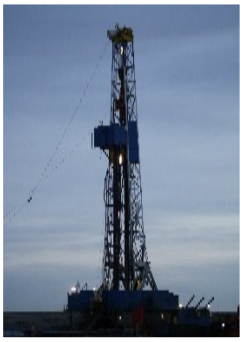
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July 1st, 2016

Patrick Fahn
Director of Compliance and Competitive Markets Division
North Dakota Public Service Commission
600 E. Boulevard Ave
12th Floor, Dept. 408
Bismarck, ND 58505-0480

REF: Application for Certificate of Corridor Compatibility and Route Permit

Dear Mr. Fahn,

Caliber Bear Den Interconnect, LLC (Caliber) has identified a need for safe and reliable transportation of crude oil in McKenzie County. Therefore, Caliber has contracted Cardno, Inc. (Cardno) to manage the regulatory process of developing its proposed Bear Den Transmission Line. Cardno respectfully submits this consolidated Application for Certificate of Corridor Compatibility and Route Permit on behalf of Caliber. This application addresses all required components per NDAC 69-06-05-01 and NDAC 69-06-08-02.

Should you have any questions or concerns, feel free to contact me at (701) 572-1455 or reice.haase@cardno.com.

Sincerely,

Reice Haase
Staff Scientist
Natural Resources & Health Sciences Division
Cardno, Inc.

Australia • Belgium • Canada • Colombia • Ecuador • Germany • Indonesia •
Kenya • New Zealand • Nigeria • Papua New Guinea • Peru • Philippines • Singapore •
United Arab Emirates • United Kingdom • United States • Operations in over 100 countries

Certificate of Corridor Compatibility

Bear Den Interconnect

July 1st, 2016

McKenzie County, ND



Prepared for

Caliber Bear Den Interconnect LLC

07/01/2016

Cardno
Shaping the Future

Document Information

Prepared for	Caliber Bear Den Interconnect, LLC
Document Name	Certificate of Corridor Compatibility
Project Name	Bear Den Interconnect Pipeline (the "Pipeline")
Project Manager	Laura Erickson, Environmental Services Client Lead, Cardno, Inc.
Date	July 1st, 2016
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	Skip Vest, Environmental Health, Safety, and Regulatory Manager, Caliber Midstream, LLC

Prepared for:



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1200 17th Street, Suite 2100, Denver, CO 80202 USA
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Prepared by:



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Reference	Required Components Per NDAC 69-06-05-01 Application for Transmission Facility Permit	Page Number
2.a.(1)	Type of facility proposed	2
2.a.(2)	Purpose of facility	2
2.a.(3)	Technology to be deployed	2
2.a.(4)	Type of product to be transmitted	2
2.a.(5)	Source of product to be transmitted	2
2.a.(6)	Final destination of product to be transmitted	2
2.a.(7)	Size and design detail and any alternative size and design	2
2.a.(7)(a)	The width of the Right-of-Way	5-6
2.a.(7)(b)	The approximate length of the facility	1
2.a.(7)(c)	The estimated span length for electric facilities	N/A
2.a.(7)(d)	The anticipated type of structure for electric facilities	N/A
2.a.(7)(e)	The voltage for electric facilities	N/A
2.a.(7)(f)	The requirement for an general location of any new associated facilities	1
2.a.(7)(g)	The estimated distance between pipeline surface structures	1
2.a.(7)(h)	The pipe size	2
2.a.(7)(i)	The maximum design for pipeline operating pressure and temperature	2
2.a.(7)(j)	The maximum design pipeline flow rate	2
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2.b.(5)	Completing construction	2
2.b.(6)	Testing operations	3
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2.g.	Study area to enable evaluation per NDCC 49-22-09	4
2.h.	Discussion of factors in NDCC 49-22-09 to aid evaluation	19-22
2.i.	Applicant's policies and commitments to limit environmental impact, including copies of board resolutions and management directives	4, Appendix I
2.j.	Map of criteria which led to route location	Figure 9, Figure 10
2.k.	Relative value of each criterial and rationale for location selection	19-34
2.l.	Mitigating measures	35-36, Appendix I

2.m.	Qualifications of each person involved in location study	xi-xiv
2.n.	Map identifying criteria which led to route location and new facilities	Figure 9, Figure 10
2.o.	8.5” X 11” black and white map suitable for newspaper publication	Included
2.p.	Discussion of present and future natural resource development in the area	8-9
2.q.	Maps and GIS data meeting PSC requirements	Included

Reference	Required Components Per NDAC 69-06-08-02 Transmission Facility Route Criteria	Page Number
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1.c.	County parks and recreational areas; municipal parks; and parks owned or administered by other governmental subdivisions	24
1.d.	Areas critical to the life stages of threatened or endangered animal or plant species	24, Appendix A
1.e.	Areas where animal or plant species that are unique or rare to North Dakota would be irreversibly damaged	24, Appendix A
1.f.	Areas within 1,200 feet of the center of an Intercontinental Ballistic Missile (ICBM) launch or launch control facility	24
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Acronyms

bbl	barrel (42 US gallons)
bpd	barrels per day
DAPL	Dakota Access Pipeline
E&P	Exploration and Production (Crude Oil and Natural Gas)
ETA	Extraterritorial Zoning Authority
FBE	fusion bonded epoxy
FERC	Federal Energy Regulatory Commission
gpm	gallons per minute
HSE	Health, Safety, and Environment
ICBM	Intercontinental Ballistic Missile
MAOP	maximum allowable operating pressure
N/A	not applicable
NEPA	National Environmental Protection Act
NDAC	North Dakota Administrative Code
NDCC	North Dakota Century Code
NDDH	North Dakota Department of Health
NDDTL	North Dakota Department of Trust Lands
NDGFD	North Dakota Game and Fish Department
NDIC	North Dakota Industrial Commission
NDPRD	North Dakota Parks and Recreation Department
NDPSC	North Dakota Public Service Commission
NDSHPO	North Dakota State Historic Preservation Office
NDSWC	North Dakota State Water Commission
NGL	natural gas pipeline
NRHP	National Register of Historic Places
NWP	Nationwide Permit Program
OD	Outside Diameter
PHMSA	Pipeline and Hazardous Materials Safety Administration
psi	pounds per square inch
ROW	Right-of-Way
SWPPP	Stormwater Pollution Prevention Plan
TBD	To Be Determined
USACE	United States Army Corps of Engineers
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
WOTUS	Waters of the United States

Executive Summary

Caliber Bear Den Interconnect LLC (herein referred to as CBDI) is a subsidiary of Caliber Midstream Partners, L.P., an independent infrastructure and midstream provider, which through its wholly-owned subsidiaries (collectively referred to herein as Caliber), serves various energy companies across the Williston Basin. Caliber's services include the gathering, treating, processing, and transportation of crude oil and natural gas as well as the transportation of freshwater and the transportation and disposal of produced water. Caliber operates primarily in McKenzie County, but has a growing presence in Williams County. Founded as a joint venture funded by First Reserve Energy Infrastructure Fund and Triangle Petroleum Corporation in 2012, Caliber initially provided service to a subsidiary of Triangle and has since grown to servicing third parties in the Williston Basin.

Cardno, Inc. (herein referred to as Cardno) has been retained by Caliber to provide technical and regulatory support services for their North Dakota operations. Cardno is a professional infrastructure and environmental services company with expertise in the development and improvement of physical and social infrastructure for communities around the world. Headquartered in Brisbane, Australia, Cardno has grown since its founding in 1945 and currently employs around 6,500 staff across the globe with projects in more than 100 countries. Cardno's U.S. operations include over 200 offices employing technical staff with extensive federal, state, and local regulatory experience.

List of Contributors and Reviewers

Caliber Midstream

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Ms. Nold received a BS in Chemical Engineering from the Colorado School of Mines in 2007, and an MBA in Entrepreneurial Studies from the University of Colorado at Denver in 2012. Her oil and gas experience includes gas processing plant design and optimization, project construction support, project economics, commissioning and operations support, and process option studies. Before joining Caliber Midstream in 2013, Ms. Nold served as a Facilities and Process Engineer for 6 years.

Skip Vest, Environmental Health, Safety, and Regulatory Manager
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Mr. Vest earned a Bachelor of Science in Biology from the University of Georgia, and Master of Science Coursework in Natural Resource Management from the University of Montana. Mr. Vest is a seasoned regulatory and environmental professional with 19 years of experience providing a diverse range of environmental and regulatory compliance management services to clients in the energy, construction and governmental sectors. Skip has exceptional environmental, regulatory and safety knowledge, with OSHA, DOT and PHMSA experience in production, operations and construction project environments. As an accomplished project manager, he has a strong ability to provide subcontractor services to oil and gas and capital construction projects, as well as prime contractor services to governmental clients. He has been responsible for entire project life cycles from concept to closeout including RFP/RFQ/RFI responses, Estimating/Cost Tracking/Scheduling, Hiring/Training, and client QA/QC management. Work experience includes Senior Environmental Program Manager (HRL Compliance Solutions, Inc.), Environmental Program Manager/EHS Manager (Xtreem Companies, Inc.), and Environmental Consultant/Project Manager (The Wyatt Group). Mr. Vest is currently pursuing a CEP designation (Certified Environmental Professional).

Cardno Project Management and Application Preparation

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Mr. Haase holds a Bachelor's Degree in International Relations from the University of Iowa. His area of study included public administration, environmental policy, political behavior, and environmental science. His education is complimented with 5 years of experience in the North Dakota energy industry. His experience includes overseeing oil production operations, drill permitting, case file preparation, county zoning, resolution of surface owner issues, location siting, GIS, spacing and directional drilling regulations, management of Naturally Occurring Radioactive Materials, safety compliance, and general regulatory compliance. His areas of expertise include North Dakota Industrial Commission compliance, North Dakota Department of Health compliance, County Zoning compliance, Bureau of Land Management compliance, Occupational Health and Safety Administration General Industry compliance (29 CFR 1910), and radiation safety. Mr. Haase is also a certified Radiation Safety Officer, and has developed and instructed several courses on radiation safety and compliance.

Laura Erickson, Environmental Services Client Lead
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Ms. Erickson earned a BS in Zoology from North Dakota State University in 1992. She also conducted post-graduate coursework at Utah State University in 1993. Ms. Erickson has 18 years of experience in the North Dakota oil and gas industry. Her expertise lies in oil and gas regulatory affairs, and she has a clear understanding of the regulatory environment in North Dakota. Ms. Erickson has extensive experience with drill permitting, case file preparation, zoning, surface owner issues, location siting, spacing and directional drilling rules, and environmental issues. She has prepared permit applications to satisfy requirements of local, state,

and federal agencies. In addition, Ms. Erickson previously owned a regulatory consulting firm for 7 years. She has also developed several courses, taught through TrainND, a local workforce training entity, and in-house to clients, to educate industry workers and the general public. Ms. Erickson is also a certified Radiation Safety Officer.

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Mr. Saunders received a BS in Biology from the Pennsylvania State University in 1991. He has over 25 years of professional experience in environmental permitting, environmental project management, emergency response, field biology, and contaminated site work. His primary areas of expertise include project/program management; strategic agency coordination; permitting/licensing of energy projects; design and implementation of environmental/ecological assessments; management of field study programs; oversight of remediation and restoration actions; and oil spill/hazardous waste emergency response. He has managed the environmental licensing of many linear energy projects, which required extensive environmental and cultural resource studies, T&E species permitting, and significant and strategic agency coordination. Mr. Saunders has extensive oil spill and contaminated site experience, and has been involved in a number of spill-related Natural Resources Damage Assessment projects, including a recent case which involved a release of both crude oil and produced water (brine). He currently supports a number of refineries, power plants and chemical manufacturing facilities with compliance and monitoring requirements associated with the DRBC PCB TMDL for the Delaware River. Mr. Saunders managed the emergency response, extent of contamination studies, and oversight of the remediation of a refinery's sulfuric acid release into the Delaware River. In addition, Mr. Saunders has also managed a number of related Supplemental Environmental Projects (including shellfish and riparian buffer restoration projects) and other compensatory restoration projects in and along the Delaware River Basin. Prior to joining Cardno, Mr. Saunders worked for more than 8 years as a contractor to EPA, providing technical support, site management, and contractor oversight on hazardous waste site and ecological assessments, oil and gas field well plugging, emergency responses, and remediation projects.

Cardno Civil Survey

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Mr. Adams has over 44 years of surveying experience in several disciplines of surveying. He has spent the past 30 years working in the pipeline industry in and around the Houston Ship Channel area. Specific experience includes extensive work in ExxonMobil Pipeline Company's Clear Lake and Bayport corridor systems and crossing the Houston Ship Channel and surrounding bays with various pipelines. His experience also includes many years of surveying and routing pipelines down Centerpoint's transmission corridors, as well as experience in pipeline routing through areas heavily congested with pipelines.

In addition to working on capital projects, 11 years of experience working in operation and maintenance strengthens the overall pipeline experience by providing an overall working knowledge of pipelines and the challenges they face once placed in service.

Specialties include: Water crossing surveys, routing, preliminary and as-built surveys as well as DOT compliance surveys. Mr. Adams is also a licensed surveyor in the State of Texas.

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Mr. Bland obtained a BS Degree in Forestry & Wildlife Management from Stephen F. Austin State University in 1997. He has over 18 years of experience in the pipeline, telecommunications, wind, solar, electric transmission, and other related industries and related disciplines including route and site design and selection, negotiation, acquisition, leasing, permitting, abstracting, pre-construction and post construction timber and crop damage valuation and settlements, environmental assessment, surveying, hydro-static testing, construction management, eminent domain coordination and procedure, due diligence, timber appraising, land appraisal

procedure and public speaking. This includes field experience as a Program Manager, FERC Liaison, Project Supervisor, Project Manager, Sr. ROW Agent and Eminent Domain Coordinator.

Cardno Cultural Survey

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Kathleen assists with all aspects of research, fieldwork, analysis, and reporting for Phase I, II, and III archaeological site investigations for both historic and prehistoric sites. Her primary responsibilities include records checks and literature reviews, field reconnaissance, artifact analysis, and report writing. She is skilled in mapping, documentation, photo documentation, and excavation of archaeological sites including prehistoric and historic burials, prehistoric mounds, historic homesteads, and prehistoric villages. Kathleen has performed archaeological fieldwork in several states across the U.S., including Ohio, West Virginia, Pennsylvania, Indiana, Illinois, Kentucky, Florida, Michigan, and Wisconsin. Kathleen also assists with invasive species control and environmental restoration.

Melisa Bernard, GIS Technician
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Melisa is a GIS specialist with 15 years of experience in applying GIS to a wide range of environmental science projects. She has extensive knowledge and expertise with GIS, GPS and remote sensing technologies. Her project experience includes terrain and watershed modeling, raster georeferencing, creating and editing vector data, and vector analysis. She has extensive experience in managing large amounts of datasets, having completed hundreds of maps. Prior to joining Cardno, Melisa worked as a GIS Analyst on a variety of ecology-based projects, including watershed planning, natural area inventories, insect studies, wetland delineations, and wetland banking. She has also conducted GIS work on projects for the oil and gas energy sectors.

Veronica Parsell, Senior Project Scientist
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Ms. Parsell holds a BA in Anthropology from the University of Kansas, and an MA in Anthropology with specialization in Archaeology from California State University, Long Beach. She currently serves as Principal Investigator for Cardno's cultural resource management services, including all aspects of research, fieldwork, analysis, and reporting. Ms. Parsell meets the Secretary of the Interior's Professional Qualification Standards in both Prehistoric and Historic Archaeology, as defined in 36 CFR 61, Appendix A. She specializes in lithic analysis, near-surface remote sensing, and preparation of compliance and consultation documents. Her primary responsibilities include conducting and supervising background research, fieldwork, and report writing, as well as overseeing the use of geophysical equipment in archaeological survey. In addition to standard fieldwork, Ms. Parsell has experience in laboratory analysis and artifact curation. She is practiced in agency and consulting party coordination, and has a proficient understanding of NEPA, Section 106 of the National Historic Preservation Act, and other related cultural resource laws and regulations. Ms. Parsell has directed projects involving large tracts of public and private land, as well as linear corridor projects including utility corridors and Department of Transportation projects.

Meg Thornton, Senior Consultant
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Ms. Thornton received a BA in Archaeology from Washington University in St. Louis in 1997, and a MA in Anthropology from the University of Alaska, Fairbanks in 1999. Ms. Thornton has over 19 years of experience preparing supporting documents for National Environmental Policy Act (NEPA) projects and Federal Energy Regulatory Commission (FERC) resource reports. These documents have been technically sound and legally defensible environmental documents for a wide variety of energy projects, including: transmission lines; natural gas pipelines; rural water pipelines; and natural gas power facilities. Much of the work has been conducted on behalf of the U.S. Army, Bureau of Land Management (BLM), the U.S. Army Corps of Engineers (USACE), and a variety of private companies. Ms. Thornton has experience coordinating with federal lead agencies and stakeholders to ensure that environmental documents are prepared in accordance with applicable agency

guidelines and are mutually acceptable to all parties. Ms. Thornton has conducted a wide variety of impact studies in support of NEPA and SEPA documents, including resource reports on cultural resources, traditional knowledge, paleontology, land use, recreation, visual impacts, and community impacts. Ms. Thornton currently serves as the Office Manager for the Cardno Anchorage office.

Cardno Environmental Survey

Brian Smith, Staff Scientist
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Mr. Smith holds a BS and an MS in Environmental Science from Drexel University. He has over seven years of experience in environmental consulting; including field activities, permit support, and data analysis. Mr. Smith has extensive experience using Microsoft Excel for data management and analysis. His technical writing abilities have been utilized for writing various summary reports, task updates, and documents in support of permitting compliance. Field activities have included habitat assessment, oil spill response, species identification, and wetland work in the Northeast and Midwest U.S., and the Atlantic and Gulf coasts.

Seth Ryan, Senior Project Scientist
Cardno, Inc., 121 Continental Drive, Suite 308, Newark, DE 19713

Mr. Ryan obtained an AAS in Ecology from Paul Smiths College in 1996, and a BS in Environmental Science from the University of Massachusetts in 1999. Mr. Ryan has 15 years of experience conducting and managing various aspects of environmental planning and permitting in accordance with federal, state, and local agencies, in particular with pipeline projects under Federal Energy Regulatory Commission (FERC) jurisdiction. Projects have included, oil and gas pipelines, electrical transmission lines, power generation plants, and transportation corridors throughout the United States. Throughout his career, Mr. Ryan has become well versed in pipeline construction and has conducted numerous environmental inspections, both during and post-construction. This ability, coupled with having the added knowledge of regulatory requirements relating to streams and wetlands, threatened and endangered species, cultural resources, mitigation, and agency consultations, has been proven to be a vital asset during the planning and permitting/licensing phases of midstream projects.

