological similarities and stratigraphic evidence, Hell Gap is technologically descended from Agate Basin. Agate Basin and Hell Gap hunter-gatherers were probably specialized bison hunters. Sites like Agate Basin II (Hill 2001) and Casper (Todd et al. 1997) indicate more frequent extraction of marrow and within-bone nutrients, suggesting a greater focus on long-range planning than previously evident. Some sites associated with this tradition have been recorded in North Dakota and South Dakota, but these mainly consist of isolated and surface finds (Gregg 1985). One of the most significant Paleoindian sites in the GSU is the Beacon Island Agate Basin site (Ahler 2003). Agate Basin points have also been recovered from the Moe site, and an isolated Knife River flint Agate Basin point was recorded at 32ME946 (Gregg and Bleier 2008).

Alberta (9800–9000 B.P.) is a poorly dated technology that probably descends from Hell Gap and is documented at the Hell Gap, Wyoming, and Hudson-Meng, Nebraska, sites (Agenbroad 1978; Frison 1991). Hudson-Meng is one of the largest documented bison kills

and suggests that Alberta people focused on bison hunting (Agenbroad 1978); however, more recent work suggests that humans were not responsible for killing the bison and that they died of a natural event (Todd and Rapson 1999). The Cody Complex (9200–8800 B.P.), which includes stemmed/shouldered Eden and Scottsbluff projectile points and the distinctive Cody knife, apparently arose from Alberta (Frison 1991). These sites are widespread across the northwestern and central Great Plains, with components at the Wyoming Horner I, Finley, and Medicine Lodge Creek sites (Frison and Todd 1986; Frison and Walker 2007) and the Mammoth Meadows, Myers-Hindman, and MacHaffie sites in Montana (Davis 1993). Such sites indicate that Cody adaptations were diverse and utilized large fauna as well as small prey and floral resources (Frison et al. 1996; Galvan 2007). Alberta/Cody sites have been recorded in North Dakota and South Dakota. In fact, Hudson-Meng contains extensive Knife River flint, showing a strong connection to the Missouri River region. A single Scottsbluff point was recorded at the Moe site, and Metcalf et al. (1988) recorded a probable Alberta point as an isolated find near Scorio Creek.

The Parallel Oblique Flaked complex is a catch-all grouping of Paleoindian projectile point types (Gregg 1985) including Angostura, Milnesand, Browns Valley, Lusk, Allen, and Frederick; these range in age from around 9400 to 7900 B.P. All types are lanceolate with parallel oblique flaking. Bison kill-butcherries became rare on the northwestern and northern Great Plains after approximately 8000 B.P. (Frison 1998), perhaps due to severe ecological deterioration that could no longer support large bison populations. Complex excavated and surface sites have been recorded in the Dakotas, including sites on the Missouri River. In the GSU, six archaeological resources defined under the general “Plano” category have been identified (Gregg and Bleier 2008).

Plains Archaic Tradition (ca. 8000–1500 B.P.)

The transition from Paleoindian to Archaic is archaeologically visible as an abrupt shift to large notched projectile points (Frison 1991), perhaps indicating a shift to atlatl propelled darts from hand-thrown spears. This transition is also associated with warming/drying trends that prompted diverse subsistence adaptations among hunter-gatherers (Carlson 1994). Ground stone appears in the Archaic, suggesting a greater focus on processing floral resources. In conjunction with the appearance of pithouses and storage pits in the western intermontane basins, this suggests a shift in subsistence base, a reduction in overall residential mobility, and more predictable seasonal rounds (Frison 1991). In the GSU, 96 Archaic archaeological resources have been identified. Thirty-one of these are from unspecified associations (Gregg and Bleier 2008). Important Archaic-age sites in the GSU include the Mondrian Tree site (32MZ58) and the Moe site (32MN101).

The Logan Creek/Mummy Cave complex (5600–4000 B.P.) is the earliest example of large side-notched projectile points on the northern Great Plains. The blending of the Logan Creek and Mummy Cave for this complex is due to varied nomenclature used among archaeologists regionally for similar archaeological complexes (Gregg 1985). Settlement types associated with this complex include bison kills, transient camps, and some stone circle sites. Four archaeological resources containing large side-notched projectile point varieties have been identified in the GSU (Gregg and Bleier 2008).

The Oxbow complex (5000–4000 B.P.), typified by side-notched, deeply concave-based projectile points, is concentrated in northern Montana, Alberta, and Saskatchewan (Hannus 1994:180) but is also quite common in North and South Dakota, with numerous sites along the Missouri River and its tributary system. Oxbow subsistence apparently centered on bison and sites include bison impoundments and jumps, encampments on stream terraces, stone circles, and processing areas (Hannus 1994; Reeves 1969). However, numerous birds and small mammals were probably exploited (Aaberg et al. 2006:174). Some northern Great Plains sites further yield evidence of complex cultural behavior including bundle burials with elaborate grave goods (Bryan 1991). Four Oxbow archaeological resources have been identified in the GSU (Gregg and Bleier 2008).

The McKean complex (ca. 4500–3400 B.P.) encompasses three distinct sub-phases—the McKean lanceolate, Duncan, and Hannah. The McKean complex is widespread across the Great Plains, and sites from this period can be found associated with bison kills, stone circles, lithic caching, and seasonal settlements (Frison 1991). Slab-lined pit hearths are common, as are ground stone artifacts suggesting a greater reliance on plant resources (Carlson 1994; Frison 1991). McKean complex sites often demonstrate evidence of lithic raw material exchange, including Swan River chert, Tongue River silicified sediment, and Knife River flint (Gregg 1985). In the GSU, 23 archaeological resources dating to the McKean complex have been identified (Gregg and Bleier 2008).