Introduction

Caliber proposes the 5.3 mile-long Bear Den Interconnect Pipeline to transport crude oil from Enable Midstream's Devore Terminal (SWSW Section 29, T 149N, R 98W) to the Dakota Access Pipeline's (DAPL) Watford City Terminal (NWNE Section 1, T 149N, R 99W). The proposed route follows US Hwy 85 in McKenzie County, beginning approximately 7.6 miles south of Watford City, and terminating approximately 2.9 miles south of Watford City near the junction of US Hwy 85 and the US Hwy 85 bypass. The line will consist of a newly constructed 12.75" OD, API5L, Grade X-42, PSL-2, ERW, PE, BFW, TRL crude oil pipeline with a nominal wall thickness of 0.188" and constructed of FBE coated steel. The line will operate at a maximum pressure of 1,440 psi, with a maximum capacity of 75,000 barrels/day.



Proposed tie-in point at DAPL Watford City Terminal (under construction at time of photo, July 8th, 2016)

In addition to the proposed transmission line, three surface facilities are also proposed. A truck off-load station is proposed for the northern end of the line, to be located in the NWNWNW of Section 12, T 149N, R 99W. This proposed truck off-load station will tie into the proposed transmission line. This yard will also be used as storage and laydown during line construction. A 5-acre pipe laydown yard is proposed in the NENE of Section 14, T 149N, R 99W. A 7-acre truck off-load station is also proposed for the southern end of the line, to be located in the NWSW of Section 30, T 149N, R 98W.

Caliber has determined a need for safe and reliable transportation of crude oil produced in the Watford City area. In addition, more options are needed to provide producers with stable market access during times of market volatility. Therefore, Caliber proposes the construction of the Bear Den Interconnect in McKenzie County, and respectfully submits this Application for Certificate of Corridor Compatibility for the proposed Bear Den Interconnect, in accordance with the requirements set forth in NDCC 49-22-08.1 and NDAC 69-06-05.

1 Description of Facility

1.1 Type of Facility

The proposed project is to construct a pipeline for liquid hydrocarbons, which has an outside diameter greater than 4.5 inches and is greater than one-mile in length. Therefore, the line as currently proposed meets the definition of a "transmission facility" per North Dakota Century Code (NDCC) 49-02-03. The transmission line was designed in compliance with U.S. Department of Transportation (USDOT) requirements, specifically 49 Code of Federal Regulations (CFR) 195.C. Line construction will be conducted per 49 CFR 195.D, and operation and maintenance will be in accordance with 49 CFR 195.F.

1.2 Purpose of Facility

The purpose of the proposed transmission facility is to transport crude oil from Enable Midstream's Devore Terminal to the DAPL's Watford City Terminal. From the Watford City Terminal, crude oil would be transferred to the DAPL terminus near Patoka, Illinois for sale. This would provide wider market access to North Dakota oil and gas operators and reduce the burden on local infrastructure.

1.3 Size and Design

The proposed transmission line is approximately 5.3 miles in length and will consist of the following:

- 12.75" OD steel pipe
- API 5L Grade X-42 PSL-2, ERW, PE, BFW, TRL, FBE-coated pipe
- Nominal Wall Thickness of 0.188 inches
- Maximum Operating Pressure of 1,440 psi
- Normal Throughput of 50,000 barrels per day (bpd)
- Maximum Throughput of 2,184 gallons per minute (gpm), or 75,000 barrels per day
- Maximum Operating Temperature of 120°F

The proposed transmission line will include one pig launcher and one pig receiver located at each truck offload station. The valves will be installed in accordance with USDOT requirements. No in-line valves are proposed at this time.

1.4 Time Schedule

1.4.1 Certificate of Corridor Compatibility

Caliber seeks a Certificate of Corridor Compatibility by mid-October 2016.

1.4.2 Route Permit

Caliber seeks a Route Permit by mid-October 2016.

1.4.3 Right-of-Way Acquisition Date

Right-of-Way (ROW) acquisition for 90% of the easements was completed by early June 2016. The remaining ROW easement is expected to be acquired by early July, 2016.

1.4.4 Construction

Construction is anticipated to begin mid-October 2016, contingent upon regulatory approval. Construction is anticipated to last approximately one month, with an anticipated completion date of mid-November 2016.

1.4.5 Test Operations

Test operations will occur following construction of the transmission line. Mechanical integrity testing will occur before the line is placed into service.

1.4.6 In-Service Date

The transmission line and all associated facilities are expected to be placed in service by mid-November 2016.

2 Route Analysis and Studies

2.1 Route Evaluation

Criteria considered in the evaluation of the proposed transmission line route included regulatory requirements as specified by NDAC 69-06-08-02, as well as environmental and anthropogenic considerations. Route analysis was composed of both desktop studies and field surveys. A 1-mile wide study area as measured from the center of the proposed route was established for the desktop studies, while a 250-foot wide survey area as measured from the center of the proposed route was used for the field surveys.

2.1.1 Caliber Midstream Policies

Caliber prioritizes best practices and policies which ensure it remains a "good neighbor", both in the way that it does business and in how it designs, constructs, and operates pipelines and associated facilities. Accordingly, Caliber is committed to maintaining an excellent health, safety, and environment (HSE) record and constantly strives to improve operations with the ultimate goal of minimizing surface impacts, operating in an environmentally responsible way, and remaining involved in communities in the Williston Basin through company support and employee engagement.

Therefore, protecting employees, contractors, landowners, local communities, and the environment is Caliber's top priority. Caliber aims to continuously improve its operations by training employees and ensuring contractors are operating in accordance with the highest health and safety standards, while constantly developing best practices to minimize the impact of projects to land, air, waterways, wildlife, and the communities where it operates.

Caliber avoids or minimizes environmental impacts during the planning, design, and construction phases of project development by implementing the following policies and standard practices:

- Whenever possible, Caliber will minimize permanent impacts to land and water resources. The majority of impacts resulting from Caliber projects are temporary and short term.
- Whenever possible, Caliber and its contractors will utilize existing public roads and existing staging areas to avoid or minimize impacts to undisturbed areas of land.
- Caliber incorporates comprehensive constraint analyses in every project during the planning stage. This ensures that impacts to known resources are minimized to the greatest extent possible.
- Caliber's assets are constructed on private land to avoid impacts to public resources.

In addition, Caliber limits environmental impacts during project operation by implementing the following policies and standard practices:

- During operation, projects undergo regular environmental monitoring and inspection to ensure safe operation and to maintain compliance with all regulations and permit conditions.
- All operators receive extensive training to recognize and prevent unsafe conditions and potential environmental hazards.

Additional policies and procedures developed by Caliber to mitigate impacts to the environment are included in Appendix I.

2.1.2 Proposed Route Location Evaluation

The entire length of the proposed route was surveyed, and mile markers were identified at every 0.1-mile interval to facilitate the thorough review of the route. Mile markers were surveyed in the direction of proposed flow, beginning at 0.0, and ending at 5.3. The proposed route begins in the NWSW of Section 30, T 149N, R 98W at Caliber's proposed south truck offload station. The initial 3,150 feet of the proposed route will proceed to the north before being bored beneath an existing lease road near mile marker 0.6. After crossing the lease road, the route enters Section 19, T 149N, R98W and turns toward the northwest. The route then proceeds for 290 feet before heading north to mile marker 0.9. After mile marker 0.9, the route proceeds west for approximately 850 feet before being bored beneath US Highway 85 near mile marker 1.1. This portion of the route was proposed to minimize impacts to existing industrial developments and to minimize crossings of existing utilities.

After crossing US Highway 85, the route enters the SENESE of Section 24, T 149N, R 99W, and proceeds northwest for approximately 715 feet before being bored beneath an unnamed intermittent tributary of Spring Creek near mile marker 1.3. Upon crossing the stream, the route continues northwest for approximately 1,120 feet before proceeding north for 1,340 feet. The route then follows an existing ROW west for 500 feet before following the ROW north for 1,160 feet. The proposed route is then bored beneath 21st St between mile markers 2.1 and 2.2, and proceeds into SWSWSE of Section 13, T 149N, R99W. This portion of the route was proposed to minimize impacts to area residences, surface waters, and wetlands, as well as to accommodate landowner requests.

Upon entering Section 13, the proposed route continues to follow the existing ROW to the north and west for 4,070 feet before proceeding north for 1,920 feet. The route is then bored beneath 22nd St between mile markers 3.3 and 3.4, and continues northwest into the SWSW of section 12, T 149N, R 99W. The proposed route continues northwest for approximately 500 feet before continuing north for approximately 2,580 feet. Near mile marker 3.9, the route briefly shifts toward the northwest before continuing north for approximately 1,900 feet. The route is then bored beneath 23rd St near mile marker 4.4 before continuing north into the SWSWSW of Section 1, T 149N, R 99W. This portion of the route was chosen to avoid impacts to surface waters and area residences, as well as to accommodate a landowner request to remain along the western edge of the property parcel.

Upon entering Section 1, the proposed route proceeds north for approximately 1,830 feet before turning in a northeasterly direction near mile marker 4.6. The route is then bored beneath Spring Creek between mile markers 4.8 and 4.9 before continuing northeast for approximately 400 feet. The proposed route then turns north near mile marker 4.9 and proceeds north for approximately 700 feet. Between mile markers 5.0 and 5.1, the route turns east and continues for approximately 1,550 feet before terminating at DAPL's Watford City Terminal. This portion of the route was chosen to minimize disturbance to Spring Creek as well as to accommodate landowner requests.

The proposed route was designed in accordance with Caliber's goal of minimizing impacts to the environment and surrounding communities. Therefore, the proposed route is located entirely on private lands, remains at least 500 feet from businesses and all occupied residences with one exception, minimizes surface water crossings, avoids impacts to environmentally sensitive areas, and accommodates landowner requests.

2.1.3 Construction and Operation Evaluation

Construction will involve trenching and boring along the proposed route, as described in section 2.1.2. During construction, a 75-foot ROW will be utilized to allow for equipment staging and temporary access. Existing roads and infrastructure will be utilized, and no additional permanent access roads will be constructed. Land agents will be available at all times during construction to address any landowner questions or concerns. Upon completion of construction, a 25-foot permanent ROW will be maintained.

Pipeline operations will be conducted to minimize impacts to the environment and local community. The proposed route avoids environmentally sensitive areas, and allows for a quick response should an emergency situation arise. Additional safeguards, such as leak detection and block valves, will be installed and maintained to allow for isolation of damaged sections of the pipeline.

2.1.4 Economic Evaluation

Economic evaluation of the proposed route revealed several beneficial impacts. The pipeline will allow for efficient and economic transport of crude oil, replacing other less economic options. The pipeline will reduce the amount of truck traffic in the area, thereby reducing impacts to local roads and infrastructure, resulting in an economic benefit to the local taxpayers. Pipeline easements will also provide economic benefits to landowners located along the proposed route.

2.2 Environmental Studies

Environmental studies were conducted during the evaluation of the proposed route. Studies conducted included both a desktop analysis utilizing available literature and geospatial resources, as well as a field survey conducted by qualified environmental scientists. A one-mile buffer around the proposed route was used as the study area, which is composed of approximately 9,401.7 acres. A 250-foot buffer around the proposed route was used as the survey area, which is composed of approximately 193.7 acres.

2.2.1 Terrain

The study area is located within the Glaciated Missouri Plateau section of the Great Plains Province, which is characterized by low relief and a rolling, hilly, or hummocky surface with occasional ridges and buttes.[1] The proposed route traverses a relatively flat area, with a minimum elevation of 2,121 feet, and a maximum elevation of 2,304 feet above sea level.



Terrain within the study area is relatively flat, interspersed in some areas with low, rolling hills. Prominent butte features are visible to the west. Although badland features are located to the south, none are visible from the study area.

[1] Trimble, Donald E. "The Geologic Story of the Great Plains". *United States Geological Survey*, 1980.

2.2.2 Soils

Approximately 99.4% of the surface within the study area is composed of topsoil, with approximately 0.21% composed of surface water and the rest composed of gravel and sand pits. Forty-nine unique soil types were identified within the study area. The majority of the soils consist of loams, clayey loams, silty loams, and silty clays.

Approximately 71.6% of the soils identified within the study area were classified as well drained, with the rest ranging from excessively drained to poorly drained. Approximately 35.3% were classified as a high runoff class, and 58.5% were identified as having high water storage potential. A typical depth to water table greater than 80 inches is present in 84.4% of the soil types.

Soil types present within the study area are summarized in Table 2-1[2]:

Table 2-1 Study Area Soil Types

Soil Name	Percent of Study Area	Drainage Class	Runoff Class	Water Storage	Typical Depth to Water Table
Farnuf loam	9.15	Well Drained	Low	High	>80"
Dooley-Zahl complex	8.85	Well Drained	Low	High	>80"
Daglum-Belfield complex	8.09	Moderately Well Drained	High	Very Low	42-60"
Brandenburg-Cabba-Dogtooth Complex	6.22	Excessively Drained	High	Very Low	>80"
Zahl-Williams loams	5.45	Well Drained	High	High	>80"
Zahl-Cabba-Maschetah complex	5.25	Well Drained	Very High	High	>80"
Korchea-Fluvaquents complex	5.1	Well Drained	Low	High	>80"
Beisigl-Flasher-Telfer loamy fine sands	4.27	Somewhat Excessively Drained	Low	Very Low	>80"
Zahl-Cabba-Williams complex	4.06	Well Drained	High	High	>80"
Williams-Zahl loams	3.89	Well Drained	Medium	High	>80"
Zahl-Beisigl-Tally complex	3.3	Well Drained	High	High	>80"
Cabba-Chama-Havrelon, occasionally flooded complex	2.86	Well Drained	High	Very Low	>80"
Rhoades-Daglum complex	2.71	Moderately Well Drained	Medium	Very Low	42-60"
Chama-Cabba-Sen silt loams	2.51	Well Drained	Medium	Moderate	>80"
Belfield-Grail clay loams	2.04	Moderately Well Drained	Medium	High	42-60"
Savage silty clay loam	2.01	Well Drained	Medium	High	>80"
Savage-Grail silty clay loams	1.95	Well Drained	Medium	High	>80"
Korchea loam	1.87	Well Drained	Low	High	>80"
Belfield-Savage-Daglum complex	1.75	Moderately Well Drained	Medium	High	42-60"
Cabba-Chama-Shambo loams	1.41	Well Drained	High	Very Low	>80"
Dogtooth-Janesburg-Cabba complex	1.21	Well Drained	Very High	Very Low	>80"
Zahl-Max loams	1.17	Well Drained	Very High	High	>80"
Vebar-Cohagen fine sandy loams	1.13	Well Drained	Low	Low	>80"
Cabba-Chama-Sen silt loams	1.12	Well Drained	Medium	Moderate	>80"
Flasher-Vebar-Parshall complex	1.1	Somewhat Excessively Drained	High	Very Low	>80"
Vebar-Flasher-Tally complex	1.03	Well Drained	Low	Low	>80"
Regent-Cabba complex	1.02	Well Drained	Very High	Moderate	>80"
Zahl-Williams-Cabba complex	0.96	Well Drained	High	High	>80"

[2] From Soil Survey geospatial data provided by the USDA Natural Resource Conservation Service.

Williams-Bowbells loams	0.92	Well Drained	Low	High	>80"
Tally-Parshall fine sandy loams	0.82	Well Drained	Very Low	Moderate	>80"
Moreau-Barkof silty clays	0.66	Well Drained	Very High	Low	>80"
Brandenburg-Cabba-Badland complex	0.6	Excessively Drained	High	Very Low	>80"
Moreau-Wayden silty clays	0.59	Well Drained	Very High	Low	>80"
Lawther silty clay	0.55	Well Drained	High	Moderate	>80"
Dooley fine sandy loam	0.51	Well Drained	Low	High	>80"
Dogtooth-Janesburg silt loams	0.43	Well Drained	Very High	Very Low	>80"
Cabba-Badland complex	0.41	Well Drained	High	Very Low	>80"
Harriet loam	0.39	Poorly Drained	Negligible	Very Low	0-18"
Pits, gravel and sand	0.39	N/A	N/A	N/A	N/A
Flasher-Rock outcrop-Vebar complex	0.37	Somewhat Excessively Drained	Low	Very Low	>80"
Regent-Janesburg complex	0.36	Well Drained	Very High	Moderate	>80"
Amor-Cabba loams	0.34	Well Drained	Medium	Low	>80"
Zahl-Tally-Williams complex	0.27	Well Drained	High	High	>80"
Regent-Savage silty clay loams	0.25	Well Drained	Very High	Moderate	>80"
Brandenburg-Searing-Dogtooth complex	0.23	Excessively Drained	Medium	Very Low	>80"
Water	0.21	N/A	N/A	N/A	N/A
Reeder-Farnuf loams	0.14	Well Drained	Medium	Moderate	>80"
Chama-Sen-Cabba silt loams	0.05	Well Drained	Medium	Moderate	>80"
Reeder-Werner loams	0.03	Well Drained	Medium	Moderate	>80"

2.2.3 Geology

Surface geology within the study area is primarily composed of alluvial sediments shaped by glacial retreat, although it continues to be minimally affected by fluvial processes. Within the study area, a thin layer (1-50 feet) of Quaternary-aged glacial till overlays Tertiary-aged bedrock. The Sentinel Butte Formation is the upper-most bedrock formation, and is composed of sandstone with interspersed lignite beds and dark-gray shales. The Sentinel Butte Formation outcrops approximately 4.5 miles to the south of the study area near the North Unit of Theodore Roosevelt National Park.[3] Although sedimentary bedrock formations overlaying pre-Cambrian rocks can range up to 16,000 feet thick near the center of the Williston Basin, their maximum thickness is expected to range from 14,500-15,100 within the study area.[4]

2.2.3.1 Geologic Resources

Natural resources identified within or with the possibility of occurring within the study area include hydrocarbons, coal, sand and gravel, nitrogen, salt, and uranium.[5] Hydrocarbon production currently occurs from 38 active oil and gas wells within the study area. Coal is known to exist within the study area. No active coal mines exist in McKenzie County, however.

Sand and gravel deposits are known to occur within the study area, and one gravel pit is known to occur within the study area. Nitrogen gas occurs within the Broom Creek formation in some areas of McKenzie County, although it has not been documented within the study area. Nitrogen extracted from the Broom

[3] Carlson, Clarence G. "Geology of McKenzie County, North Dakota." *North Dakota Geological Survey Bulletin 80-Part I*, 1985.

[4] Based on gamma logs run in O&G wellbores in McKenzie County (NDIC File #2372, #6387, #8314)

[5] Carlson, 1985.