Pelican Lake (ca. 3000–2700 B.P.), typified by broad, thin corner-notched projectile points, is likely a descendant of McKean and is found across the northern and central Great Plains (Frison 1991). This wide spatial distribution may indicate significant population growth in response to the favorable moist conditions of the Sub-Atlantic episode (Reeves 1983). Numerous communal bison kills, such as Head-Smashed-In (Frison 1991), indicate communal bison hunting, but this does not suggest it was an exclusive feature of their subsistence. Rather, Pelican Lake populations probably relied on a broad-based economy across diverse ecozones (Hannus 1994). Thirty-four Pelican Lake archaeological resources have been identified in the GSU (Gregg and Bleier 2008).

Plains Woodland Tradition (ca. 2000–450 B.P.)

Temporally overlapping with the Northwestern Plains Late Archaic, the Plains Woodland tradition is characterized by increased sedentism, garden horticultural activity, expanding regional exchange networks with eastern Woodland populations (Adena and Hopewell), and the elaboration of ceremonial activities and mortuary practices, specifically mound burials (Griffin 1967). Significant technological advances such as bow and arrow and ceramics-use are also apparent (Gregg 1985); however, the fundamental subsistence strategies of the Plains Woodland did not drastically differ from their Archaic predecessors (Zimmerman 1985). It is assumed that this tradition saw the beginning of horticultural practices in the region. For the purposes of this study the complexes that are classed as belonging to the Plains Woodland include Besant, Sonota, Laurel, Avonlea, Old Woman's, and Blackduck. The Besant and Sonata components are well represented in the GSU (Gregg and Bleier 2008). Of the 184 Woodland sites in the GSU, 119 are unspecified, and 37 are Besant and/or Sonata age sites (Gregg and Bleier 2008).

The Besant complex (ca. 2000–1500 B.P.), typified by small to medium-sized side-notched triangular projectile points, represents the earliest presence of ceramics in North Dakota, probably resulting from eastern woodland influence (Walde 2006). Besant ceramics are more common in the eastern half of the Dakotas; the vessels show a basic conoidal shape and suggest lump modeling manufacture with some coarse cording (Wood and Johnson 1973). Besant sites show extensive use of Knife River flint (Reeves 1970). Site types include stone circle sites, habitations on stream and river terraces, and bison kills. Numerous communal kill sites, including the Ruby bison pound in Wyoming (Frison 1991), suggest that Besant people were sophisticated bison hunters. The Sonota complex (1850–1350 B.P.) appears to be a possible sub-complex of Besant, but differs in that burial mounds are common at Sonota sites (Reeves 1983; Wood 1967). These mounds include rectangular subfloor pits/tombs with dismembered bodies and, commonly, articulated bison remains (Johnson and Johnson 1998). The presence of associated exotic artifacts is often cited as evidence of Hopewell influence on Middle Plains Woodland populations (Johnson and Johnson 1998). In the GSU, 37 Besant/Sonota archaeological resources have been identified, including at 32DU2, the Twin Buttes site (32DU32/32ME617), and 32ME254.

Sites from the Laurel complex (2100–850 B.P.) are generally found in the eastern portions of North Dakota, northern Minnesota, and southern Canada. Laurel pottery and mound building are fairly distinct, but lithics associated with this complex tend to be various and lack a particular style (Gregg 1985).

Avonlea complex (ca. 1800–1000 B.P.) sites occur across the northern Great Plains and are contemporaneous with Besant. This complex includes a variety of site types, including stone circles, bison kills, and rock shelter habitations (Reeves 1970). Avonlea represents the first regional complex to produce arrow points exclusively, suggesting a transition to bow and arrow technology (Frison 1988). Avonlea point types are small and indistinctly side-notched. Saskatchewan Basin Complex: Early Variant pottery is found at Avonlea sites (Byrne 1973). Avonlea subsistence in the north relied heavily on communal bison procurement, but in their southern range bison hunting was supplemented by smaller game (e.g., pronghorn), fish, and seasonal plant exploitation (Smith and Walker 1988). Avonlea sites are relatively rare in the Dakotas (Vickers 1994). In North Dakota, the Evans site (32MN301) contained Avonlea projectile points and ceramics (Schneider and Kinney 1978). Only one Avonlea-aged archaeological resource was identified in the GSU.

Rare in North Dakota is the Old Woman's complex (A.D. 700–1300). This complex is contemporary with the Plains Village tradition, so it would seem likely that many associated sites would be granted the latter designation (Gregg 1985).

The Blackduck complex (A.D. 1150–450) derives from northern Minnesota and was concentrated in southern Manitoba. It is contemporary with both Avonlea and Old Woman's complexes, and with Extended and Terminal Middle Missouri traditions. Some evidence of possible Blackduck pottery has been found along the Missouri River, which suggests trade between the Missouri River villagers and the Blackduck people to the north (Joyes 1970).

Plains Village Tradition (ca. 1050–350 B.P.)