Creek Formation has been used as a source of gas for secondary recovery efforts in some North Dakota oilfields, but is not currently considered an economic source of nitrogen.

Salt beds are found within the Triassic Spearfish, Permian Opeche, Mississippian Madison, and Devonian Prairie Formations. Production from these salt beds is uneconomic, however, due to their depth and abundant alternative sources of salt. Uranium has been identified within lignite beds in several locations across southwestern North Dakota. It has not been known to occur within the study area, and any amount of uranium deposit in North Dakota is unlikely to occur in economic quantities.[6]



Active oil and gas production facility located between route mile markers 3.2 and 3.4. Oil and gas production is common within the study area.

2.2.3.2 Landslides

Landslides are gravity-induced movement of earth and rock, including slumps, mud slides, sediment flows, and falling rocks. Risks of landslides are typically higher in areas of steep terrain, unstable soils, and/or during periods of heavy precipitation.

[6] Noble, E.A. "Uranium in Coal", *North Dakota Geological Survey Bulletin 63*, 1973.

Eight areas of suspected landslide deposits have been identified within the study area,[7] and make up approximately 0.2% of the total land area. One of the landslide deposits lies within the survey area. No other areas of known instability or active landslides exist within the survey area.

2.2.3.3 Seismicity

As North Dakota lies at the center of the North American continent, it is largely unaffected by tectonic activity. Two faults have been identified in North Dakota, the Tabbernor and the Thompson Boundary Fault, although movement along these fault lines would not likely cause a major earthquake. A potential source of seismic activity would be the collapse of sediments overlying salt deposits as it is dissolved due to groundwater seepage. Seismic activity due to salt collapse is most likely to occur in Bottineau, Burke, and Renville counties, however, and is unlikely in western North Dakota.[8]

The only earthquake to occur with a verified epicenter in North Dakota occurred near Huff, ND on July 8, 1968. It measured approximately 4.4 on the Richter scale. The nearest episode of seismic activity to occur in the vicinity of the study area was located approximately 18.5 miles to the north, reaching 3.1 on the Richter scale, on September 28th, 2012.[9] No known seismic activity has been recorded within the study area.

2.2.3.4 Subsidence

Subsidence is the gradual settling or sudden sinking of surficial soils, typically caused by underground mining, heavy drainage, aquifer depletion, or thawing permafrost. None of these causes are present within the study area, and no known instances of subsidence are recorded.

2.2.4 Vegetation

Vegetation communities present within the study area include herbaceous upland, woody vegetation, cropland, and palustrine emergent wetland. A field survey was conducted to identify and confirm the presence of various vegetative communities within the survey area; the results are detailed in Appendix A.

2.2.4.1 Native Vegetation

Native grasses in western North Dakota includes Bluestem (*Andropogon gerardii, Andropogon scoparius*), Buffalograss (*Buchloe dactyloides*), Sideoats Grama (*Bouteloua curtipendula*), Blue Grama (*Bouteloua gracilis*), Junegrass (*Koeleria macrantha*), Western Wheatgrass (*Agropyron smithii*), and Foxtail Barley (*Hordeum jubatum*).[10]

Woody vegetation includes American Elm (*Ulmus americana*), Bur Oak (*Quercus macrocarpa*), Chokecherry (*Prunus virginiana*), Silver Buffaloberry (*Shepherdia argentea*), and Siberian Elm (*Ulmus pumila*).[11]

Aquatic vegetation includes Cattail (*Typha latifolia*), Curly Dock (*Rumex crispus*), Foxtail Barley (*Hordeum jubatum*), Prairie Cordgrass (*Spartina pectinata*), Reed Canarygrass (*Phalaris arundinacea*), and Western Dock (*Rumex occidentalis*). Curly Pondweed (*Potamogeton crispus*) and Eurasian Watermilfoil

[7] Murphy, Edward C. "Areas of Landslides Tepee Buttes Quadrangle, North Dakota". *North Dakota Geological Survey*, 2010.

[8] Bluemle, John P. "The Face of North Dakota". *North Dakota Geological Survey*, 2000.

[9] Based on geospatial data provided by the North Dakota GIS Hub, 2016.

[10] Stevens, O.A. "Handbook of North Dakota Plants". *North Dakota Institute for Regional Studies,* 1963.

[11] Stevens, 1963.

(*Myriophyllum spicatum*) may also be present, but are considered aquatic nuisance species in North Dakota.[12]

Other common vegetation includes Purple Coneflower (*Echinacea angustifolia*), Speckled Alder (*Alnus rugose*), Buckbrush (*Purshia tridentate)*, Prairie Clover (*Dalea spp.*), Prairie Sage (*Artemisia ludoviciana*), and Prickly Pear Cactus (*Opuntia spp.*).[13]

2.2.4.2 Noxious Weeds

Noxious weeds are classified as quickly spreading non-native vegetation. A summary of noxious weeds identified within the survey area are detailed in Appendix A. Noxious weeds present in McKenzie County are included in Table 2-2[14]:

Table 2-2 Noxious Weeds of McKenzie County, North Dakota

Species	Perennial	Seed Viability	Reproduction/Seed Production	Flowers/Seed Maturity	Timing
Absinth wormwood (*Artemisia absinthium)*	Long-lived perennial that grows back each year from a woody base	3-4 years	No evidence of vegetative reproduction but may regenerate from root stock; prolific seed producer; one stem can produce between 674-1468 flower heads with 35-38 seeds per head (over 51,000 seeds/plant)	July-September; seeds mature in early fall; seedlings emerge early spring to August or whenever moisture and warmth are available	Treat when plant is at least 12" tall and actively growing (late June to mid-August); refer to individual label instructions for best timing of each herbicide
Canada thistle (*Cirsium arvense*)	Creeping perennial	Up to 22 years; deep burial (more than 8") promotes survival longevity	Adventitious creeping root buds; root fragments as short as 0.2" if vegetative material is moved on equipment or in the soil; also reproduces by seed; up to 40,000 seeds per stem	June through August; seeds mature in as few as ten days after flowering	Bud, rosette, and bolt stages; early spring or fall; refer to individual label instructions for best timing of each herbicide
Diffuse knapweed (*Centaurea diffusa*) Spotted knapweed (*Centaurea maculosa*)	Annual, biennial or perennial; individual spotted knapweed plants can live up to 9 years	5-8 years	Plants regrow from buds on the root crown but reproduction is primarily by seed; seed production varies widely with site conditions; avg 680 – 25,260 seeds/plant;	Flowers July through September; mature seeds usually formed by mid-August, followed by the death of the plant; dead plants break off at ground level and tumble with the wind to spread seed	Spring rosette to bloom stage or fall rosette; refer to individual label instructions for best timing of each herbicide
Russian knapweed (*Centaurea repens*)	Creeping perennial	2-3 years; once established very difficult to control	Seed and vegetative root buds; roots can grow as deep as 6' below surface after 1 years growth and 23' after 2 years; 1200 seeds per plant	June-September	Generally in the fall following several hard frosts; metsulfuron plus 2,4-D can also be effective in bud to early bloom stage; refer to individual label instructions for best timing of each herbicide
Field bindweed (*Convolvulus arvensis*)	Long-lived perennial; life span unknown but believed to be up to 30 years	20 years or more; seed that is 60 years old has been found to be alive! once established very difficult to control	Roots can reach depth of 20'; shoots capable of budding have been found at 14' depth; rhizomes develop from root buds and emerge as new plants; root fragments may generate new plants; 25-300 seeds per plant	June through fall frost	During periods of active growth and stems at least 12" long; bud to full-bloom; spring or fall depending on herbicide; refer to individual label instructions for best timing of each herbicide
Leafy spurge (*Euphorbia esula*)	Persistent, long-lived, deep rooted perennial; unknown life span	8 years or more	Regenerates from very small root fragments, vegetative root buds, and by seed; average 140 seeds per plant; first year plants do not produce seeds	Yellow-green bracts develop May – early June and true flowers develop a few weeks later; flowering is usually	True flower growth stage and seed development or during fall re-growth; refer to individual label instructions for best timing of each herbicide

[12] North Dakota Game and Fish Department: "North Dakota's Aquatic Nuisance Species List", September 2015.

[13] Stevens, 1963.

[14] United States Department of Agriculture: "Land and Resource Management Plan for the Dakota Prairie Grasslands", 2001.

				complete by mid-July; seeds mature approximately 30 days after pollination	
Purple loosestrife (*Lythrum salicaria*)	Yes; individual plants may live up to 22 years	3+ years	Primarily by seed but also vegetatively by cuttings; estimated 2.7 million seeds per plant	Early June through mid-September	July – early September; refer to individual label instructions for best timing of each herbicide
Yellow starthistle (*Centaurea solstitialis*)	Winter annual or rarely biennial or short-lived perennial	10+ years	Reproduces by seed only; up to 80,000 seeds per plant	Early July through September	Refer to individual label instructions for best timing of each herbicide
Perennial sowthistle (*Sonchus arvensis*)	Creeping perennial	1-5 years	Vegetative root buds; rhizomes develop as deep as 10' below surface; average 30 seeds per flower with numerous flowers per plant; known to produce up to 9750 seeds on a single plant	Blooms June & July; seeds mature July & August	Spring pre-bud or bud stage or fall; refer to individual label instructions for best timing of each herbicide
Black henbane (*Hyoscyamus niger*)	Annual or biennial	up to 5 year	Reproduces by seed only; a single plant can produce up to a half million seed	Flowers June – August; seed production July - October	Rosette stage to early bolting; when the plant is actively growing; refer to individual label instructions for best timing of each herbicide
Dalmation toadflax (*Linaria dalmatica*) yellow toadflax (*Linaria vulgaris*)	Deep-rooted, short-lived perennials; individual plants live 3 – 5 years	Up to 10 years	Seed reproduction, vegetative buds on creeping roots, and by root fragments; a single plant can produce over 500,000 seeds	Late June through August; seed production July through October	Although slow to establish, this weed is difficult to control once it takes root because many herbicides are ineffective; requires repeated treatments at high rates; apply pre-bloom to flowering or in the fall; refer to individual label instructions for best timing of each herbicide
Hoary cress (*Cardaria draba*)	Deep-rooted perennial with spreading root system from which many aerial shoots are produced; individual plants can live up to 8 years	Approximately 3 years	Vegetatively by persistent, adventitious roots and by seed production; a single plant produces between 1200 – 4800 seeds	Flowers May – June; seed production by July; if conditions are favorable, hoary cress can produce a second crop of seeds by fall	Up to 76% of this plant's biomass is below ground; May or June, bud or flowering stage; refer to individual label instructions for best timing of each herbicide
St Johnswort (*Hypericum perforatum*)	Yes; individual plants can live up to 8 years	6-10 years	Vegetatively by short creeping stems and by seed production; a single plant can produce up to 100,000 seeds; average seed production is 15,000 – 30,000	Flowers May – September	Extensive root system makes it hard to eradicate; refer to individual label instructions for best timing of each herbicide
Saltcedar (*Tamarix ramosissima*)	Yes; long-lived; in New Mexico, plants up to 100 years old show no signs of deteriorating from age	Less than 6 months especially if subject to desiccation	Vegetatively by adventitious roots or by seed production; a single mature plant can produce >500,000 seeds per season	Early to mid-April through July; seeds are shed throughout the growing season	Refer to individual label instructions for best timing of each herbicide
Bull thistle (*Cirsium vulgare*)	Biennial or sometimes monocarpic perennial (flowers and fruits only once, then dies)	Up to 3 years if buried at least 5" deep; seeds on the surface usually don't remain viable for longer than a year	By seed only; a single mature, healthy plant can produce up from 5000 to 50,000 seeds	July-September	Late fall or early spring; seedling to rosette stage; bolting to bud stage; refer to individual label instructions for best timing of each herbicide
Musk thistle (*Carduus nutans*)	Herbaceous tap rooted biennial; spring annual; occasionally a winter annual	Approximately 10 years	By seed only; a single plant produces approximately 10,000 seeds	May or early June through August	Late fall or early spring; seedling to rosette stage; refer to individual label instructions for best timing of each herbicide

Plumeless thistle (*Carduus acanthoides*)	Winter annual or biennial	10 years or more	By seed only; up to 9000 seeds per plant	May to August; seeds are dispersed 1-3 weeks after flowering	Late fall or early spring; seedling to rosette stage; refer to individual label instructions for best timing of each herbicide
Houndstongue (*Cynoglossum officinale*)	Biennial or short lived perennial	2-3 years unless buried; then only approximately a year	Average 300-675 seeds per plant but single plants can produce over 2000 seeds	Flowering May through July; seeds mature July through August	1st year rosettes in spring, summer or fall; early spring before bloom for second year rosettes; when plant is actively growing; refer to individual label instructions for best timing of each herbicide
Hemp (*Cannabis sativa*)	Annual		By seed only	Flowering July to September; seed production August until frost	Refer to individual label instructions for best timing of each herbicide
Buckthorn (*Rhamnus cathartica*)	Perennial	Up to 5 years	Reproduces by seed or by stump sprouting	Flowers May – June; berries ripen during August and September	Late summer and throughout the fall; refer to individual label instructions for best timing of each herbicide
Common burdock (*Arctium minus*)	Biennial	2-10 years	By seed only; each plant produces 15,000 – 60,000 seeds	Flowers July – frost; seeds mature by September and are shed continuously throughout the fall, winter, and following spring	Herbicides are most effective when applied to first-year rosettes and before bloom stage; refer to individual label instructions for best timing of each herbicide
Halogeton (*Halogeton glomeratus*)	Winter annual; plants can germinate in fall, winter, or spring depending on soil moisture	Black seeds have no dormancy and are viable for up to 1 year; brown seeds have a dormancy and are viable for up to 10 years	By seed only; a single large plant can produce 100,000 seeds	Flowers July – August; seed maturity August - October	Apply when actively growing or very early in spring prior to flowering; refer to individual label instructions for best timing of each herbicide
Baby's breath (*Gypsophila paniculata*)	Herbaceous perennial	2 years	New shoots can grow from the crown, but not the root; reproduces by seed only; a single plant can produce up to 14,000 seeds	Flowers late June to late August	Bolting to pre-flower; refer to individual label instructions for best timing of each herbicide

2.2.5 Wildlife

Wildlife which may be present within the study area include over 160 species of common mammals, various bird species, raptors, and aquatic species. A biological survey was conducted within the survey area to identify critical habitat and species of concern, and is detailed in Appendix A. A coyote with a litter of puppies were noted within the vicinity of the proposed route during the field survey. The Endangered Species Act granted authority to the USFWS to maintain a list of threatened and endangered species of the United States. Species of concern which were evaluated for potential impacts are summarized in Table 2-3[15]:

[15] USFWS: "County Occurrence of Endangered, Threatened, and Candidate Species and Designated Critical Habitat in North Dakota", January 2015.

Table 2-3 Threatened or Endangered Species in North Dakota

Species	Confirmed Sighting	Habitat Present	Determination
Endangered			
Black-footed Ferret (*Mustela nigripes*)	No	No	No Effect: The study area is outside of known range and no habitat suitable for re-introduction is present
Gray Wolf (*Canis lupus*)	No	No	No Effect: Species presence in North Dakota is sporadic, and typically near Minnesota and Manitoba borders
Interior Least Tern (*Sterna antillarum athalassos*)	No	No	No Effect: No habitat present within study area
Pallid Sturgeon (*Scaphirhynchus albus*)	No	No	No Effect: No habitat present within study area
Poweshiek Skipperling (*Oarisma poweshiek*)	No	No	No Effect: Critical habitat is generally present in Richland and Sargent Counties, but not listed in McKenzie County
Whooping Crane (*Grus americana*)	No	Yes	Unlikely Effect: Potential migratory habitat present, but not ideal
Threatened			
Dakota Skipper (*Hesperia dacotae*)	No	Yes	Unlikely Effect: Marginal habitat is present, but not ideal
Northern Long-eared Bat (*Myotis septentrionalis*)	No	Yes	Unlikely Effect: Potential habitat may be present, but not ideal
Piping Plover (*Charadrius melodus*)	No	No	No Effect: No habitat present within study area
Red Knot (*Calidris canutus*)	No	No	No Effect: No habitat present within study area
Sprague's pipit (*Anthus spragueii*)	No	Yes	Unlikely Effect: Potential habitat is present, but not ideal
Western Prairie Fringed Orchid (*Plantanthera praeclara*)	No	No	No Effect: Critical habitat is present in Ransom and Richland Counties, but is not listed in McKenzie County

2.2.5.1 Black-footed Ferret (Mustela nigripes)

Although the historical range of Black-footed Ferrets included the northern plains, no populations currently reside in North Dakota. The Black-footed Ferrets have been re-introduced in various areas across Wyoming, Montana, and South Dakota, but no sites were chosen in North Dakota. As the diet of the Black-footed Ferret consists mostly of prairie dogs, large colonies of prairie dogs are needed for suitable habitat to be present. Although one small prairie dog colony was noted within the study area during the biological survey, it is not large enough to be eligible habitat, and no prairie dog colonies in McKenzie County are likely large enough to support a Black-footed Ferret population.

2.2.5.2 Gray Wolf (Canis lupus)

Gray Wolf habitat does not occur within the study area, and no known recent sightings have occurred. Due to current land use and the proximity to US Highway 85, Gray Wolves would likely avoid the study area.

2.2.5.3 Interior Least Tern (Sterna antillarum athalassos)

Suitable habitat for Interior Least Tern is located along the riverbanks and sandbars of the Missouri River and Lake Sakakawea. No suitable habitat is located within the study area.

2.2.5.4 Pallid Sturgeon (Scaphirhynchus albus)

Pallid Sturgeon are present in Lake Sakakawea and the Missouri River, over 17 miles to the north of the study area. Suitable habitat is not present within the study area.

2.2.5.5 Poweshiek Skipperling (Oarisma poweshiek)

Poweshiek Skipperling reside in areas of native prairie across the north-central United States and southern Canada. Poweshiek Skipperling are believed to have been extirpated from North Dakota, and the most recent sightings identified isolated populations only in Michigan, Wisconsin, and Manitoba. Critical habitat exists in Richland County, in southeastern North Dakota, but no habitat is listed in McKenzie County.

2.2.5.6 Whooping Crane (Grus americana)

Whooping Cranes migrate through North Dakota en-route to breeding grounds in Alberta and wintering grounds in Texas. Habitat includes large wetland complexes and cultivated cropland which provide for suitable foraging and roosting. Although both wetlands and cultivated cropland are present within the study area, they are unlikely to serve as ideal habitat due to the proximity to US Highway 85 as well as heavy agricultural and industrial activity in the area.