Lehmer (1971) defined the Plains Village tradition as possessing the following diagnostic traits: equal horticulture and hunting and gathering strategies; semi-permanent villages near the Missouri River floodplain; earthlodges; large storage and refuse pits; distinctive ceramics; abundant end scrapers and arrow points; bison scapula hoes; and a well-developed bone tool industry. The Plains Village Tradition is divided into the Middle Missouri tradition (A.D. 969–1500) and the Coalescent tradition (A.D. 1300–1650), discussed below. Fifteen Plains Village archaeological resources have been identified in the GSU (Gregg and Bleier 2008).

Three primary Middle Missouri variants are recognized: Initial Middle Missouri (A.D. 969–1297), Extended Middle Missouri (A.D. 1075–1443), and Terminal Middle Missouri (A.D. 1300–1500) (Eighmy and LaBelle 1996). These represent a continuation and intensification of Northern Plains Woodland lifeways and their appearance coincides with the onset of the Medieval Warm Period (Bryson et al. 1970) when a moisture increase likely permitted horticulture in areas previously characterized by tenuous farming conditions (Wood 2001).

The Initial Middle Missouri Variant (IMMV) is thought to have developed as an outgrowth of the Great Oasis (Tiffany 2007) or via the arrival of eastern populations already exploiting a Plains Village lifeway (Lehmer 1971). The IMMV was concentrated in the southern portions of the Middle Missouri region and characterized by highly fortified villages of large, semi-subterranean rectangular houses (Lehmer 1971; Winham and Calabrese 1998).

The Extended Middle Missouri Variant (EMMV) is concentrated in the northern portions of the Middle Missouri region (Lehmer 1971). EMMV groups resided in small villages of semi-subterranean rectangular houses; southern villages were more often fortified than those in the north (Wood 2001). It is unclear whether the EMMV replaced the IMMV or represents a contemporaneous offshoot of the IMMV. Origins aside, it is assumed that IMMV populations were eventually absorbed into EMMV populations. The final expression of this tradition was the Terminal Middle Missouri (Winham and Calabrese 1998:282). These sites were concentrated in a smaller geographic area along the Missouri River in southern North Dakota and characterized by fewer but much larger villages (Wood 2001). Sites again contained long, rectangular semi-subterranean houses but were highly fortified (Wood 2001). A continuation of the Middle Missouri Tradition is recognized historically as the Siuwan-speaking Mandan and Hidatsa (Wood 2001).

The Coalescent period is temporally divided into Initial (650–350 B.P.), Extended (500–300 B.P.), and Post-Contact Coalescent (300 B.P.–Historic period) (Johnson 1998; Lehmer 1971). The Coalescent Tradition is thought to represent a geographic movement of Central Plains Tradition village-dwelling populations to the Missouri River Valley in South Dakota (Blakeslee 1993). Central Plains Traditions might have migrated from Nebraska and Kansas in response to drought brought on by the Pacific climatic episode (Lehmer 1971). Similar to Middle Missouri Tradition groups, Coalescent populations practiced an economy split between mixed cultigen horticulture and bison hunting (Johnson 1998).

Initial Coalescent Variant sites are located on bluffs overlooking the Missouri River and its drainages in southern South Dakota. Populations lived in fortified villages consisting of

subrectangular to circular/oval earthlodges and often surrounded by complex fortifications (Johnson 1998). Violence amongst Coalescent groups is evidenced at the Crow Creek site (39BF11) where approximately 486 individuals were killed in the village fortification ditch around 625 B.P. (Willey and Emerson 1993). Crow Creek is interpreted as evidence of internecine warfare amongst Initial Coalescent groups over land competition (Zimmerman and Bradley 1993) or, conversely, as evidence of warfare between immigrant Coalescent groups and resident Middle Missouri Tradition peoples (Johnson 1998). The Extended Coalescent Variant apparently descended from the Initial Coalescent sometime in the fifteenth century A.D. Sites are concentrated along the Missouri River and its tributaries in central and northern South Dakota (Krause 2001). Extended Coalescent sites are far more abundant than during the Initial Coalescent and are characterized by a dispersed, unfortified village structure of circular earthlodges (Johnson 1998; Krause 2001; Lehmer 1971). The Extended Coalescent Variant evolved into the Post-Contact Coalescent during the Protohistoric and Historic and the Coalescent Tradition is recognized as the Arikara (Krause 2001). The last post-contact village was Like-a-Fishhook Village, occupied by the Arikara, Mandan, and Hidatsa; it was abandoned in 1886 when groups relocated to the Fort Berthold Indian Reservation (Smith 1972).

HISTORIC CONTEXTS

European Trade and Exploration (A.D. 1738–1858)

Perhaps the earliest attempts at exploring the northern Great Plains came as a result of the ventures of Pierre Gaultier de Varennes Siure de la Verendrye (Dill 1983). His travels from New France into North Dakota led him as far as the Missouri River (somewhere near Bismarck), and led to subsequent expeditions by his sons, which went farther south into South Dakota (near Pierre) and west towards the Black Hills. While the elder la Verendrye met the Mandan, his sons encountered the Arikara and other tribes in South Dakota. Their reports heightened interest in the region and the possibilities that existed for trade with its inhabitants.

Following the la Verendryes, a modest fur trade developed in the region, but until the expedition of Captains Meriwether Lewis and William Clark returned successfully from their voyage up the Missouri, the region was considered a wild unknown (Schulenberg 1957).

In 1807, Manuel Lisa established a short-lived post at the mouth of the Bighorn, and by 1809 his St. Louis Missouri Fur Company was building posts among most of the tribes all along the Missouri River. Other notable companies, such as the Northwest Company, Hudson Bay Company, the Columbia Fur Company, and the American Fur Company, soon followed suit (Schulenberg 1957). The life of these posts tended to be short, but they did much to influence the tribes who frequented the Missouri River in both North and South Dakota. Fort Union—at the confluence of the Yellowstone and Missouri rivers—was the last of the great posts, and its waning during the late 1850s saw the fur trade in the Dakotas in its last throes.

Post-Contact Tribal Overview (A.D. 1780–1900)

In addition to the tribes that arose from the Middle Missouri and Coalescent traditions (Mandan, Hidatsa, and Arikara), the northern Great Plains and the Missouri River were also used by countless other tribes since before European contact.

The Assiniboine were known to frequent the northern Missouri River (mainly near the confluence with the Yellowstone), and were active in the fur trade throughout the eighteenth and nineteenth centuries. As well, the Cheyenne were pushed westward by the Chippewa during the middle of the eighteenth century and took up at least a temporary settlement period on the Missouri River. At least one earthlodge village has been attributed to the Cheyenne in eastern North Dakota, and some Cheyenne villages on the Missouri River were located between the Mandan to the north, and the Arikara to the south, where they built earthlodges and pursued horticulture and buffalo hunting (Schlesier 1968).

The Plains Cree and Plains Chippewa also frequented the northern Missouri—mainly near the confluence with the Yellowstone, but also near Fort Clark. Both tribes traded actively with the Mandan and Hidatsa. The Crow, although more westerly in their territory, were related to the Hidatsa and would often trade and visit with the Missouri River tribes (Schulenberg 1957).

Based on linguistic evidence, the Sioux (or Dakota) originated from the southwest Great Lakes region (DeMallie 2001a). The timing of the migration is unclear, but ceramic evidence suggests that the Dakota were living on the plains several centuries before the arrival of Europeans (Hanson 1998). Based on linguistics, it is thought that the Assiniboine split from the Sioux sometime before the mid-seventeenth century (Hanson 1998). The Teton Dakota are divided into seven sub-tribes, including the Oglala, Brule, Sans Arc, Hunkpapa, Blackfeet, Miniconjou, and Two Kettles (Hanson 1998). According to DeMallie (2001a), by the mid-eighteenth century, the Teton Dakota hunted bison in the area east of the Missouri River, their movements limited in part by the Arikara stronghold along the Missouri River. However, a series of smallpox epidemics from 1771 to 1781 devastated the Arikara villages (Johnson 1998) and permitted the Teton Dakota to move west of the Missouri River. Like the Teton Dakota, the Yankton and Yanktonai Dakota occupied the prairies east of the Missouri River and north into Minnesota in the mid-seventeenth century (DeMallie 2001a). By the mid-nineteenth century, the Yankton and Yanktonai occupied the prairies east of the Missouri River from the mouth of the Big Sioux River in the south to the Red River in the north (DeMallie 2001b).

The Reservation Period began in the 1860s and continues to today. This time period contains numerous accounts of government actions to stop tribal ceremonialism, forced boarding school education of Indian children, and attempts at termination and relocation to solve the “Indian Problem” in the Dakotas. Regardless of this checkered history, the tribes who lived on, and used, the Missouri River have persisted to the present as strong and vital people with a living culture which has survived for present and future generations.

In the GSU, five Hidatsa, one Arikara, one Chippewa, one Mandan, and 21 unspecified historic Native American archaeological resources have been identified (Gregg and Bleier 2008).

Homesteading in the Dakotas (A.D. 1860–1930)

The first homestead in North Dakota was filed in 1868, which was the only homestead filed until 1871. The true rush for homesteads did not take place until 1885. This rush was spurred by the extension of the Northern Pacific Railroad across the Red River from Minnesota (Works Progress Administration [WPA] 1950). Western North Dakota—including McKenzie County—did not see much settlement prior to the 1890s, and the major settlement of this region did not start in any great numbers until between 1900 and 1910. In general, those homesteaders who selected lands along the Missouri River were able to do some crop farming, but the majority of homesteads were arranged as ranch operations for sheep or cattle.

In addition to the homesteading, which brought an increasing number of people to western North Dakota, the discovery of large deposits of lignite coal further boosted interest in the development of McKenzie County and the surrounding area (WPA 1950). Although slow at first, the mining industry started to flourish during the 1930s; to this day it remains a major focus of activity which drives the economy of both the county and the state. In total, eight historic Euro-American archaeological resources have been identified in the GSU (Gregg and Bleier 2008).

BACKGROUND RESEARCH

As part of the initial phase of this investigation, SWCA conducted a background search of archaeological and historical literature and records for the project area and surrounding 1-mile area. Researchers searched relevant record holdings at the State Historical Society of North Dakota (SHSND) and other available sources for information regarding previously recorded historic and prehistoric sites located within the project area, including General Land Office (GLO) survey plats. Background research was conducted on December 8, 2011.

Based on the results of the SHSND records search, five previous cultural resource inventories have been performed within 1 mile of the project area between 1976 and 2011. These are detailed in Table 2.

Table 2. Bibliographic Listing of Previous Archaeological and Historic Studies within 1 Mile of the Project Area.