2.2.5.7 Dakota Skipper (Hesperia dacotae)

Dakota Skipper habitat includes undisturbed moist bluestem prairie and dry upland prairie, usually associated with purple coneflower (*Echinacea angustifolia*), harebell (*Campanula rotundifolia*), smooth camas (*Zygadenus elegans*), and wood lily (*Lilium philadelphicum*). Although critical habitat has been identified in northern McKenzie County, the study area is located at least 16 miles to the south. Marginal habitat does exist within the study area, but due to agricultural activities, habitat is not considered ideal.

2.2.5.8 Northern Long-eared Bat (Myotis septentrionalis)

Northern Long-eared Bat are typically forest dwelling, but their range extends into North Dakota. Summer habitat includes trees with a trunk diameter exceeding three inches, while winter habitat includes caves and mines. The greatest threats to the Northern Long-eared Bat are white-nose syndrome, habitat loss, and wind energy facilities. No known winter habitat is present within the study area, and any summer habitat would be minimal, as the study area is not heavily wooded.

2.2.5.9 Piping Plover (Charadrius melodus)

Suitable habitat for Piping Plover exists along Lake Sakakawea and the Missouri River, but is not present within the study area.

2.2.5.10 Red Knot (Calidris canutus)

Although migratory habitat may be present in North Dakota, Red Knots do not typically reside in the area, and suitable habitat is not present within the study area.

2.2.5.11 Sprague's Pipit (Anthus spragueii)

Sprague's Pipit migrate from their winter range in the southern U.S. and northern Mexico to breeding grounds in the northern plains in April and May. Fall migration occurs from September to November. Suitable habitat includes short and mixed-grass prairies. Although Sprague's Pipit may be briefly present within the study area during migration, ideal habitat in Alberta and Saskatchewan is typically used for breeding and summer habitat.

2.2.5.12 Bald and Golden Eagle (Haliaeetus leucocephalus; Aquila chrysaetos)

Suitable habitat for Bald and Golden Eagle include cliffs and tall trees. No suitable habitat is present within the study area.

2.2.6 Hydrology

Approximately 0.21% of the study area is composed of surface water features, which are located within the Cherry Creek watershed of the Lower Little Missouri Subbasin. Ten intermittent streams and 20 wetland features have been identified within the study area. Surface water drains into Cherry Creek approximately 0.6 miles to the north of the study area. Cherry Creek continues in a northeasterly direction before turning southeast and eventually draining into the Little Missouri River approximately 23.6 miles downstream of the study area.

2.2.6.1 Flooding

Flooding in North Dakota is typically caused by snow melt during spring. The study area is not located in a listed floodplain.[16] Flash floods are also possible during rare periods of heavy precipitation. The study area averages 14.67 inches of annual precipitation, with the largest amount occurring in June, making flash floods unlikely.

2.2.6.2 Wetlands

A desktop analysis identified 20 wetland features within the study area. These included 11 Freshwater Emergent Wetlands, 7 Freshwater Ponds, and 2 unspecified wetland areas. During a field reconnaissance, two palustrine emergent wetlands were identified with the 250-foot wide survey area. A detailed description of wetlands identified within the survey area is included in Appendix A.

2.2.7 Hydrogeology

Three groundwater aquifers are present within the study area, and are found within semi-consolidated sediments of Tertiary to Late Cretaceous age. The deepest Underground Source of Drinking Water (USDW) lies within the Fox Hills Formation at a maximum depth of approximately 1,981 feet.[17] The Tobacco Garden Surficial Aquifer is also present, making up approximately 12.7% of the total area within the study area.

[16] Per flood zone geospatial data provided by the Federal Emergency Management Agency.

[17] Based on gamma log run in Watford City SWD #1 wellbore (NDIC File No. 90166).

One-hundred-sixty-three groundwater wellbores have been identified within the study area. Groundwater present within the study area is primarily used for domestic purposes (94.4%), with agricultural uses being limited to livestock use. Groundwater within the study area is not used for irrigation purposes. The average depth to groundwater within the study area is 88 feet.

2.3 Demographic Studies

Although approximately 309 acres of the study area is included within the Watford City ETA, the study area remains sparsely populated at 1.1 people per square mile. Six occupied residences have been identified adjacent to the survey area. Farming and ranching remain the predominant economic activity, although oil and gas production facilities and other industrial developments make up approximately 17% of the total land use. Although 16 wellhead protection areas have been identified within the study area, no municipal water supplies are present within the survey area.



Land use within the study area is primarily agricultural, with significant industrial development located along the northern and southern ends of the proposed route. Industrial development along US Highway 85 is visible in the distance.

2.4 Cultural Resource Studies

A Class I and Class III cultural resource survey was conducted within the survey area. The results of the survey are included in Appendix B.

2.5 Alternative Routes

Several alternatives to the current proposed route were considered. However, none met Caliber's goal of minimizing impacts to the local community and the environment. The current proposed route was determined to be the most efficient and preferred route.

2.5.1 Trucking

The trucking alternative was rejected due to its likely impact on local infrastructure. As the average truckload of crude oil is 220 barrels, a significant amount of truck traffic would result from this alternative.

This would facilitate the rapid deterioration of local roads, increase traffic congestion, decrease air quality, and disturb local residents. Disruption caused by weather and road construction would also result in delays. Therefore, this alternative was determined to be uneconomic and unfeasible.

2.5.2 Rail

Transport by rail is not an available alternative at this time. No rail infrastructure currently exists in the area, and the construction of rail infrastructure would likely cause significant impacts to the local community and environment. Transport of crude oil by rail would also present safety concerns, as demonstrated by recent high-profile derailments.

2.5.3 Eastern Route

An eastern route located within Township 149N, Range 98W was considered and ultimately rejected. This route would have added approximately 1.3 miles to the total length of the pipeline, resulting in a significant cost increase. This route would have also involved more waterbody crossings, more landowner disturbances, and significant impacts to an existing industrial development. Caliber rejected this route as it did not meet the goal of minimizing impacts to the local community and environment.

2.5.4 No Action

A “No Action” alternative would limit safe and reliable transportation of crude oil, and significantly constrain market options for producers. Impacts to the local community and environment due to the construction and operation of the proposed Bear Den Interconnect would be insignificant in comparison to the effects of taking no action.

3 Siting Criteria

3.1 Relative Value and Effects upon Each Criteria (N.D.A.C. § 69-06-05-01 (2)(K))

NDAC 69-06-05-01 (2)(K) requires “a discussion of the relative value of each criteria and how the applicant selected the proposed corridor location, giving consideration to all criteria and how the location, construction, and operation of the facility will affect each criteria.” These criteria, as defined by NDAC 69-06-05-01 (2)(H), are discussed in section 3.2.

3.2 Factors to be Considered in Evaluating Applications and Designation of Sites, Corridors, and Routes (N.D.C.C. § 49-22-09)

NDAC 69-06-05-01 (2)(H) requires “a discussion of the factors in North Dakota Century Code section 49-22-09 to aid the commission’s evaluation of the proposed route.” These factors are detailed below:

3.2.1 Available Research and Investigations Relating to the Effects of the Location, Construction, and Operation of the Proposed Facility of Public Health and Welfare, Natural Resources and the Environment

Caliber is committed to minimizing effects to the local community and the environment. Upon reviewing the alternatives, the current proposed route was determined to be the least invasive option. A thorough review of the study area, as discussed in Section 2, revealed no adverse effects should be anticipated by the construction and operation of the proposed route. The area is not heavily populated, land use is compatible with pipeline operation, effects to the environment will be minimized, groundwater contamination is unlikely, and the production of natural resources will be enhanced rather than hindered by the proposed pipeline. This was confirmed by conducting environmental and cultural surveys within the survey area, as discussed in Appendices A and B.

3.2.2 Adverse Direct and Indirect Environmental Effects which cannot be Avoided Should the Proposed Site or Route be Designated

Unavoidable adverse environmental effects expected to arise due to the proposed route are limited to temporary constructed-related effects, including disturbance of soil and vegetation and increased noise during construction hours. Mitigation measures will be implemented during construction to minimize these effects. Operation of the proposed pipeline will result in a benefit to the local environment, as it will reduce truck traffic and emissions. Any adverse environmental effects arising from the operation of the proposed pipeline will be limited to soil and surface water contamination in the unlikely event of an accidental release. Employees will be trained in best practices, the pipeline will be constantly monitored and regularly maintained, and the Emergency Response Plan will be regularly reviewed and updated as needed to reduce the chance of an accidental release and mitigate adverse environmental effects should a release occur.

3.2.3 Alternatives to the Proposed Site, Corridor, or Route which are Developed During the Hearing Process and which Minimize Adverse Effects

The current proposed route was developed in conjunction with landowner input, extensive desktop studies, and field surveys. Alternative routes were rejected due to adverse effects on the local community and environment. However, any alternative routes proposed during the hearing process would be welcomed by Caliber, and addressed as applicable.

3.2.4 Irreversible and Irretrievable Commitments of Natural Resources Should the Proposed Site, Corridor, or Route be Designated

Irreversible and irretrievable commitments of natural resources resulting from the designation of the proposed route are not expected at this time. The proposed route is co-located within existing ROWs to the maximum extent feasible, and landowners were consulted to minimize effects to agricultural production. No mining or gravel production operations will be affected by the proposed route. The proposed transmission line would enhance extraction of oil and gas by providing a wider market to area producers.

3.2.5 The Direct and Indirect Economic Impacts of the Proposed Facility

The project has and will result in several beneficial economic impacts to the local community, including employment, increased tax revenue, and local spending. Direct effects include the investment of approximately $6 million in the local community during the development of the pipeline, employment of local consultants and contractors, and tax revenue and local spending in surrounding communities. Indirect effects include providing an efficient and economical means of transporting crude oil, increasing market opportunities and reducing isolation of local oil and gas producers, and reducing the burden and cost of local infrastructure.

3.2.6 Existing Plans of the State, Local Government, and Private Entities for Other Developments at or in the Vicinity of the Proposed Site, Corridor, or Route

The proposed route is located entirely on private land, and no known plans or proposed development will be affected by the route. All section lines crossed by the route are developed roads, and will be bored to prevent surface impacts. Most surface land use is compatible with the proposed route. Expansion of existing oil and gas pipelines and gathering lines may occur in the future, but no proposed projects are known within the study area at this time. Future drilling of oil and gas wells is not expected to be impacted by the proposed route, as approximately 98% of the route exists within developed spacing units. A review of well data provided by the NDIC revealed two proposed wells on an existing oil and gas well pad in the NENE of Section 13, T 149N, R 99W. The proposed route is not expected to negatively impact the drilling and operation of these proposed wells.

3.2.7 The Effect of the Proposed Site or Route on Existing Scenic Areas, Historic Sites and Structures, and Paleontological or Archaeological Sites

No designated scenic areas, historic sites, or structures are known to occur within the study area. Teepee Buttes, an undesignated potential scenic area, is located along the western edge of the study area, but is not expected to be affected by the proposed route. No significant effects to paleontological or archaeological sites were noted during the cultural field survey.



Teepee Buttes located along the western boundary of the study area. Significant oil and gas production occurs in the immediate vicinity.

3.2.8 The Effect of the Proposed Route on Areas which are Unique Because of Biological Wealth or Because They are Habitats for Rare and Endangered Species

Unique areas due to biological wealth were not identified within the study area. Ideal habitat for rare and endangered species is unlikely to occur within the study area, as discussed in Section 2.2.5. During the environmental survey, no rare or endangered species were identified within the survey area.

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

Various county, state, and federal regulatory agencies were consulted during the analysis of the proposed route. A summary of the agency consultations are listed in Table 3-1. A record of the agency consultations is also included in Appendix D.

Table 3-1 Agency Consultations

Agency	Communication Media	Date Sent	Date of Response	Comments
McKenzie County Weed Control Board	Emailed Letter	5/27/2016	06/01/2016	Weed Plan complies with state and county regulations
McKenzie County Office of Emergency Management	Emailed Letter	5/27/2016	06/07/2016	Emergency Response Plan approved
McKenzie County Rural Fire Department	Emailed Letter	5/27/2016	5/27/2016	No issues or comments
McKenzie County Sheriff's Office	Emailed Letter	5/27/2016	5/31/2016	No issues
North Dakota Department of Transportation	Letter	6/16/2016	Pending	Delivered 06/20/2016, response pending
North Dakota Department of Health	Letter	6/16/2016	Pending	Delivered 6/20/2016, response pending
North Dakota State Historic Preservation Office	Letter	6/5/2016	Pending	Submitted 6/5/2016, response pending
North Dakota Department of Trust Lands	Letter	6/16/2016	Pending	Delivered 6/20/2016, response pending
North Dakota Parks and Recreation Department	Letter	6/16/2016	Pending	Delivered 6/20/2016, response pending
North Dakota Game and Fish Department	Letter	6/16/2016	Pending	Delivered 6/20/2016, response pending
North Dakota State Water Commission	Letter	6/16/2016	Pending	Delivered 6/17/2016, response pending
North Dakota Industrial Commission	Letter	6/16/2016	Pending	Delivered 6/17/2016, response pending
United States Army Corps of Engineers	Personal Communication	Not Required	Verbal	Per personal communication with the USACE, a letter requesting concurrence is not required or requested when project is demonstrated to be eligible for coverage under Nationwide Permit 12.
United States Fish and Wildlife Service	Letter	6/16/2016	Pending	Delivered 6/17/2016, response pending

3.3 Exclusion Areas (N.D.A.C. § 69-06-08-02 (1))

NDAC 69-06-08-02 defines exclusion areas as "geographical areas [which] must be excluded in the consideration of a route for a transmission facility." Exclusion areas may be located within a transmission facility corridor, but may not exceed 50% of the corridor width. Exclusion areas are summarized in Table 4-2:

Table 4-2 Exclusion Areas

Exclusion Area	Within Survey Area	Exceeds 50% of Survey Area	Intersected by Route	Comments
National Parks or Memorial Parks	No	No	No	North Unit of Theodore Roosevelt National Park is 4.1 miles south of study area
National Historic Sites or Landmarks	No	No	No	
Natural Landmarks or Monuments	No	No	No	
Federal Wilderness Areas	No	No	No	
State Historic Sites, Monuments, or Historical Markers	No	No	No	
Archaeological Sites	Yes	No	No	See Appendix B
State Parks	No	No	No	Little Missouri State Park is 24 miles to the southeast of the study area
State Nature Preserves	No	No	No	Killdeer Mountains Wildlife Management Area is 14.5 miles to the southeast of the study area
County Parks	No	No	No	
County Recreation Areas	No	No	No	
Municipal Parks	No	No	No	
Areas Critical to the Life Stages of Threatened or Endangered Flora or Fauna	No	No	No	See Appendix A
Areas where Flora or Fauna Unique or Rare to North Dakota would be Irreversibly Damaged	No	No	No	See Appendix A
Within 1,200' of an ICBM	No	No	No	No ICBMs in McKenzie County, nearest ICBM located 41 miles to the northeast in Mountrail County
Within 30' of a Direct Line Between ICBM Launch or Launch Control Facilities	No	No	No	

3.3.1 National Parks and Resources

No national parks, historic sites listed on the National Registry of Historic Places, national landmarks, natural landmarks, or federal wilderness areas are located within the study area. The North Unit of Theodore Roosevelt National Park is located approximately 4.1 miles to the south of the study area. ArcGIS 10.3 was utilized to conduct a 3D spatial view shed analysis of the North Unit of Theodore Roosevelt National Park, and the resulting raster suggested an approximate view shed boundary of 3.5 miles. Therefore, it can be reasonably concluded that local topography places the study area outside of the park's view shed, as shown on page 5 of Figure 9. The proposed transmission line is not expected to negatively impact the national park. In addition, several federal agencies were consulted; their correspondence is included in Appendix D.

3.3.2 State Parks and Resources

No state parks or wildlife management areas are located within the study area. The closest state park, Little Missouri State Park, is located 24 miles to the southeast. The closest wildlife management area (WMA), the Killdeer Mountains WMA, is located approximately 14.5 miles to the southeast. The North Dakota Parks and Recreation Department (NDPRD) and the North Dakota Game and Fish Department (NDGFD) were also consulted; their correspondence is included in Appendix D.

3.3.3 County Parks and Resources

No county parks are located within the study area. Two cemeteries are located within the study area, Tepee Buttes Cemetery and Salem Cemetery. Both cemeteries are located outside of the survey area.

3.3.4 Archaeological Sites

NDCC 55-10-02 defines a "state archaeological site" as "an area that primarily relates to prehistoric man, designated by the state historical society as possessing state or national significance." Furthermore, NDAC 69-06-01 defines a historical resource as a "district, site, building, structure, or other object which possesses significance in history, archaeology, paleontology, or architecture, or has other cultural value to the state or local community." Although several archaeological resources were discovered within the survey area, no significant effects are expected. Sensitive sites will be marked for avoidance prior to construction activities. See Appendix B for more information.

3.3.5 Sensitive Habitat

No sensitive habitat is present within the survey area. See Appendix A for more information.

3.3.6 Intercontinental Ballistic Missile Launch Sites and Launch Control Facilities

Approximately 450 known ICBM launch sites and associated launch control facilities are located within North Dakota. These sites are administered by the Minot Air Force Base's 91st Missile Wing. Geospatial data describing the location of known ICBM sites was provided by the University of Wyoming. No known ICBM site is located within McKenzie County, and the nearest known ICBM site is located approximately 41 miles to the northeast near New Town, ND.

3.4 Avoidance Areas (N.D.A.C. § 69-06-08-02 (2))

NDAC 69-06-08-2 defines avoidance areas as "geographical areas [which] may not be considered in the routing of a transmission facility unless the applicant shows that under the circumstances there is no reasonable alternative." Avoidance areas are summarized in Table 3-3:

Table 3-3 Avoidance Areas

Avoidance Area	Within Survey Area	Exceeds 50% of Survey Area	Intersected by Route	Comments
National Historic Districts	No	No	No	
National Wildlife Areas	No	No	No	
National Wildlife Refuges	No	No	No	
National Grasslands	No	No	No	Little Missouri National Grasslands located 0.87 miles to the southwest of the study area
National Wild, Scenic, or Recreational Rivers	No	No	No	No Federal Wild, Scenic, or Recreational Rivers listed in North Dakota
State Wild, Scenic, or Recreational Rivers	No	No	No	Little Missouri State Wild and Scenic River is located 5.3 miles to the south of the study area
State Game Refuges or Game Management Areas	No	No	No	Killdeer Mountains Wildlife Management Area is 14.5 miles to the southeast of the study area
State Forests or Forest Management Lands	No	No	No	No state forests in McKenzie County
State Grasslands	No	No	No	
Historic Resources not meeting Exclusion Areas Criteria	No	No	No	
Areas of Known Geologic Instability	Yes	No	No	Quaternary-aged landslide deposit
Areas within 500-feet of a Residence, School, or Place of Business	Yes	No	No	One residence, waiver signed
Reservoirs and Municipal Water Supplies	No	No	No	
Water Sources for Organized Rural Water Districts	No	No	No	
Areas of Recreational Significance which are not Designated as Exclusion Areas	No	No	No	

3.4.1 Federal Lands and Recreational Areas

No national historic districts, wildlife areas or refuges, national grasslands, or national wild, scenic or recreational rivers are located within the study area. The Little Missouri National Grasslands are located approximately 0.87 miles to the southwest of the study area. The United States Army Corps of Engineers (USACE) and United States Fish and Wildlife Service (USFWS) were consulted; their correspondence is included in Appendix D.