Manuscript Number	Location	Title	Author(s)	Year
00140	Section 3, T150N, R98W	Archaeological and Historic Site Survey of Project No. CRS 91(5), McKenzie County, North Dakota	C. Dill	1976
09613	Sections 26, 34, 35, T151N, R98W	Reservation Telephone Cooperative Cable Improvements: A Class II Cultural Resource Inventory, McKenzie Co., ND	D. Klinner	2006
11739	Section 35, T151N, R98W	A Class I and Class III Cultural Resource Inventory of the Garden Creek Gas Plant, McKenzie Co. ND	N. Smith	2010

A Class I and Class III Cultural Resource Inventory of the ONEOK Rockies Midstream 80-Acre Potential Commercial Development Area, Section 35, Township 151 North, Range 98 West, McKenzie County, North Dakota

Manuscript Number	Location	Title	Author(s)	Year
12263	Section 34, T151N, R98W	A Class I and Class III Cultural Resource Inventory of the Bear Paw Energy Natural Gas Liquids Garden Creek Pipeline, Private Lands, McKenzie Co., ND.	C. Riordan, J. Cooper, S. Lechert, S. Slessman	2011
12312	Section 2, T150N, R98W; Sections 25, 26, 34, 35, 36, T151N, R98W	WBI Holding's Garden Creek Pipeline: A Class III Cultural Resources Inventory in McKenzie Co., ND.	P. Metzger, W. Bluemle	2011

Results of the background search identified three previously recorded cultural resources within the surrounding 1-mile study area (Table 3). Two are prehistoric in age and include one cultural material scatter site of unknown cultural affiliation (32MZ118) and one cultural material scatter site lead, also of unknown cultural affiliation (32MZX187). The other site consists of an historic quarry/mine site lead (32MZX375). Regarding eligibility for listing on the National Register of Historic Places (NRHP), all three resources remain unevaluated. None of the previously recorded resources are within the project area. Additionally, a search of the GLO plats for Section 35, T151N, R98W (GLO 1902) did not show any historic resources or features located within the project area as of 1902 (Figure 4).

Table 3. Previously Recorded Resources.

Site Number	Site Name	Site Type	Legal Location (S/T/R)	Cultural Affiliation	NRHP Eligibility
32MZ118	Cherry Creek	Cultural Material Scatter	SW $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 34, T151N, R98W	Unknown Prehistoric	Unevaluated
32MZX375	AML Location	Quarry/Mine	NW $\frac{1}{4}$ Section 27, T151N, R98W	Historic	Unevaluated
32MZX187	None	Cultural Material Scatter	SW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 1, T150N, R98W	Unknown Prehistoric	Unevaluated

NRHP = National Register of Historic Places

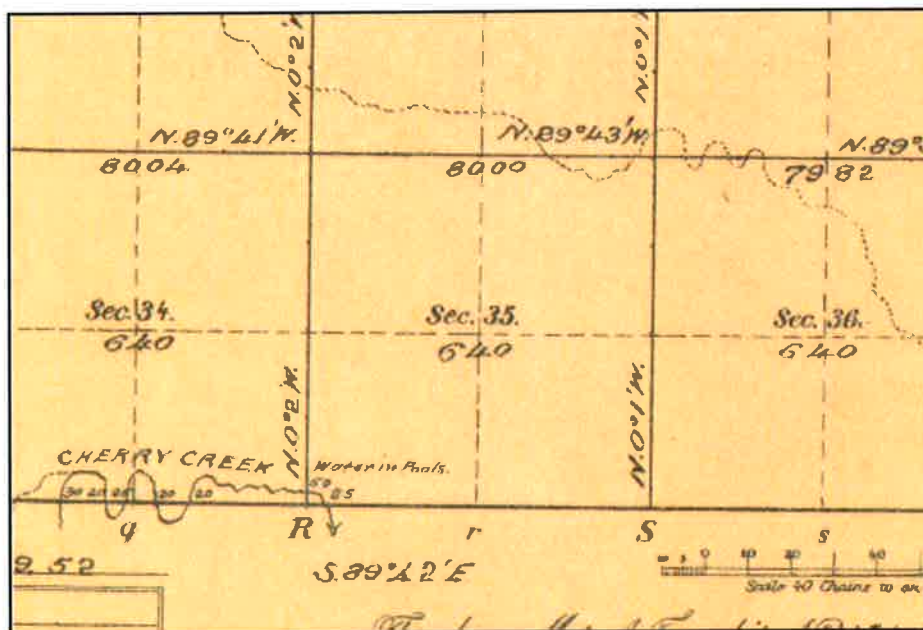


Figure 5. 1902 GLO survey plat showing Section 32 of T 151N, R 98W (GLO 1902).

FIELDWORK METHODS

Fieldwork was designed so that project archaeologists could collect all appropriate and necessary data for the completion of the project report of results and recommendations, and to ensure accurate completion of site forms for all resources encountered.

In accordance with the scope of work, archaeologists surveyed the 80-acre project area using parallel linear transects with spacing not exceeding 30 m. The ground surface was examined for artifacts, features, or other evidence of cultural occupation. Cut banks, eroded surfaces, and other areas with significant exposure were examined intensively throughout fieldwork. In areas with high vegetation cover and high probability of cultural resources, survey transects were reduced to 10 m to maintain adequate visibility.

Where cultural resources were located, project archaeologists made an intensive effort to fully and accurately establish the extent and boundaries of new and previously recorded sites. As such, sites were mapped using sub-meter accurate Trimble Global Positioning System (GPS) units. When detailed mapping or remapping was required, all linear site features, such as site boundaries, roads, and fence lines, as well as point features, such as the site datum, cultural features, artifact concentrations, diagnostic artifacts and tools, and other necessary data, were mapped with the Trimble GPS unit for post-processing into ArcMap 10.0 shapefiles, and for plotting onto associated U.S. Geological Survey 7.5-minute quadrangles to ensure accuracy and to produce required location maps of all sites and resources.