3.4.2 State Lands and Recreational Areas

No state wild, scenic, or recreational rivers, state game refuges or game management areas, state forests or forest management lands, or state grasslands are located within the study area. The Little Missouri Wild and Scenic River is located approximately 5.3 miles to the south of the study area, but is shielded from the viewshed by local topography. The Little Missouri River is also downstream from the study area. Caliber has developed a Stormwater Pollution Prevention Plan (SWPPP) to mitigate the effects of stormwater runoff and sediments on area surface waters. No state forests are located in McKenzie County, and no state forest management lands are located within the study area. The North Dakota Department of Trust Lands (NDDTL), NDGFD, and NDPRD were consulted; their correspondence is included in Appendix D.

3.4.3 Historic Resources Not Meeting Exclusion Areas Criteria

Several archaeological resources were identified within the survey area; however, none meet exclusion area criteria. See Appendix B for more information.

3.4.4 Areas of Known Geologic Instability

Areas identified as landslide deposits were mapped by the North Dakota Geological Survey in 2010. These maps were based on aerial photographs taken between June 21st, 1958 and September 7th, 1958. An area of Quaternary-aged landslide deposits was identified within the survey area between mile markers 1.7 and 1.8, as shown on page 3 of Figure 10. This area does not exceed 50% of the survey area width, nor does the proposed route intersect this area.



Identified area of landslide deposits (facing east). Area is well vegetated, suggesting no recent landslides have occurred.

A penetrometer was used to measure the compressive strength of the soil in the area of the identified landslide deposits. A background sample was first measured outside of the landslide area to obtain a control reading; results indicated a reading exceeding 2.5 tons per square foot. Next, several readings were taken within the construction ROW, with readings ranging from 1.75-2.25. Several readings were then measured inside the identified landslide area, with readings ranging from 0.75-1.5 tons per square foot. The results of the penetrometer screenings suggest relatively stable soils exist within the construction ROW. However, somewhat unstable soils are present within the area of identified landslide deposits located approximately 25 feet to the west of the ROW. Mitigation measures proposed to prevent further destabilization of area soils are discussed in section 4.4.

3.4.5 Areas within 500-feet of a Residence, School, or Place of Business

One residence was identified within 422-feet of the centerline of the proposed route between mile markers 1.3 and 1.4. This residence is occupied by Mrs. Carla Schaible. Mrs. Schaible requested the route to be located at its current proposed location to minimize impacts to local topography and surface water. She has also signed a waiver allowing the proposed transmission line to be located within 500-feet of her residence.

In addition to the Schaible residence, one mancamp was identified within 507-feet of the centerline between mile markers 0.7 and 0.8. This mancamp was originally operated by Strategic Workforce Solutions, LLC, but is currently recorded with the McKenzie County Auditor's Office as being owned by Fertile Fields, LLC. Fertile Fields does not appear to be currently registered in good standing with the North Dakota Secretary of State. The proposed route was shifted slightly to the west to avoid the Fertile Fields Mancamp, as shown on page 5 of Figure 10.

3.4.6 Reservoirs and Municipal Water Supplies

No reservoirs or municipal water supplies are located within the study area.

3.4.7 Water Sources for Organized Rural Water Districts

Fourteen wellhead protection areas have been identified within the study area. However, none are located within the survey area, and no other water sources for organized rural water districts are located within the survey area.

3.4.8 Areas of Recreational Significance which are not Designated as Exclusion Areas

No known areas of recreational significance are located within the study area

3.5 Selection Criteria (N.D.A.C. § 69-06-08-02 (3))

NDAC 69-06-08-02 (3) states a route may only be designated "when it is demonstrated to the commission by the applicant that any significant adverse effects which will result from the location, construction, and maintenance of the facility as they relate to the following [selection criteria], will be at an acceptable minimum, or that those effects will be managed and maintained at an acceptable minimum."

Table 3-4 Selection Criteria

Selection Criteria	Impacts Within Study Area	Impacts Within Survey Area	Intersected by Route	Comments
Agricultural Production	No	Yes	Yes	Less than 37.6 acres, impacts are temporary
Family Farms and Ranches	No	Yes	Yes	Temporary impacts during construction
Surface Drainage	No	No	Yes	Four intermittent stream crossings
Groundwater Flow	No	No	Yes	Surficial aquifer crossed by route
Sound-sensitive land uses	No	No	No	Noise limited to construction
Visual Effects	No	No	No	No degradation of aesthetic landscape
Extractive and Storage Resources	No	No	No	Enhanced effects
Wetlands, Woodlands, and Wooded Areas	No	No	No	No woodlands or wooded areas within survey area
Radio and Television Reception	No	No	No	No communication transmission facilities within survey area
Human Health and Safety	No	No	No	See Emergency Response Plan
Animal Health and Safety	No	No	Yes	Impacts to livestock and wildlife are expected to be negligible
Plant Life	No	No	Yes	Areas of disturbance will be re-vegetated with a native seed mix

3.5.1 Agricultural Production

Within the survey area, land use is primarily agricultural, with spring wheat and barley consisting of the primary crops. Pastureland is also present, and used for livestock grazing. Some industrial development is also present, with the heaviest use occurring along the southern end of the route. Land lying within the 25-foot ROW is expected to be temporarily affected during the construction of the pipeline. Less than 37.6 acres of agricultural cropland and pasture are expected to be affected by the construction of the proposed route. After the pipeline is constructed, the land will be restored to its pre-construction contours

and original land use. Agricultural production is not expected to be impacted by the operation of the pipeline.

3.5.2 Family Farms and Ranches

The proposed route passes through seven family farm and ranch lands. The ROW consists of approximately 37.6 acres. Use of farm and ranchlands during the construction of the pipeline will be limited to the maximum extent feasible. Construction activity may result in the temporary disruption of agricultural activities. Actions will be implemented as needed to minimize impacts to the operation of family farms and ranches, such as installing access across the ROW for the movement of farm equipment and livestock.

Easements have been negotiated with all affected landowners, and sufficient compensation will be provided. Impacts upon family farms and ranches will be limited to the construction of the pipeline; no impacts are expected during the operation of the pipeline.

3.5.3 Surface Drainage Patterns

Care will be taken during construction to avoid disturbance or alteration of surface water drainage. Areas where surface water is present, such as stream beds and wetlands, will be bored to minimize disturbance. After construction, disturbed areas will be restored to the original contours, allowing drainage patterns to remain unchanged. A SWPPP has been developed, and best management practices will be implemented and maintained until final reclamation has been achieved to ensure surface drainage patterns are not altered.

3.5.4 Groundwater Flow Patterns

Area groundwater well data provided by the ND State Water Commission (NDSWC) was reviewed to determine hydrogeological characteristics. Within the study area, 163 wells were recorded with the NDSWC. Five freshwater wellbores are located within the survey area. The Tobacco Garden surficial aquifer was also found to be located within the survey area. Six freshwater wellbores were drilled into this aquifer within the study area. The five wells within the survey area as well as the six wells drilled into the surficial aquifer are summarized in Table 3-5:

Table 3-5 Freshwater Wells in Vicinity of the Proposed Route

Well Location	Groundwater Depth	Date Drilled	Driller	Purpose	Surficial Aquifer	Status
14909830	250’	2015-01-31	Agri Industries	Domestic	No	Active
14909819CCA	24’	1973-03-24	Wold Well Drilling	Stock	No	Active
14909901ACC	68’	1988-07-06	Thompson Drilling	Stock	No	Active
14909913BA	17’	1984-10-30	Thompson Drilling	Domestic	Yes	Active
14909912CCC	149’	1982-09-10	Wold Well Drilling	Domestic	Yes	Active
14909912CC	Not Recorded	1980-08-10	Thompson Drilling	Domestic	Yes	Active
14909912BB	74’	1976-04-09	B. K. Water Well Drilling	Domestic	Yes	Active
14909911BBB	21’	Unknown	Dennis J. Bingeman	Domestic	Yes	Active
14909911BBB	Not Recorded	1979-03-08	Thompson Drilling	Domestic	Yes	Active

After reviewing driller’s logs recorded with the NDSWC, it was determined that the average depth to groundwater within the survey area is 122 feet. Within the Tobacco Garden surficial aquifer, the average depth to groundwater was found to be 65.25 feet, with the shallowest depth recorded at 17 feet next to Spring Creek. Excavations during the construction of the pipeline will not exceed 10 feet in depth, and

will not intersect the shallowest point of the water table. In addition, a brown clay layer was recorded on the shallowest well log, occurring at a depth of 2 feet with a thickness of 23 feet. This suggests an aquitard is present, which would protect groundwater flow patterns and prevent contamination in the unlikely event of an accidental release.

3.5.5 Impact on Noise Sensitive Land Uses

Land use in the vicinity of the proposed route is primarily agricultural, with significant industrial development along the US Highway 85 corridor. Noise generated during construction of the pipeline will be limited to equipment and heavy machinery during normal working hours. Noise generated as a result of pipeline operations is expected to be negligible. Hunting and other recreational uses may be sensitive to noise, but do not constitute a significant portion of land use within the study area. While construction of the pipeline is expected to occur during the regular deer hunting season, wildlife are unlikely to frequent the area due to the proximity to US Highway 85 and the existing industrial development.

3.5.6 Impact on Visual Effect on the Adjacent Area

Visual impacts resulting from the Bear Den Interconnect includes line construction and surface facilities. Line construction visual effects will be temporary, as disturbed soils will be re-contoured and re-vegetated to match original conditions. Surface facilities include two truck offload stations, a temporary 5-acre pipe laydown yard, and temporary ROW access routes. Surface facilities are located within areas of existing industrial development, and will not significantly alter the aesthetic landscape.

3.5.7 Impact on Extractive and Storage Resources

The proposed transmission line would enhance oil and natural gas extractive resources, and would not result in a negative impact on any extractive and storage resources.

3.5.8 Impact on Wetlands, Woodlands, and Wooded Areas

One freshwater pond and one freshwater emergent wetland were noted within the survey area. Impacts to these wetlands are expected to be minimal, and a SWPPP has been developed to prevent contamination. Operation of the transmission line is not expected to negatively impact these wetlands. No trees, woodlands, or wooded areas lie within the proposed ROW. See Appendix A for more information.



Areas of woody vegetation within the survey area are limited to the banks of surface water bodies and shelter belts. During construction of the transmission line, no water bodies will be open-cut. Therefore, no areas of woody vegetation are expected to be impacted.

3.5.9 Impact on Radio and Television Reception, and Other Communication of Electronic Control Facilities

No radio, television, or other communication or electronic control facilities will be impacted by the construction or operation of the proposed transmission line.

3.5.10 Impact on Human Health and Safety

An Emergency Response Plan has been developed in conjunction with the McKenzie County Emergency Manager. Best practices and engineering controls will be implemented to prevent adverse effects to the environment and human health and safety. Caliber will work with local emergency responders to ensure a safe and effective response strategy is implemented should an adverse event occur.

3.5.11 Impact on Animal Health and Safety

Due to the proximity to US Highway 85 and existing industrial development, the survey area is not expected to provide significant habitat to wildlife. Animals within the survey area are limited to livestock and occasional common wildlife species. Best practices will be implemented during construction to allow for the unhindered movement of local livestock and wildlife. No species of concern will be impacted by the construction or operation of the proposed transmission line. See Appendix A for more information.

3.5.12 Impact on Plant Life

A survey of existing vegetation along the proposed route was conducted, and is included in Appendix A. Noxious weeds currently growing along the proposed route will be removed prior to the start of construction activities. A weed control plan has been developed in conjunction with the McKenzie County Weed Control Board. Best practices will be implemented to prevent the spread of noxious weeds. Areas of disturbed soil will be re-vegetated with a native seed mix developed in conjunction with the local landowners. See Section 6 for re-vegetation procedures and a typical native seed mixture.

3.6 Policy Criteria (N.D.A.C. § 69-06-08-02 (4))

Per NDAC 69-06-08-02, the Public Service Commission “may give preference to an applicant that will maximize benefits that result from the adoption of the following policies and practices, and in a 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.”

3.6.1 Location and Design

The proposed Bear Den Interconnect is located in central McKenzie County, approximately 2.9 miles south of Watford City. The line will originate at a proposed truck offload station (connected to Enable Midstream’s Devore Terminal) to be located approximately 7.2 miles south of Watford, and terminate at DAPL’s Watford City Terminal.

The proposed line will meet or exceed design criteria as specified in 49 CFR 195 (c), will be constructed of 12.75” OD steel pipe, and will have a nominal wall thickness of 0.188 inches. The maximum transportation rate is 75,000 bbls/day, with a maximum operating pressure of 1,440 psi.

3.6.2 Training and Utilization of Available Labor in this State for the General and Specialized Skills Required

Both local and out-of-state labor will be utilized during the construction and operation of the Bear Den Interconnect. Cardno, Inc. was contracted to provide technical, environmental, and cultural support during the planning and construction of the line. Included within this scope of work was the employment of North Dakota Public Land Surveyors, support staff in Cardno’s Williston, ND office, and two landmen based in western North Dakota. Other non-local technical staff contributed to the local economy during work performed for this project. Local construction crews will be utilized to the maximum extent feasible.

All of Caliber's assets are located in North Dakota, and operation of the line will be conducted by qualified personnel who will reside in-state.

3.6.3 Economies of Construction and Operation

The development of the Bear Den Interconnect will result in the investment of approximately $12 million by Caliber, much of which is direct investment in North Dakota. Indirect benefits to the local and state economy will also be realized in the form of tax revenues generated from the labor force. The operation and maintenance costs of the line are expected to be minimal, and local labor will be utilized to the maximum extent feasible. The line will provide a wider market for local oil producers, reduce operating and transportation costs, provide a safer and more efficient means of transportation, and increase revenues to local mineral owners.

3.6.4 Use of Citizen Coordinating Committees

Caliber is committed to continuously improving operations, training personnel and contractors, and ensuring the highest health and safety standards are maintained. To achieve this goal, Caliber believes establishing trust and respect as well as maintaining open communication with the local community is vital. Caliber has collaborated with the local emergency response manager to develop an appropriate Emergency Response Plan, and will continue to encourage a culture of teamwork and collaboration with local communities to address challenges as they arise.

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

The proposed transmission line will provide North Dakota producers with wider access to markets for locally produced crude oil. This line will also facilitate the delivery of crude oil to in-state and out-of-state markets by connecting to DAPL.

3.6.6 Labor Relations

Caliber maintains good relations with its labor force, and no adverse labor relations are expected. North Dakota is a "right to work" state, and conflicts between organized labor and employers is not common. In addition, NDCC 34-09-13 declares labor protests such as boycotting and striking to be against the public interest of North Dakota and unlawful.

3.6.7 Coordination of Facilities

The Bear Den Interconnect and associated surface facilities will be owned and operated by Caliber. The line will be used in conjunction with DAPL to optimize market access to North Dakota producers.

3.6.8 Monitoring of Impacts

Caliber will implement best management and engineering practices to monitor the ROW for impacts. During construction, communication will be maintained with all affected landowners to ensure negative impacts are minimized or eliminated to the maximum extent feasible. After construction, areas of disturbance will be re-vegetated and a weed control plan will be implemented to ensure the return of the ROW to pre-construction conditions. A SWPPP has also been developed, and will be implemented to minimize erosion and the transportation of disturbed sediments. During operation, the line will be regularly inspected to search for signs of accidental release and to ensure mechanical integrity is maintained.

3.6.9 Utilization of Existing and Proposed Rights-of-Way and Corridors

The proposed route was chosen to utilize existing ROWs to the maximum extent feasible. Approximately 1.4 miles (25.92%) of the current proposed route is co-located with existing utility corridors.

3.6.10 Other Existing and Proposed Transmission Facilities

Caliber's 10-year Plan, which details existing and planned transmission facilities, is included in Appendix H.

4 Mitigation Measures

4.1 Winter Construction

Winter construction will be avoided, if possible. However, Caliber acknowledges that winter construction may be required for the Bear Den Interconnect due to the proposed project schedule. Therefore, Caliber is prepared to take all necessary measures to mitigate adverse effects caused by winter construction.

The ROW will first be prepared by removing any snow which may be present. Snow removal will be limited to the area of construction during the working day. Frozen ground can inhibit effective soil segregation by freezing topsoil and subsoil together. This will be mitigated by using a ripper to loosen the frozen soil to the maximum depth of topsoil or 12 inches, whichever is less. Excavated topsoil will be loosened to ensure no clumps larger than 1-2" in diameter remain. Under no circumstances will topsoil be allowed to mix with subsoil.

Areas of open excavation will be minimized to reduce the amount of frozen backfill and facilitate the restoration to pre-construction contours. Any snow accumulation within the trench will be removed prior to lowering the pipe. Any snow present on or within backfill material will be removed prior to backfill activities to prevent subsidence during warmer weather.

Excavated subsoil will be loosened to ensure no clumps larger than 2-3" remain to ensure proper compaction. The first 2 feet of backfill will be returned to the trench, and the first lift will be compacted by using vibratory compactors or other mechanical tampers. The remaining backfill will be compacted in one-foot lifts to prevent subsidence during warmer weather. Regular probes will be taken during backfilling to ensure proper compaction is achieved.

Topsoil will be re-spread over disturbed areas to match original contours. Dormant seeding and weed-free mulching will be spread to facilitate the regrowth of vegetation in the spring. The ROW will be inspected after the last frost of the spring to ensure the successful achievement of final grading and cleanup. Any areas of subsidence or lack of successful vegetation will be promptly repaired.

4.2 Public Health and Safety

All waste materials, litter, and debris will be collected daily and disposed of at an approved off-site facility. All contractors will be held accountable to ensure all employees are properly trained in the proper storage, handling, and disposal of wastes. Any wastes which are classified as hazardous by federal and state regulations will be properly labeled and stored within secondary containment as needed.

All employees will receive proper safety training prior to reporting for work. A tailgate safety meeting will be conducted daily prior to the start of work. A safety plan will be available on-site at all times, with emergency contact numbers and directions to the work site included.