In addition to site mapping, project personnel photograph sites in overview and for other data collection needs. Associated features and diagnostic artifacts are described, measured, recorded with GPS, and photographed, as appropriate. Field personnel note environmental

setting, context, topography, and geographical location for each cultural resource. No collection or subsurface testing was conducted during the inventory.

SITE EVALUATION

SWCA evaluated sites and their significance, as defined by criteria set forth in Title 36 Code of Federal Regulations 60.4 (National Park Service [NPS] 1991), which states:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- A) That are associated with events that have made a significant contribution to the broad patterns of our history; or
- B) That are associated with the lives of persons significant in our past; or
- C) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D) That has yielded or may be likely to yield information important in prehistory or history.

Not eligible sites have lost integrity and are unlikely to contribute further data significant to knowledge of prehistory or history.

Prehistoric Archaeological Sites

Prehistoric lithic scatters/campsites (sites without any structures or association with known significant events or persons) recorded for the project generally will not contain NRHP discussion for Criteria A, B, and C. Instead, for NRHP recommendation purposes, these properties will be discussed for their potential to yield information significant to prehistory or the archaeological record under NRHP Criterion D. Special cases generally apply to Criterion A, where a prehistoric site type (such as a stone circle site) may not be recommended eligible for the NRHP from an archaeological perspective, but may be considered important to cultures of Native American peoples.

Evaluation of the significance of archaeological sites under Criterion D considers general characteristics such as the nature, size, and diversity of the site assemblage; the potential presence or absence of subsurface cultural deposits; the nature of any features within the site (construction techniques, building materials, structural integrity); and the age range reflected by the site assemblage. Sites considered to be significant generally contain an assemblage of cultural remains that reflects sufficient diversity to permit identification of activities and to allow confirmation of the period of site use. Sites with the most potential to address research questions about human lifeways contain associated features, structures, and/or relatively intact and dateable artifacts.

Historic Archaeological Sites or Components

Historic sites containing or consisting of preserved features or structures are evaluated primarily under Criteria A, B, and C. Historic trash scatters lacking associated features or structures are primarily evaluated under Criterion D. In general, these types of sites represent ephemeral prospecting or stock management activities, but they lack identifiable or important association with specific persons or events of regional or national history (Criteria A and B), and they lack the formal and structural attributes necessary to qualify as eligible under Criterion C. The evaluation of significance of historic archaeological sites under Criterion D focuses on the capacity of the sites or components to yield significant information regarding knowledge of history during the period(s) of site significance. Evaluation of the significance of historic sites considers general characteristics such as the nature, size, and diversity of the site assemblage; the potential presence or absence of subsurface cultural deposits; the nature of any features within the site; construction techniques; building materials; structural integrity; and the age range reflected by the site assemblage.

Historic sites considered to be significant under Criterion D generally contain an assemblage of cultural remains that reflects sufficient diversity to permit identification of activities and to allow confirmation of the period of site use. Sites with the most potential to address research questions contain associated features, structures, and relatively intact and datable artifacts. Significant sites are those that could impart information not available solely from historical documents. Although archival research may provide an essential form of information, often historical records are inaccurate or incomplete. For example, examination of construction techniques or household assemblages can provide information on economic slumps, reuse of structures for other than original purposes, and re-occupation cycles. As a result, insight may be gained into questions about human lifeways that are often asked in archaeology, but rarely specified directly in historical documentation.

Non-Archaeological Historic Sites or Components

Non-archaeological historic sites or sites with non-archaeological components are those primarily assessed for NRHP eligibility under Criterion A, B, or C, rather than Criterion D and typically are not subject to subsurface testing. Individual segments of significant historic sites are evaluated as contributing or non-contributing in terms of physical and environmental integrity. Examples of historic site types include linear historic features, such as transportation routes and water conduits, standing building and structure sites, and potentially extend to any historic feature on an otherwise archaeological site, such as Traditional Cultural Property (TCP) features. Historic and ethnographic sites evaluated for potential contribution to history or cultural traditions for reasons beyond their possible future research value tend to have different evaluation and management considerations than archaeological sites. Typically, the integrity of historic sites is addressed using the guidelines presented in National Register Bulletin 15 (NPS 1991), which defines the seven elements of integrity as location, design, materials, workmanship, setting, feeling, and association. As such, properties are basically evaluated in consideration of their physical integrity and the integrity of their surroundings. TCPs are also considered under the guidelines of National Register Bulletin 38 (Parker and King 1998).

INVENTORY RESULTS AND RECOMMENDATIONS

SWCA conducted a Class III inventory of the 80-acre project area on December 21, 2011. The project area lies in an active agricultural field. Project area vegetation was dominated by cultivated wheat (*Triticum* sp.) and ground visibility ranged from 60 to 90 percent. Impacts to the project area include agricultural activity, trash dumping, and construction within a small portion of the project area in the southeast corner of the survey parcel. Although portions of the project area had small, isolated patches of snow at the time of survey, primarily concentrated around wheat stubble, none were large enough in size or depth to obscure features or cultural material (see Figure 4).

No cultural resources were identified during the course of the inventory. It is recommended that the project be granted determinations of *No Historic Properties Affected* and *No Significant Sites Affected* and clearance to proceed as planned.