Noise and dust will be minimized to the maximum extent possible. A SWPPP has been developed to address erosion control. No pollutants are expected to be generated from the construction of the transmission line. Measures to ensure public health and safety during the operation of the transmission line are addressed in the Emergency Response Plan.

4.3 Land Use

All surface facilities, drains, fences, or private roads which may be incidentally damaged or destroyed during the construction of the proposed transmission facility will be promptly repaired or replaced. Any gates will remain closed to prevent the escape of livestock. The proposed transmission line will be placed at a sufficient depth to prevent accidental damage due to routine agricultural activities.

4.4 Terrain and Soils

All disturbed areas will be re-contoured to original site conditions. Erosion control devices will be installed in areas of disturbed soils until revegetation is complete. One area with potential landslide susceptibility was identified between mile markers 1.7 and 1.8. Additional erosion control devices, including a "super silt fence" reinforced with straw bales and/or chain-link fence will be installed and maintained in this area until vegetation is reestablished.

4.5 Vegetation and Wildlife

A weed control plan was developed in conjunction with the McKenzie County Weed Control Board to prevent the spread of noxious weeds during construction. Areas with noxious weeds present within the survey area were identified, and additional measures will be taken during construction in these areas to prevent the spread of seeds, including the cleaning of all equipment prior to leaving the site and the treatment of all disturbed soils with herbicides as approved by the landowner(s).

No threatened or endangered plant species were noted during the biological survey, and none are expected to be affected by the construction of the proposed transmission line. Disturbed areas will be re-seeded with a native weed-free seed mix as approved by the landowner(s). No trees will be removed during construction.

No threatened or endangered wildlife species were noted during the biological survey. Any area wildlife and livestock will likely avoid the area during construction, and are not expected to be negatively impacted by project activities. Temporary access routes will be maintained across the ROW to allow the movement of livestock and wildlife. Trenches will also be regularly sloped to allow any trapped wildlife to escape.

4.6 Water Resources

Of the three wetland/waterbodies identified within the survey area, one wetland (WMK-001) will be crossed via open cut, and the other two identified features (WMK-002 and SMK-001) will be crossed utilizing horizontal drilling or conventional bore techniques, which would minimize adverse impacts. Woody vegetation was rare within the survey area, and limited to shelterbelts and waterbody banks. A SWPPP has also been developed to prevent discharge of sediments or pollutants to surface water bodies. As the shallowest groundwater level is below the deepest point of the proposed transmission line trench, and is separated by a clay layer which appears to act as an aquitard, no mitigation measures to protect groundwater are anticipated at this time.

4.7 Cultural Resources

During the cultural survey, several archaeological resources were identified within the survey area. Impacts to these sites are not expected at this time, as all sensitive sites will be marked for avoidance. Additional detail is provided in Appendix B.

Application for Route Permit

Bear Den Interconnect

July 1st, 2016

McKenzie County, ND



Prepared for

CALIBER MIDSTREAM

Caliber Bear Den Interconnect LLC

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Cardno
Shaping the Future

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Executive Summary

Caliber Bear Den Interconnect LLC (herein referred to as Caliber) is a subsidiary of Caliber Midstream Partners, L.P., an independent infrastructure and midstream provider, which through its wholly-owned subsidiaries (collectively referred to herein as the Caliber Entities), serves various energy companies across the Williston Basin. The Caliber Entities' services include the gathering, treating, processing, and transportation of crude oil and natural gas as well as the transportation of freshwater and the transportation and disposal of produced water. Caliber operates primarily in McKenzie County, but has a growing presence in Williams County. Founded as a joint venture funded by First Reserve Energy Infrastructure Fund and Triangle Petroleum Corporation in 2012, the Caliber Entities initially provided service to a subsidiary of Triangle and has since grown to servicing third parties in the Williston Basin.

Cardno, Inc. (herein referred to as Cardno) has been retained by Caliber to provide technical and regulatory support services for their North Dakota operations. Cardno is a professional infrastructure and environmental services company with expertise in the development and improvement of physical and social infrastructure for communities around the world. Headquartered in Brisbane, Australia, Cardno has grown since its founding in 1945 and currently employs around 6,500 staff across the globe with projects in more than 100 countries. Cardno's U.S. operations include over 200 offices employing technical staff with extensive federal, state, and local regulatory experience.

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Acronyms

bbl	barrel (42 US gallons)
bpd	barrels per day
DAPL	Dakota Access Pipeline
E&P	Exploration and Production (Crude Oil and Natural Gas)
ETA	Extraterritorial Zoning Authority
fbe	fusion bonded epoxy
FERC	Federal Energy Regulatory Commission
gpm	gallons per minute
HSE	Health, Safety, and Environment
ICBM	Intercontinental Balistic Missile
maop	maximum allowable operating pressure
N/A	not applicable
NEPA	National Environmental Protection Act
NDAC	North Dakota Administrative Code
NDCC	North Dakota Centry Code
NDDH	North Dakota Department of Health
NDDTL	North Dakota Department of Trust Lands
NDGFD	North Dakota Game and Fish Department
NDIC	North Dakota Industrial Commission
NDPRD	North Dakota Parks and Recreation Department
NDPSC	North Dakota Public Service Commission
NDSHPO	North Dakota State Historic Preservation Office
NDSWC	North Dakota State Water Commission
NGL	natural gas pipeline
NRHP	National Register of Historic Places
NWP	Nationwide Permit Program
OD	Outside Diameter
PHMSA	Pipeline and Hazardous Materials Safety Administration
psi	pounds per square inch
ROW	Right-of-Way
SWPPP	Stormwater Pollution Prevention Plan
TBD	To Be Determined
USACE	United States Army Corps of Engineers
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
WOTUS	Waters of the United States

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Mr. Haase holds a Bachelor's Degree in International Relations from the University of Iowa. His area of study included public administration, environmental policy, political behavior, and environmental science. His education is complimented with 5 years of experience in the North Dakota energy industry. His experience includes overseeing oil production operations, drill permitting, case file preparation, county zoning, resolution of surface owner issues, location siting, GIS, spacing and directional drilling regulations, management of Naturally Occurring Radioactive Materials, safety compliance, and general regulatory compliance. His areas of expertise include North Dakota Industrial Commission compliance, North Dakota Department of Health compliance, County Zoning compliance, Bureau of Land Management compliance, Occupational Health and Safety Administration General Industry compliance (29 CFR 1910), and radiation safety. Mr. Haase is also a certified Radiation Safety Officer, and has developed and instructed several courses on radiation safety and compliance.

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Ms. Erickson earned a BS in Zoology from North Dakota State University in 1992. She also conducted post-graduate coursework at Utah State University in 1993. Ms. Erickson has 18 years of experience in the North Dakota oil and gas industry. Her expertise lies in oil and gas regulatory affairs, and she has a clear understanding of the regulatory environment in North Dakota. Ms. Erickson has extensive experience with drill permitting, case file preparation, zoning, surface owner issues, location siting, spacing and directional drilling rules, and environmental issues. She has prepared permit applications to satisfy requirements of local, state,

and federal agencies. In addition, Ms. Erickson previously owned a regulatory consulting firm for 7 years. She has also developed several courses, taught through TrainND, a local workforce training entity, and in-house to clients, to educate industry workers and the general public. Ms. Erickson is also a certified Radiation Safety Officer.

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Mr. Saunders received a BS in Biology from the Pennsylvania State University in 1991. He has over 25 years of professional experience in environmental permitting, environmental project management, emergency response, field biology, and contaminated site work. His primary areas of expertise include project/program management; strategic agency coordination; permitting/licensing of energy projects; design and implementation of environmental/ecological assessments; management of field study programs; oversight of remediation and restoration actions; and oil spill/hazardous waste emergency response. He has managed the environmental licensing of many linear energy projects, which required extensive environmental and cultural resource studies, T&E species permitting, and significant and strategic agency coordination. Mr. Saunders has extensive oil spill and contaminated site experience, and has been involved in a number of spill-related Natural Resources Damage Assessment projects, including a recent case which involved a release of both crude oil and produced water (brine). He currently supports a number of refineries, power plants and chemical manufacturing facilities with compliance and monitoring requirements associated with the DRBC PCB TMDL for the Delaware River. Mr. Saunders managed the emergency response, extent of contamination studies, and oversight of the remediation of a refinery's sulfuric acid release into the Delaware River. In addition, Mr. Saunders has also managed a number of related Supplemental Environmental Projects (including shellfish and riparian buffer restoration projects) and other compensatory restoration projects in and along the Delaware River Basin. Prior to joining Cardno, Mr. Saunders worked for more than 8 years as a contractor to EPA, providing technical support, site management, and contractor oversight on hazardous waste site and ecological assessments, oil and gas field well plugging, emergency responses, and remediation projects.

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Mr. Adams has over 44 years of surveying experience in several disciplines of surveying. He has spent the past 30 years working in the pipeline industry in and around the Houston Ship Channel area. Specific experience includes extensive work in ExxonMobil Pipeline Company's Clear Lake and Bayport corridor systems and crossing the Houston Ship Channel and surrounding bays with various pipelines. His experience also includes many years of surveying and routing pipelines down Centerpoint's transmission corridors, as well as experience in pipeline routing through areas heavily congested with pipelines.

In addition to working on capital projects, 11 years of experience working in operation and maintenance strengthens the overall pipeline experience by providing an overall working knowledge of pipelines and the challenges they face once placed in service.

Specialties include: Water crossing surveys, routing, preliminary and as-built surveys as well as DOT compliance surveys. Mr. Adams is also a licensed surveyor in the State of Texas.

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Ms. Parsell holds a BA in Anthropology from the University of Kansas, and an MA in Anthropology with specialization in Archaeology from California State University, Long Beach. She currently serves as Principal Investigator for Cardno's cultural resource management services, including all aspects of research, fieldwork, analysis, and reporting. Ms. Parsell meets the Secretary of the Interior's Professional Qualification Standards in both Prehistoric and Historic Archaeology, as defined in 36 CFR 61, Appendix A. She specializes in lithic analysis, near-surface remote sensing, and preparation of compliance and consultation documents. Her primary responsibilities include conducting and supervising background research, fieldwork, and report writing, as well as overseeing the use of geophysical equipment in archaeological survey. In addition to standard fieldwork, Ms. Parsell has experience in laboratory analysis and artifact curation. She is practiced in agency and consulting party coordination, and has a proficient understanding of NEPA, Section 106 of the National Historic Preservation Act, and other related cultural resource laws and regulations. Ms. Parsell has directed projects involving large tracts of public and private land, as well as linear corridor projects including utility corridors and Department of Transportation projects.

Meg Thornton, Senior Consultant
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Ms. Thornton received a BA in Archaeology from Washington University in St. Louis in 1997, and a MA in Anthropology from the University of Alaska, Fairbanks in 1999. Ms. Thornton has over 19 years of experience preparing supporting documents for National Environmental Policy Act (NEPA) projects and Federal Energy Regulatory Commission (FERC) resource reports. These documents have been technically sound and legally defensible environmental documents for a wide variety of energy projects, including: transmission lines; natural gas pipelines; rural water pipelines; and natural gas power facilities. Much of the work has been conducted on behalf of the U.S. Army, Bureau of Land Management (BLM), the U.S. Army Corps of Engineers (USACE), and a variety of private companies. Ms. Thornton has experience coordinating with federal lead agencies and stakeholders to ensure that environmental documents are prepared in accordance with applicable agency

guidelines and are mutually acceptable to all parties. Ms. Thornton has conducted a wide variety of impact studies in support of NEPA and SEPA documents, including resource reports on cultural resources, traditional knowledge, paleontology, land use, recreation, visual impacts, and community impacts. Ms. Thornton currently serves as the Office Manager for the Cardno Anchorage office.

Cardno Environmental Survey

Brian Smith, Staff Scientist
Cardno, Inc., 121 Continental Drive, Suite 308, Newark, DE 19713

Mr. Smith holds a BS and an MS in Environmental Science from Drexel University. He has over seven years of experience in environmental consulting; including field activities, permit support, and data analysis. Mr. Smith has extensive experience using Microsoft Excel for data management and analysis. His technical writing abilities have been utilized for writing various summary reports, task updates, and documents in support of permitting compliance. Field activities have included habitat assessment, oil spill response, species identification, and wetland work in the Northeast and Midwest U.S., and the Atlantic and Gulf coasts.

Seth Ryan, Senior Project Scientist
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Mr. Ryan obtained an AAS in Ecology from Paul Smiths College in 1996, and a BS in Environmental Science from the University of Massachusetts in 1999. Mr. Ryan has 15 years of experience conducting and managing various aspects of environmental planning and permitting in accordance with federal, state, and local agencies, in particular with pipeline projects under Federal Energy Regulatory Commission (FERC) jurisdiction. Projects have included, oil and gas pipelines, electrical transmission lines, power generation plants, and transportation corridors throughout the United States. Throughout his career, Mr. Ryan has become well versed in pipeline construction and has conducted numerous environmental inspections, both during and post-construction. This ability, coupled with having the added knowledge of regulatory requirements relating to streams and wetlands, threatened and endangered species, cultural resources, mitigation, and agency consultations, has been proven to be a vital asset during the planning and permitting/licensing phases of midstream projects.

Introduction

Caliber proposes the 5.3 mile-long Bear Den Interconnect Pipeline to transport crude oil from Enable Midstream's Devore Terminal (SWSW Section 29, T 149N, R 98W) to the Dakota Access Pipeline's (DAPL) Watford City Terminal (NWNE Section 1, T 149N, R 99W). The proposed route follows US Hwy 85 in McKenzie County, beginning approximately 7.6 miles south of Watford City, and terminating approximately 2.9 miles south of Watford City near the junction of US Hwy 85 and the US Hwy 85 bypass. The line will consist of a newly constructed 12.75" OD, API5L, Grade X-42, PSL-2, ERW, PE, BFW, TRL crude oil pipeline with a nominal wall thickness of 0.188" and constructed of FBE coated steel. The line will operate at a maximum pressure of 1,440 psi, with a maximum capacity of 75,000 barrels/day.

In addition to the proposed transmission line, three surface facilities are also proposed. A truck off-load station is proposed for the northern end of the line, to be located in the NWNWNW of Section 12, T 149N, R 99W. This proposed truck off-load station will tie into the proposed transmission line. This yard will also be used as storage and laydown during line construction. A temporary 5-acre pipe laydown yard to be used during line construction is proposed in the NENE of Section 14, T 149N, R 99W. A 7-acre truck off-load station is also proposed for the southern end of the line, to be located in the NWSW of Section 30, T 149N, R 98W.

Caliber has determined a need for safe and reliable transportation of crude oil produced in the Watford City area. In addition, more options are needed to provide producers with stable market access during times of market volatility. Therefore, Caliber proposes the construction of the Bear Den Interconnect in McKenzie County, and respectfully submits this Application for Route Permit for the proposed Bear Den Interconnect, in accordance with the requirements set forth in NDCC 49-22-08.1 and NDAC 69-06-05.

Reference	Required Components Per NDAC 69-06-05-01 Application for Transmission Facility Permit	Page Number
2.a.(1)	Type of facility proposed	8
2.a.(2)	Purpose of facility	8
2.a.(3)	Technology to be deployed	8
2.a.(4)	Type of product to be transmitted	8
2.a.(5)	Source of product to be transmitted	8
2.a.(6)	Final destination of product to be transmitted	8
2.a.(7)	Size and design detail and any alternative size and design	8
2.a.(7)(a)	The width of the Right-of-Way	16
2.a.(7)(b)	The approximate length of the facility	1
2.a.(7)(c)	The estimated span length for electric facilities	N/A
2.a.(7)(d)	The anticipated type of structure for electric facilities	N/A
2.a.(7)(e)	The voltage for electric facilities	N/A
2.a.(7)(f)	The requirement for an general location of any new associated facilities	1

2.a.(7)(g)	The estimated distance between pipeline surface structures	1
2.a.(7)(h)	The pipe size	8
2.a.(7)(i)	The maximum design for pipeline operating pressure and temperature	8
2.a.(7)(j)	The maximum design pipeline flow rate	8
2.a.(7)(k)	The number and general location of compressor or pumping stations	N/A
2.b	Time schedule	8
2.b.(1)	Obtaining the certificate of corridor compatibility	8
2.b.(2)	Obtaining the route permit	8
2.b.(3)	Completing the Right-of-Way acquisition	8
2.b.(4)	Starting construction	8
2.b.(5)	Completing construction	8
2.b.(6)	Testing operations	9
2.b.(7)	Commencing operations	9
2.c.	Agency consultation and response	10-13, 30, Appendix C

2.d.	Need for the facility	16, 27
2.e.	Description of alternatives	27
2.f.	Corridor width	15
2.g.	Study area to enable evaluation per NDCC 49-22-09	15-27
2.h.	Discussion of factors in NDCC 49-22-09 to aid evaluation	28-30
2.i.	Applicant's policies and commitments to limit environmental impact, including copies of board resolutions and management directives	15
2.j.	Map of criteria which led to route location	76-88
2.k.	Relative value of each criterial and rationale for location selection	28-39
2.l.	Mitigating measures	40-41, Appendix I
2.m.	Qualifications of each person involved in location study	viii-xi
2.n.	Map identifying criteria which led to route location and new facilities	76-88
2.o.	8.5" X 11" black and white map suitable for newspaper publication	Included
2.p.	Discussion of present and future natural resource development in the area	19, 29
2.q.	Maps and GIS data meeting PSC requirements	Included

Reference	Required Components Per NDAC 69-06-08-02 Transmission Facility Route Criteria	Page Number
1	**Exclusion Areas**	
1.a.	Designated or registered national parks; memorial parks; historic sites and landmarks; natural landmarks; monuments; wilderness areas	31-32
1.b.	Designated or registered state parks; historic sites; monuments; historical markers; archaeological sites; and nature preserves	31-32, Appendix B
1.c.	County parks and recreational areas; municipal parks; and parks owned or administered by other governmental subdivisions	31-32
1.d.	Areas critical to the life stages of threatened or endangered animal or plant species	31-32, Appendix A
1.e.	Areas where animal or plant species that are unique or rare to North Dakota would be irreversibly damaged	31-32, Appendix A
1.f.	Areas within 1,200 feet of the center of an Intercontinental Ballistic Missile (ICBM) launch or launch control facility	31-32
1.g.	Areas within 30 feet of a direct line between ICBM launch or launch control facilities	31-32
2	**Avoidance Areas**	
2.a.	Designated or registered national historic districts; wildlife areas; wild, scenic, or recreational rivers; wildlife refuges; and grasslands	33-34
2.b.	Designated or registered state wild, scenic, or recreational rivers; game refuges; game management areas; management areas; forests; forest management lands; and grasslands	33-34
2.c.	Historical resources which are not specifically designated as exclusion or avoidance areas	33-34
2.d.	Areas which are geologically unstable	33-34, 41
2.e.	Within 500 feet of a residence, school, or place of business	33-34

2.f.	Reservoirs and municipal water supplies	33-34
2.g.	Water sources for organized rural water districts	33-34
2.h.	Irrigated land (Not applicable to an underground transmission facility)	N/A
2.i.	Areas of recreational significance which are not designated as exclusion areas	33, 35
3	**Selection Criteria**	
3.a.(1)	Agricultural production	35-36
3.a.(2)	Family farms and ranches	35-36
3.a.(3)	Land with demonstrated soil, topography, drainage, and available water supply which cause the land to be economically suitable for irrigation	N/A
3.a.(4)	Surface drainage patterns and groundwater flow patterns	35-36
3.b.(1)	Sound-sensitive land uses	35,37
3.b.(2)	Visual effect on adjacent area	35,37
3.b.(3)	Extractive and storage resources	35,37
3.b.(4)	Wetlands, woodlands, and wooded areas	35,37
3.b.(5)	Radio and television reception, and other communication or electronic control facilities	35,37

3.b.(6)	Human health and safety	35,37
3.b.(7)	Animal health and safety	35,37
3.b.(8)	Plant life	35,37-38
4	**Policy Criteria**	
4.a.	Location and design	38
4.b.	Training and utilization of available labor in North Dakota for the general and specialized skills required	38
4.c.	Economics of construction and operation	38
4.d.	Use of citizen coordinating committees	38
4.e.	A commitment of a portion of the transmitted product for use in North Dakota	38
4.f.	Labor relations	39
4.g.	Coordination of facilities	39
4.h.	Monitoring of impacts	39
4.i.	Utilization of existing and proposed Rights-of-Way and corridors	39
4.j.	Other existing or proposed transmission facilities	39

1 Description of Facility

1.1 Type of Facility

The proposed project is to construct a transmission line for liquid hydrocarbons, which has an outside diameter greater than 4.5 inches and is greater than one-mile in length. Therefore, the line as currently proposed meets the definition of a "transmission facility" per North Dakota Century Code (NDCC) 49-02-03. The transmission line was designed in compliance with U.S. Department of Transportation (USDOT) requirements, specifically 49 Code of Federal Regulations (CFR) 195.C. Line construction will be conducted per 49 CFR 195.D, and operation and maintenance will be in accordance with 49 CFR 195.F.