CONCLUSION

On December 8 and 21, 2011, respectively, SWCA conducted a Class I and intensive Class III cultural resource inventory for the proposed ONEOK 80-acre potential commercial development project in the N½ SE¼ of Section 35, T151N, R98W. SWCA inventoried 80 acres for the project. No cultural resources were observed during the course of the inventory. It is recommended that the project be granted determinations of *No Historic Properties Affected* and *No Significant Sites Affected* and clearance to proceed as planned.

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**Unanticipated Discovery Plan for
Cultural Resources Identified During
Construction of the ONEOK Rockies
Midstream 80-Acre Potential
Commercial Development Area,
Section 35, Township 151 North,
Range 98 West, McKenzie County,
North Dakota**

Agency

State Historical Society of North Dakota

Prepared for

E3 Environmental, LLC

Prepared by

SWCA Environmental Consultants

March 28, 2012

**Unanticipated Discovery Plan for Cultural Resources Identified During
Construction of the ONEOK Rockies Midstream 80-Acre Potential
Commercial Development Area, Section 35, Township 151 North,
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TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	1
TRAINING	1
DISCOVERY DEFINITION	2
PROCEDURES FOR ADDRESSING DISCOVERIES IDENTIFIED BY CONSTRUCTION PERSONNEL.....	2
TREATMENT OF DISCOVERIES BY ARCHAEOLOGICAL PERSONNEL.....	3
AGENCY NOTIFICATION AND REPORTING.....	3
SPECIAL PROCEDURES FOR DISCOVERIES OF HUMAN REMAINS	3
REFERENCES CITED.....	5

LIST OF TABLES

<u>Table</u>	<u>Page</u>
Contact Information	4

INTRODUCTION

This Unanticipated Discovery Plan documents the procedures to be implemented in the event that cultural resources are discovered during construction of the ONEOK Rockies Midstream (ONEOK) 80-Acre Potential Commercial Development Project in McKenzie County, North Dakota. ONEOK proposes to develop a privately owned 80-acre parcel in the N½ SE¼ of Section 35, Township 151 North, Range 98 West, approximately 5.6 miles northeast of Watford City, North Dakota. A Class I and Class III cultural resource inventory was performed for the project area, during which no cultural resources were identified (Leroy 2012); however, the potential for exposure of previously unidentified or buried cultural material within the project area during mechanical excavation exists.

Significant historical or archaeological artifacts or sites located on lands under the jurisdiction of the State of North Dakota or its political subdivisions are protected under Section 55-02-07 of the North Dakota Century Code (NDCC). Furthermore, NDCC Section 23-06-27 and North Dakota Administrative Code (NDAC) Section 40-02-03 provide special protection of human burial sites, human remains, and burial goods. In accordance with applicable North Dakota laws and regulations, this plan contains procedures for addressing cultural resource discoveries identified by construction personnel during construction of the ONEOK 80-Acre Potential Commercial Development Project, including procedures for the initial treatment of discoveries, the evaluation and treatment of discoveries, and the treatment of human remains.

TRAINING

Training is necessary in order to recognize potential archaeological resources. All ONEOK responsible parties and construction personnel will meet with ONEOK representatives for basic training prior to participating in construction. So that construction personnel are familiar with the types of archaeological resources that may be encountered during construction, this training will provide orientation regarding recognition of cultural resources as well as a general overview of the regional culture history. The training will also outline the steps to be followed in the event of a significant archaeological discovery during construction, including the discovery of human remains. The following items will be reviewed within the program:

- definition of a discovery and examples of discoveries;
- steps towards discovery protection until such time as they can be properly evaluated by a qualified archaeologist;
- proper notification of the appropriate ONEOK personnel;
- the necessity of reporting discoveries in a timely manner and complying with the other stipulations provided in this plan;
- the need to treat any human skeletal remains that are encountered with dignity and respect; and
- penalties for failure to report discoveries or to comply with the procedures outlined in this plan.

DISCOVERY DEFINITION

Archaeological discoveries consist of evidence of human activity that is more than 50 years old with potential to yield data pertinent to regional history and prehistory. Prehistoric discoveries include, but are not limited to, features (small hearth features, housepit features, storage features, etc.), artifact concentrations, and activity areas. Historic discoveries include, but are not limited to, features (historic hearths, trash deposits, structures, old canals, roads, etc.), artifact concentrations, and activity areas. Isolated historic artifacts or small concentrations of non-human bone will not be considered discoveries.

PROCEDURES FOR ADDRESSING DISCOVERIES IDENTIFIED BY CONSTRUCTION PERSONNEL

The following procedures will be initiated in the event unanticipated cultural resources are discovered. When a discovery is encountered, the construction activity that resulted in the exposure of the discovery will be immediately halted and the construction manager will be notified. The construction manager in turn will notify the ONEOK project manager.

ONEOK's responsible party involved in unanticipated discoveries of archeological materials will order construction contractors to suspend ground-disturbing activities adjacent to the discovery. Cessation of ground-disturbing activity will encompass a sufficient area to protect the discovery and provide a buffer zone for adequate and safe investigation of the discovery and any associated features or artifacts. A recommended guideline for the buffer zone is at least 100 feet (30 meters [m]) around the discovery, but its size can be adjusted to protect the discovery adequately without unnecessary hindrance to construction. Visual barriers such as temporary fencing will be placed around the discovery area to protect it from further disturbance. Vehicle traffic within the vicinity may need to be limited or halted until the discovery is inspected.

ONEOK's responsible party will then notify and consult an archeologist qualified under NDAC Section 40-02-02 to review the discovery. In the event a qualified archaeologist is not immediately available, photographs of the discovery may be transmitted to the archaeologist for review, at which time the archaeologist will determine if a field visit is required. During the review phase, suspension of all work and vehicle traffic in the buffered area is required. If the archaeologist determines that the discovery is non-cultural, ONEOK will be notified and the halted construction activity can resume.

If the discovery is deemed cultural and a field visit is required, the archaeologist will be scheduled for an on-site visit as soon as possible. In the meantime, ONEOK's responsible party will notify the construction manager to suspend work within the buffered discovery area until the field visit by the archaeologist occurs. During the field visit, the archaeologist will determine whether the discovery is potentially significant.

TREATMENT OF DISCOVERIES BY ARCHAEOLOGICAL PERSONNEL

When a discovery is reviewed by an archaeologist, the discovery will be fully recorded according to approved standards. The initial treatment of any discovery will consist of recording the location of the remains; recording summary data concerning the feature(s) and/or other remains (including dimensions, qualitative characteristics, and associated remains); photographing the discovery and the overall context of the exposed remains; and profiling trench walls containing cultural features or strata (where safe and prudent). The feature(s) will then be excavated and a sample or all feature fill will be collected for laboratory analysis including pollen studies, flotation, and carbon dating as appropriate. Feature plans and profiles will be drawn. Features will be photographed. Uncollected feature fill will be screened using 0.25-inch mesh. If necessary, additional horizontal exposure of sediments/deposits around the feature may be investigated to evaluate the feature context.

When appropriate, the location around the discovered cultural remains will be tested to determine the extent of the cultural material. Testing can include, but is not limited to, excavation of controlled units over and around the feature area or placement of test units and/or auger probes. Testing will be designed to identify the nature and extent of the discovery and any associated activity area(s) or other features, if present.

AGENCY NOTIFICATION AND REPORTING

If the discovery is deemed potentially significant, ONEOK and the archaeologist will consult and coordinate with the State Historical Society of North Dakota (SHSND) to propose procedures for further treatment of the discovery, while minimizing impacts to the construction schedule to the extent possible. Suspended construction activities in the discovery area may not proceed until approval has been obtained from the SHSND and other involved agencies and parties.

A report detailing all cultural resources identified, recorded, tested, and/or excavated during the construction phase of the project, regardless of significance, will be prepared by the archaeologist and submitted to the SHSND for review within six months of project completion.

SPECIAL PROCEDURES FOR DISCOVERIES OF HUMAN REMAINS

Should human remains be encountered during construction of the project, per the protocol outlined above, all work will be immediately halted at the general location of the discovery. This location will be immediately secured, including a buffer zone of 100 feet (30 m) surrounding the discovery. Construction personnel and vehicles will promptly vacate the buffer zone. Vehicle traffic within the buffer zone will be limited to that necessary to remove vehicles and equipment from the buffer zone. Care will be taken to prevent any disturbance of the potential human remains during removal of vehicles and equipment. Until appropriate consultation has occurred, the discovery shall remain protected from any disturbance, such that no remains or associated artifacts are touched, moved, or collected.

Following notification of the construction manager and ONEOK project manager, ONEOK will immediately notify local law enforcement, the county coroner, and the SHSND. Contact information for relevant parties is listed in Table 1.

Table 1. Contact Information.

Contact/Agency	Phone	Address
County Sherriff's Office, McKenzie County, North Dakota	701-444-3654	201 5th St NW Watford City, North Dakota 58854
Coroner (Calvin Parrish), Coroner's Office, McKenzie County, North Dakota	701-770-4522	2492 Beaver Creek Road Watford City, North Dakota 58854
Chief Archaeologist (Paul Picha), Archaeology and Historic Preservation Division, North Dakota State Historical Society	701-328-3574	North Dakota State Historical Society 612 East Boulevard Ave. Bismarck, North Dakota 58505

The coroner and local law enforcement will make the official ruling on the nature of the remains, being either forensic or archaeological. The subsequent treatment of the discovery, including custody of the remains, will follow guidelines set forth in the NDCC Chapter 23-06 and NDAC Section 40-02-03, as follows.

- If the remains are deemed forensic (non-archaeological), the county coroner will retain custody of the remains and determine the plan of action.
- If the remains are deemed to be archaeological (historic or prehistoric) in nature, within 24 hours of notification, the SHSND will send a staff member to evaluate the remains and determine the race and age of the remains, if possible. The subsequent plan of action will depend on the race of the burial.
 - If human remains are determined to be non-Native American, the SHSND will retain custody of the burial and, following consultation with appropriate parties, determine a plan of action.
 - If the human remains are determined to be Native American or of unknown race, the remains will be left in place and protected from any form of disturbance until a plan for their protection or removal can be generated. The SHSND will contact and consult with the North Dakota Intertribal Reinterment Committee to determine the subsequent plan of action.

REFERENCES CITED

Leroy, Adam

2012 *A Class I and Class III Cultural Resource Inventory of the ONEOK Rockies
Midstream 80-Acre Potential Commercial Development Area, Section 35,
Township 151 North, Range 98 West, McKenzie County, North Dakota.* An
unpublished report prepared by SWCA Environmental Consultants and
submitted to the State Historical Society of North Dakota.