1.2 Purpose of Proposed Facility

The purpose of the proposed transmission line is to transport crude oil from Enable Midstream's Devore Terminal to the Dakota Access Pipeline's Watford City Terminal. From the Watford City Terminal, crude oil would be transferred to the DAPL terminus near Patoka, Illinois for sale. This would provide wider market access to North Dakota oil and gas operators and reduce the burden on local infrastructure.

1.3 Size and Design

The proposed transmission line is approximately 5.3 miles in length and will consist of the following:

- 12.75" OD steel pipe
- API 5L Grade X-42 PSL-2, ERW, PE, BFW, TRL, FBE-coated pipe
- Nominal Wall Thickness of 0.188 inches
- Maximum Operating Pressure of 1,440 psi
- Normal Throughput of 50,000 barrels per day (bpd)
- Maximum Throughput of 2,184 gallons per minute (gpm), or 75,000 barrels per day
- Maximum Operating Temperature of 120°F

The proposed transmission line will include one pig launcher and one pig receiver located at each truck offload station. The valves will be installed in accordance with USDOT requirements. No in-line valves are proposed at this time.

1.4 Time Schedule

1.4.1 Certificate of Corridor Compatibility

Caliber seeks a Certificate of Corridor Compatibility by mid-October 2016.

1.4.2 Route Permit

Caliber seeks a Route Permit by mid-October 2016.

1.4.3 Right-of-Way Acquisition Date

Right-of-Way (ROW) acquisition for 90% of the easements was completed by early June 2016. The remaining ROW easement is expected to be acquired by early July, 2016.

1.4.4 Construction

Construction is anticipated to begin mid-October 2016, contingent upon regulatory approval. Construction is anticipated to last approximately one month, with an anticipated completion date of mid-November 2016.

1.4.5 Test Operations

Test operations will occur following construction of the transmission line. Mechanical integrity testing will occur before the line is placed into service.

1.4.6 In-Service Date

The transmission line and all associated facilities are expected to be placed in service by mid-November 2016.

2 Regulatory Requirements

Transmission facilities are heavily regulated, and newly constructed facilities are subject to numerous approvals and permits. Intrastate facilities which remain entirely within a single state are typically regulated by state and local agencies. Interstate facilities which cross state lines, however, are also subject to federal permitting requirements. States typically adopt similar rules and procedures as federal agencies, and in some cases are tasked with ensuring compliance with federal regulations.

The proposed transmission line is an intrastate pipeline lying entirely within North Dakota, and will not only be subject to North Dakota Public Service Commission (NDPSC) regulation, but will also fall under the jurisdiction of various state and local agencies. Several regulatory agencies were notified and consulted; copies of the correspondence are included in Appendix C. The status of required permits and regulatory compliance for the proposed transmission line are summarized below:

Table 2-1 Facility Permit and Regulatory Compliance Status

Permit	Agency	Date of Submittal	Date of Approval
McKenzie County Utility Application	McKenzie County Road Department	June 29th, 2016	July 1st, 2016
Conditional Use Permit	McKenzie County Planning and Zoning Commission	June 3, 2016	Expected by July 19th, 2016
Weed Control Plan	McKenzie County Weed Control Board	May 27th, 2016	June 1st, 2016
Emergency Response Plan	McKenzie County Office of Emergency Management	May 27th, 2016	June 7th, 2016
Utility Occupancy Application and Permit	North Dakota Department of Transportation	Early July, 2016	Expected by Mid-July, 2016
Hydrostatic Water Discharge Permit	North Dakota Department of Health	To be submitted prior to water discharge	As Needed
Stormwater Pollution Prevention Plan	North Dakota Department of Health	To be submitted minimum of 7 days prior to construction	Notice of Intent May 27th, 2016
Air Quality Permit	North Dakota Department of Health	To be submitted for above ground petroleum storage tanks prior to construction per NDAC 33-15-14	Approval prior to construction
National Historic Preservation Act	North Dakota State Historic Preservation Office	Submittal Pending NDSHPO issuance of site names	Concurrence letter expected by late July, 2016
Nationwide Permit 12	United States Army Corps of Engineers	Eligibility determined on June 10th, 2016	No notification required if compliance is demonstrated
Endangered Species Act	United States Fish and Wildlife Service	June 16th, 2016	Pending

2.1 County Requirements

NDCC 11-33-01 grants authority to North Dakota counties to regulate land use "for the purpose of promoting health, safety, morals, public convenience, general prosperity, and public welfare." Furthermore, NDCC 11-33-02 allows for the designation of political subdivisions within the counties, thereby granting townships authority to regulate land use within their jurisdictions as well. NDCC 40-47-01 also grants authority to cities to zone within their boundaries, as well as to exercise extraterritorial zoning authority on lands adjacent to the city.

The proposed route lies entirely within McKenzie County, and is not subject to any other county's jurisdiction. Within McKenzie County, 15 townships are organized, although only seven retain zoning authority. Three cities also exercise extraterritorial zoning authority (ETA).

The McKenzie County Zoning Ordinance defines a transmission facility as "a gas or liquid transmission line and associated facilities designed for or capable of transporting coal, gas, or liquid hydrocarbon products for public commerce," and are regulated under county ordinances and the McKenzie County Comprehensive Plan.

2.1.1 City and Township Approval

The proposed route lies approximately 0.4 miles south of the Watford City ETA, and is not subject to city authority. Likewise, the route lies entirely within two unorganized townships (T 149N, R 99W and T 149N, R 98W), and is not subject to township authority.

2.1.2 McKenzie County Road Department

NDCC 24-06 grants authority to counties to regulate section line crossings and to designate a district overseer to regulate roads and highways in an unorganized township. In McKenzie County, the Road Department is responsible for this role.

The proposed route crosses six section lines, all of which have an existing road or highway. A McKenzie County Utility Permit was applied for on June 29th, 2016, and was approved on July 1st, 2016.

2.1.3 McKenzie County Planning and Zoning Department

McKenzie County zoning ordinances define a transmission facility as a regulated land use, and allow transmission lines in all zoning districts with a Conditional Use Permit. The McKenzie County Board of Commissioners have designated the Planning and Zoning Department as the regulatory authority for zoning issues.

A Conditional Use Permit Application was submitted to the McKenzie County Planning and Zoning Department on June 3rd, 2016, and a public hearing is scheduled for July 11th, 2016. Approval of the Conditional Use Permit is expected to occur by July 19th, 2016.

2.1.4 McKenzie County Weed Control Board

McKenzie County Zoning Ordinance 4.12(5) grants authority to the McKenzie County Weed Control Board to regulate development within the county. A weed control plan was submitted to the Weed Control Board on May 27th, 2016, and was approved on June 1st, 2016.

2.1.5 McKenzie County Office of Emergency Management

McKenzie County Zoning Ordinance 4.12(11) requires an emergency response plan to be submitted to the Emergency Manager and updated annually. Caliber's Emergency Response Plan for the proposed Bear Den Interconnect was submitted to the McKenzie County Emergency Manager on May 27th, 2016, and was approved on June 7th, 2016.

2.2 State Requirements

The proposed route is an intrastate pipeline which lies entirely within the state of North Dakota, and is therefore subject to state jurisdiction. NDCC 49-22 grants authority to the North Dakota Public Service Commission (NDPSC) to regulate the siting of energy conversion and transmission facilities. Transmission facilities are also regulated in various forms by other state agencies, as described below.

2.2.1 North Dakota Public Service Commission

The NDPSC regulates the siting of transmission facilities, in accordance with requirements set forth in NDCC 49-22, as well as NDAC 69-06-05 and 69-06-08. An application for a Certificate of Route Compatibility and Route Permit were submitted to the NDPSC on July 1st, 2016, with approval expected by mid-October 2016.

2.2.2 North Dakota Department of Transportation

NDCC 24-01 grants authority to the North Dakota Department of Transportation (NDDOT) to regulate utilities crossing state and federal highways within North Dakota. The proposed route includes one crossing of US Highway 85. A Utility Occupancy Application and Permit was submitted to the NDDOT in late June, 2016, and approval is expected by late July, 2016.

2.2.3 North Dakota Department of Health

NDCC 61-28 grants authority to the North Dakota Department of Health (NDDH) to regulate water discharge and stormwater runoff. A Stormwater Pollution Prevention Plan (SWPPP) has been developed, and a Notice of Intent was submitted to the NDDH Division of Water Quality on May 27th, 2016. A Hydrostatic Water Discharge Permit will be obtained as needed before any discharge of stormwater.

NDCC 23-25 grants authority to the NDDH to regulate air quality and potential sources of air pollution. If future plans necessitate the installation of above ground petroleum storage tanks, air quality permits to construct and operate will be submitted prior to construction.

2.2.4 North Dakota State Historic Preservation Office

The National Historic Preservation Act established requirements to consider effects of federal undertakings on historic and cultural resources in the United States. In North Dakota, the North Dakota State Historic Preservation Office (NDSHPO) has been granted the authority under NDCC 55-01 and 55-03 to protect and mitigate adverse effects to cultural resources and historic sites. Additionally, NDCC 49-22 gives the NDPSC authority to seek to minimize adverse impacts to cultural resources. The NDSHPO acts as a reviewer in this capacity. A Class I and Class III Cultural Resources Report was submitted to the NDSHPO in late June, 2016. A concurrence letter is expected by late July, 2016.

2.2.5 North Dakota Department of Trust Lands

In 1889, the Enabling Act provided over 3 million acres of land from the Federal Government to the State of North Dakota. The North Dakota Department of Trust Lands (NDDTL) was granted authority under Article IX of the North Dakota Constitution to oversee and managed these lands. The NDDTL was contacted on June 16th, 2016, and their correspondence is included in Appendix C. The proposed route does not affect NDDTL lands, and is therefore not subject to NDDTL jurisdiction.

2.2.6 North Dakota Parks and Recreation Department

NDCC 55-08 charges the North Dakota Parks and Recreation Department (NDPRD) with the authority to plan and administer state parks, nature preserves, and other recreation areas with state-wide or reginal significance. The NDPRD was contacted on June 16th, 2016, and their correspondence is included in Appendix C. The proposed route does not affect NDPRD lands, and is therefore not subject to NDPRD jurisdiction.

2.2.7 North Dakota Game and Fish Department

NDCC 20.1-02 grants the North Dakota Game and Fish Department (NDGFD) with protecting, conserving, and enhancing wildlife and fish habitat and resources for public benefit. A Natural Resources and Wetlands Determination Report was completed to assess potential impacts to fish and wildlife due to the construction and operation of the proposed Bear Den Interconnect. The NDGFD was contacted on June 16th, 2016, and their correspondence is included in Appendix C.

2.2.8 North Dakota Industrial Commission

The North Dakota Industrial Commission (NDIC) is granted authority under NDCC 38-08-04 to regulate and "foster, encourage, and promote the development, production, and utilization of natural resources of oil and gas in the state in such a manner as will prevent waste". Although the NDIC does not regulate oil and gas transmission facilities, the Oil and Gas Division does oversee gathering facilities which have the potential to be affected by the construction and operation of a transmission facility. The NDIC Pipelines Program Director was contacted on June 16th, 2016, and his correspondence is included in Appendix C.

2.3 Federal Requirements

Although intrastate pipelines are typically regulated by state agencies, in many instances state agencies share regulatory authority with federal agencies. In some cases, federal agencies have jurisdiction when federal lands, waters, or wildlife may be affected by the project.

2.3.1 U.S. Army Corps of Engineers

Section 404 of the Clean Water Act charged the U.S. Army Corps of Engineers (USACE) to regulate dredge and fill activities in waters of the United States. Nationwide Permit 12 authorizes the crossing of a navigable water by utility lines, provided the project does not affect greater than ½-acre of waters or wetland bodies. The Clean Water Act defines a navigable water as "waters of the United States, including the territorial seas".

The USACE defines a wetland as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions".

A Natural Resources and Wetlands Determination Report was completed to determine if the proposed Bear Den Interconnect is eligible under the Nationwide Permit 12. Based on the findings and impact calculations, each crossing of waters or wetlands will be below the requirements for a Pre-Construction Notification. Per a conversation with the USACE headquarters in Washington, D.C., a notification letter is not necessary or preferred if impacts for single and complete crossing are clearly demonstrated to be below the requirements for a Pre-Construction Notification, and will meet the conditions set forth under the Nationwide Permit 12. It was determined that each crossing associated with the proposed Bear Den Project are below the requirements for a Pre-Construction Notification, and have automatic approval under the Nationwide Permit 12, as demonstrated in Appendix A. Therefore, a notification to the USACE is not needed at this time.

2.3.2 U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) was created in 1940 after a reorganization within the Department of the Interior, and is charged with enforcing federal wildlife regulations, protecting endangered species, managing migratory birds, conserving wetlands and nationally significant fisheries, and managing more than 150 million acres of National Wildlife Refuges.

The Endangered Species Act of 1973 prohibits the continued existence of a federally listed or proposed Threatened or Endangered Species from being jeopardized by a proposed project. In addition, the Bald and Golden Eagle Protection Act of 1940 and the Migratory Bird Treaty Act of 1918 also prohibit damage to those species included in the acts.

A Natural Resources and Wetlands Determination Report was completed to determine if the proposed project would negatively affect a listed species. The USFWS was consulted on June 16th, 2016 to ensure compliance with federal fish and wildlife regulations, and to ensure no USFWS-administered lands would be affected by the proposed project. Correspondence with the USFWS is included in Appendix C.

2.4 Other Permits

In addition to local, state, and federal agencies, other governments and organizations may also claim jurisdiction and require permits for the construction and operation of transmission lines.

2.4.1 Tribal governments

The proposed route does not cross tribal lands. Therefore, the transmission line is not subject to tribal jurisdiction.

2.4.2 Railroad Crossings

The proposed route does not cross any railroads. Therefore, a railroad crossing permit is not required.

2.4.3 Utility Crossings

Several utilities are crossed by the proposed route, including overhead and underground electric lines, underground pipelines, and underground telecommunication cables. Caliber will work with the owners of the affected utilities to obtain the necessary permissions and line crossing permits. Caliber will continue to work with affected utility owners and attempt to accommodate utility owner requests as much as is practicable during construction and operation of the transmission line.

2.4.4 Canal Crossings

The proposed route does not cross any canals or irrigation ditches. Therefore, a canal crossing permit is not required.

2.4.5 Wellhead Protection Areas

The proposed route is not located within any wellhead protection areas, and no additional permits are required.

3 Route Analysis and Studies

3.1 Route Evaluation

Criteria considered in the evaluation of the proposed transmission line route included regulatory requirements as specified by NDAC 69-06-08-02, as well as environmental and anthropogenic considerations. Route analysis was composed of both desktop studies and field surveys. A 1-mile wide study area as measured from the center of the proposed route was established for the desktop studies, while a 250-foot wide survey area as measured from the center of the proposed route was used for the field surveys.

3.1.1 Caliber Policies

Caliber prioritizes best practices and policies which ensure it remains a "good neighbor", both in the way that it does business and in how it designs, constructs, and operates pipelines and associated facilities. Accordingly, Caliber is committed to maintaining an excellent health, safety, and environment (HSE) record and constantly strives to improve operations with the ultimate goal of minimizing surface impacts, operating in an environmentally responsible way, and remaining involved in communities in the Williston Basin through company support and employee engagement.

Therefore, protecting employees, contractors, landowners, local communities, and the environment is Caliber's top priority. Caliber aims to continuously improve its operations by training employees and ensuring contractors are operating in accordance with the highest health and safety standards, while constantly developing best practices to minimize the impact of projects to land, air, waterways, wildlife, and the communities where it operates.

Caliber avoids or minimizes environmental impacts during the planning, design, and construction phases of project development by implementing the following policies and standard practices:

- Whenever possible, Caliber will minimize permanent impacts to land and water resources. The majority of impacts resulting from Caliber projects are temporary and short term.
- Whenever possible, Caliber and its contractors will utilize existing public roads and existing staging areas to avoid or minimize impacts to undisturbed areas of land.
- Caliber incorporates comprehensive constraint analyses in every project during the planning stage. This ensures that impacts to known resources are minimized to the greatest extent possible.
- Caliber's assets are constructed on private land to avoid impacts to public resources.

In addition, Caliber limits environmental impacts during project operation by implementing the following policies and standard practices:

- During operation, projects undergo regular environmental monitoring and inspection to ensure safe operation and to maintain compliance with all regulations and permit conditions.
- All operators receive extensive training to recognize and prevent unsafe conditions and potential environmental hazards.

Additional policies and procedures developed by Caliber to mitigate impacts to the environment are included in Appendix I.

3.1.2 Proposed Route Location Evaluation

The entire length of the proposed route was surveyed, and mile markers were identified at every 0.1-mile interval to facilitate the thorough review of the route. Mile markers were surveyed in the direction of proposed flow, beginning at 0.0, and ending at 5.3. The proposed route begins in the NWSW of Section 30, T 149N, R 98W at Caliber's proposed south truck offload station. The initial 3,150 feet of the proposed route will proceed to the north before being bored beneath an existing lease road near mile marker 0.6. After crossing the lease road, the

route enters Section 19, T 149N, R98W and turns toward the northwest. The route then proceeds for 290 feet before heading north to mile marker 0.9. After mile marker 0.9, the route proceeds west for approximately 850 feet before being bored beneath US Highway 85 near mile marker 1.1. This portion of the route was proposed to minimize impacts to existing industrial developments and to minimize crossings of existing utilities.

After crossing US Highway 85, the route enters the SENESE of Section 24, T 149N, R 99W, and proceeds northwest for approximately 715 feet before being bored beneath an unnamed intermittent tributary of Spring Creek near mile marker 1.3. Upon crossing the stream, the route continues northwest for approximately 1,120 feet before proceeding north for 1,340 feet. The route then follows an existing ROW west for 500 feet before following the ROW north for 1,160 feet. The proposed route is then bored beneath 21st St between mile markers 2.1 and 2.2, and proceeds into SWSWSE of Section 13, T 149N, R99W. This portion of the route was proposed to minimize impacts to area residences, surface waters, and wetlands, as well as to accommodate landowner requests.

Upon entering Section 13, the proposed route continues to follow the existing ROW to the north and west for 4,070 feet before proceeding north for 1,920 feet. The route is then bored beneath 22nd St between mile markers 3.3 and 3.4, and continues northwest into the SWSW of section 12, T 149N, R 99W. The proposed route continues northwest for approximately 500 feet before continuing north for approximately 2,580 feet. Near mile marker 3.9, the route briefly shifts toward the northwest before continuing north for approximately 1,900 feet. The route is then bored beneath 23rd St near mile marker 4.4 before continuing north into the SWSWSW of Section 1, T 149N, R 99W. This portion of the route was chosen to avoid impacts to surface waters and area residences, as well as to accommodate a landowner request to remain along the western edge of the property parcel.

Upon entering Section 1, the proposed route proceeds north for approximately 1,830 feet before turning in a northeasterly direction near mile marker 4.6. The route is then bored beneath Spring Creek between mile markers 4.8 and 4.9 before continuing northeast for approximately 400 feet. The proposed route then turns north near mile marker 4.9 and proceeds north for approximately 700 feet. Between mile markers 5.0 and 5.1, the route turns east and continues for approximately 1,550 feet before terminating at DAPL's Watford City Terminal. This portion of the route was chosen to minimize disturbance to Spring Creek as well as to accommodate landowner requests.

The proposed route was designed in accordance with Caliber's goal of minimizing impacts to the environment and surrounding communities. Therefore, the proposed route is located entirely on private lands, remains at least 500 feet from businesses and all occupied residences with one exception, minimizes surface water crossings, avoids impacts to environmentally sensitive areas, and accommodates landowner requests.

3.1.3 Construction and Operation Evaluation

Construction will involve trenching and boring along the proposed route, as described in section 3.1.2. During construction, a 75-foot ROW will be utilized to allow for equipment staging and temporary access. Existing roads and infrastructure will be utilized, and no additional permanent access roads will be constructed. Land agents will be available at all times during construction to address any landowner questions or concerns. Upon completion of construction, a 25-foot permanent ROW will be maintained.

Pipeline operations will be conducted to minimize impacts to the environment and local community. The proposed route avoids environmentally sensitive areas, and allows for a quick response should an emergency situation arise. Additional safeguards, such as leak detection will be utilized to allow for a quick response should pipeline mechanical integrity be compromised. Additional information on pipeline operations and emergency response is included in Section 8.

3.1.4 Economic Evaluation

Economic evaluation of the proposed route revealed several beneficial impacts. The proposed transmission line will allow for efficient and economic transport of crude oil, replacing other less economic options. The line will reduce the amount of truck traffic in the area, thereby reducing impacts to local roads and infrastructure,

resulting in an economic benefit to the local taxpayers. Pipeline easements will also provide economic benefits to landowners located along the proposed route.

3.2 Environmental Studies

Environmental studies were conducted during the evaluation of the proposed route. Studies conducted included both a desktop analysis utilizing available literature and geospatial resources, as well as a field survey conducted by qualified environmental scientists, as described in the List of Contributors and Reviewers. A one-mile buffer around the proposed route was used as the study area, which is composed of approximately 9,401.7 acres. A 250-foot buffer around the proposed route was used as the survey area, which is composed of approximately 193.7 acres.

3.2.1 Terrain

The study area is located within the Glaciated Missouri Plateau section of the Great Plains Province, which is characterized by low relief and a rolling, hilly, or hummocky surface with occasional ridges and buttes.[1] The proposed route traverses a relatively flat area, with a minimum elevation of 2,121 feet, and a maximum elevation of 2,304 feet above sea level.

3.2.2 Soils

Approximately 99.4% of the surface within the study area is composed of topsoil, with approximately 0.21% composed of surface water and the rest composed of gravel and sand pits. Forty-nine unique soil types were identified within the survey area. The majority of the soils consist of loams, clayey loams, silty loams, and silty clays.

Approximately 71.6% of the soils identified within the study area were classified as well drained, with the rest ranging from excessively drained to poorly drained. Approximately 35.3% were classified as a high runoff class, and 58.5% were identified as having high water storage potential. A typical depth to water table greater than 80 inches is present in 84.4% of the soil types.

Soil types present within the study area are summarized in Table 3-1[2]:

Table 3-1 Study Area Soil Types

Soil Name	Percent of Study Area	Drainage Class	Runoff Class	Water Storage	Typical Depth to Water Table
Farnuf loam	9.15	Well Drained	Low	High	>80"
Dooley-Zahl complex	8.85	Well Drained	Low	High	>80"
Daglum-Belfield complex	8.09	Moderately Well Drained	High	Very Low	42-60"
Brandenburg-Cabba-Dogtooth Complex	6.22	Excessively Drained	High	Very Low	>80"
Zahl-Williams loams	5.45	Well Drained	High	High	>80"
Zahl-Cabba-Maschetah complex	5.25	Well Drained	Very High	High	>80"
Korchea-Fluvaquents complex	5.1	Well Drained	Low	High	>80"
Beisigl-Flasher-Telfer loamy fine sands	4.27	Somewhat Excessively Drained	Low	Very Low	>80"
Zahl-Cabba-Williams complex	4.06	Well Drained	High	High	>80"
Williams-Zahl loams	3.89	Well Drained	Medium	High	>80"
Zahl-Beisigl-Tally complex	3.3	Well Drained	High	High	>80"
Cabba-Chama-Havrelon, occasionally flooded complex	2.86	Well Drained	High	Very Low	>80"
Rhoades-Daglum complex	2.71	Moderately Well Drained	Medium	Very Low	42-60"

[1] Trimble, Donald E. "The Geologic Story of the Great Plains". *United States Geological Survey*, 1980.

[2] From Soil Survey geospatial data provided by the USDA Natural Resource Conservation Service.

Chama-Cabba-Sen silt loams	2.51	Well Drained	Medium	Moderate	>80"
Belfield-Grail clay loams	2.04	Moderately Well Drained	Medium	High	42-60"
Savage silty clay loam	2.01	Well Drained	Medium	High	>80"
Savage-Grail silty clay loams	1.95	Well Drained	Medium	High	>80"
Korchea loam	1.87	Well Drained	Low	High	>80"
Belfield-Savage-Daglum complex	1.75	Moderately Well Drained	Medium	High	42-60"
Cabba-Chama-Shambo loams	1.41	Well Drained	High	Very Low	>80"
Dogtooth-Janesburg-Cabba complex	1.21	Well Drained	Very High	Very Low	>80"
Zahl-Max loams	1.17	Well Drained	Very High	High	>80"
Vebar-Cohagen fine sandy loams	1.13	Well Drained	Low	Low	>80"
Cabba-Chama-Sen silt loams	1.12	Well Drained	Medium	Moderate	>80"
Flasher-Vebar-Parshall complex	1.1	Somewhat Excessively Drained	High	Very Low	>80"
Vebar-Flasher-Tally complex	1.03	Well Drained	Low	Low	>80"
Regent-Cabba complex	1.02	Well Drained	Very High	Moderate	>80"
Zahl-Williams-Cabba complex	0.96	Well Drained	High	High	>80"
Williams-Bowbells loams	0.92	Well Drained	Low	High	>80"
Tally-Parshall fine sandy loams	0.82	Well Drained	Very Low	Moderate	>80"
Moreau-Barkof silty clays	0.66	Well Drained	Very High	Low	>80"
Brandenburg-Cabba-Badland complex	0.6	Excessively Drained	High	Very Low	>80"
Moreau-Wayden silty clays	0.59	Well Drained	Very High	Low	>80"
Lawther silty clay	0.55	Well Drained	High	Moderate	>80"
Dooley fine sandy loam	0.51	Well Drained	Low	High	>80"
Dogtooth-Janesburg silt loams	0.43	Well Drained	Very High	Very Low	>80"
Cabba-Badland complex	0.41	Well Drained	High	Very Low	>80"
Harriet loam	0.39	Poorly Drained	Negligible	Very Low	0-18"
Pits, gravel and sand	0.39	N/A	N/A	N/A	N/A
Flasher-Rock outcrop-Vebar complex	0.37	Somewhat Excessively Drained	Low	Very Low	>80"
Regent-Janesburg complex	0.36	Well Drained	Very High	Moderate	>80"
Amor-Cabba loams	0.34	Well Drained	Medium	Low	>80"
Zahl-Tally-Williams complex	0.27	Well Drained	High	High	>80"
Regent-Savage silty clay loams	0.25	Well Drained	Very High	Moderate	>80"
Brandenburg-Searing-Dogtooth complex	0.23	Excessively Drained	Medium	Very Low	>80"
Water	0.21	N/A	N/A	N/A	N/A
Reeder-Farnuf loams	0.14	Well Drained	Medium	Moderate	>80"
Chama-Sen-Cabba silt loams	0.05	Well Drained	Medium	Moderate	>80"
Reeder-Werner loams	0.03	Well Drained	Medium	Moderate	>80"

3.2.3 Geology

Surface geology within the study area is primarily composed of alluvial sediments shaped by glacial retreat, although it continues to be minimally affected by fluvial processes. Within the study area, a thin layer (1-50 feet) of Quaternary-aged glacial till overlays Tertiary-aged bedrock. The Sentinel Butte Formation is the upper-most bedrock formation, and is composed of sandstone with interspersed lignite beds and dark-gray shales. The Sentinel Butte Formation outcrops approximately 4.5 miles to the south of the study area near the North Unit of

Theodore Roosevelt National Park.[3] Although sedimentary bedrock formations overlaying pre-Cambrian rocks can range up to 16,000 feet thick near the center of the Williston Basin, their maximum thickness is expected to range from 14,500-15,100 within the study area.[4]

Geologic Resources

Natural resources identified within or with the possibility of occurring within the study area include hydrocarbons, coal, sand and gravel, nitrogen, salt, and uranium.[5] Hydrocarbon production currently occurs from 38 active oil and gas wells within the study area. Coal is known to exist within the study area, however, no active coal mines exist in McKenzie County.

Sand and gravel deposits are known to occur within the study area, and one gravel pit is known to occur within the study area. Nitrogen gas occurs within the Broom Creek formation in some areas of McKenzie County, although it has not been documented within the study area. Nitrogen extracted from the Broom Creek Formation has been used as a source of gas for secondary recovery efforts in some North Dakota oilfields, but is not currently considered an economic source of nitrogen.

Salt beds are found within the Triassic Spearfish, Permian Opeche, Mississippian Madison, and Devonian Prairie Formations. Production from these salt beds is uneconomic, however, due to their depth and abundant alternative sources of salt. Uranium has been identified within lignite beds in several locations across southwestern North Dakota. It has not been known to occur within the study area, and any amount of uranium deposit in North Dakota is unlikely to occur in economic quantities.[6]

Landslides

Landslides are gravity-induced movement of earth and rock, including slumps, mud slides, sediment flows, and falling rocks. Risks of landslides are typically higher in areas of steep terrain, unstable soils, and/or during periods of heavy precipitation.

Eight areas of suspected landslide deposits have been identified within the study area,[7] and make up approximately 0.2% of the total land area. One of the landslide deposits lies within the survey area. No other areas of known instability or active landslides exist within the survey area.

Seismicity

As North Dakota lies at the center of the North American continent, it is largely unaffected by tectonic activity. Two faults have been identified in North Dakota, the Tabbernor and the Thompson Boundary Fault, although movement along these fault lines would not likely cause a major earthquake. A potential source of seismic activity would be the collapse of sediments overlying salt deposits as it is dissolved due to groundwater seepage. Seismic activity due to salt collapse is most likely to occur in Bottineau, Burke, and Renville counties, however, and is unlikely in western North Dakota.[8]

The only earthquake to occur with a verified epicenter in North Dakota occurred near Huff, ND on July 8, 1968. It measured approximately 4.4 on the Richter scale. The nearest episode of seismic activity to occur in the vicinity of the study area was located approximately 18.5 miles to the north, reaching 3.1 on the Richter scale, on September 28th, 2012.[9] No known seismic activity has been recorded within the study area.

[3] Carlson, Clarence G. "Geology of McKenzie County, North Dakota." *North Dakota Geological Survey Bulletin 80-Part I*, 1985.

[4] Based on gamma logs run in O&G wellbores in McKenzie County (NDIC File #2372, #6387, #8314)

[5] Carlson, 1985.

[6] Noble, E.A. "Uranium in Coal", *North Dakota Geological Survey Bulletin 63*, 1973.

[7] Murphy, Edward C. "Areas of Landslides Tepee Buttes Quadrangle, North Dakota". *North Dakota Geological Survey*, 2010.

[8] Bluemle, John P. "The Face of North Dakota". *North Dakota Geological Survey*, 2000.

[9] Based on geospatial data provided by the North Dakota GIS Hub, 2016.

Subsidence

Subsidence is the gradual settling or sudden sinking of surficial soils, typically caused by underground mining, heavy drainage, aquifer depletion, or thawing permafrost. None of these conditions are present within the study area, and no known instances of subsidence are recorded.

3.2.4 Vegetation

Vegetation communities present within the study area include herbaceous upland, woody vegetation, cropland, and palustrine emergent wetland. A field survey was conducted to identify and confirm the presence of various vegetative communities within the survey area; the results are detailed in Appendix A: Natural Resources and Wetland Determination Report.

Native Vegetation

Native grasses in western North Dakota includes Bluestem (*Andropogon gerardii, Andropogon scoparius*), Buffalograss (*Buchloe dactyloides*), Sideoats Grama (*Bouteloua curtipendula*), Blue Grama (*Bouteloua gracilis*), Junegrass (*Koeleria macrantha*), Western Wheatgrass (*Agropyron smithii*), and Foxtail Barley (*Hordeum jubatum*).[10]

Woody vegetation includes American Elm (*Ulmus americana*), Bur Oak (*Quercus macrocarpa*), Chokecherry (*Prunus virginiana*), Silver Buffaloberry (*Shepherdia argentea*), and Siberian Elm (*Ulmus pumila*).[11]

Aquatic vegetation includes Cattail (*Typha latifolia*), Curly Dock (*Rumex crispus*), Foxtail Barley (*Hordeum jubatum*), Prairie Cordgrass (*Spartina pectinata*), Reed Canarygrass (*Phalaris arundinacea*), and Western Dock (*Rumex occidentalis*). Curly Pondweed (*Potamogeton crispus*) and Eurasian Watermilfoil (*Myriophyllum spicatum*) may also be present, but are considered aquatic nuisance species in North Dakota.[12]

Other common vegetation includes Purple Coneflower (*Echinacea angustifolia*), Speckled Alder (*Alnus rugose*), Buckbrush (*Purshia tridentate)*, Prairie Clover (*Dalea spp.*), Prairie Sage (*Artemisia ludoviciana*), and Prickly Pear Cactus (*Opuntia spp.*).[13]

Noxious Weeds

Noxious weeds are classified as quickly spreading non-native vegetation. A summary of noxious weeds identified within the survey area are detailed in Appendix A. Noxious weeds present in McKenzie County are included in Table 3-2[14]:

[10] Stevens, O.A. "Handbook of North Dakota Plants". *North Dakota Institute for Regional Studies,* 1963.

[11] Stevens, 1963.

[12] North Dakota Game and Fish Department: "North Dakota's Aquatic Nuisance Species List", September 2015.

[13] Stevens, 1963.

[14] United States Department of Agriculture: "Land and Resource Management Plan for the Dakota Prairie Grasslands", 2001.

Table 3-2 Noxious Weeds of McKenzie County, North Dakota

Species	Perennial	Seed Viability	Reproduction/Seed Production	Flowers/Seed Maturity	Timing
Absinth wormwood (*Artemisia absinthium)*	Long-lived perennial that grows back each year from a woody base	3-4 years	No evidence of vegetative reproduction but may regenerate from root stock; prolific seed producer; one stem can produce between 674-1468 flower heads with 35-38 seeds per head (over 51,000 seeds/plant)	July-September; seeds mature in early fall; seedlings emerge early spring to August or whenever moisture and warmth are available	Treat when plant is at least 12" tall and actively growing (late June to mid-August); refer to individual label instructions for best timing of each herbicide
Canada thistle (*Cirsium arvense*)	Creeping perennial	Up to 22 years; deep burial (more than 8") promotes survival longevity	Adventitious creeping root buds; root fragments as short as 0.2" if vegetative material is moved on equipment or in the soil; also reproduces by seed; up to 40,000 seeds per stem	June through August; seeds mature in as few as ten days after flowering	Bud, rosette, and bolt stages; early spring or fall; refer to individual label instructions for best timing of each herbicide
Diffuse knapweed (*Centaurea diffusa*) Spotted knapweed (*Centaurea maculosa*)	Annual, biennial or perennial; individual spotted knapweed plants can live up to 9 years	5-8 years	Plants regrow from buds on the root crown but reproduction is primarily by seed; seed production varies widely with site conditions; avg 680 – 25,260 seeds/plant;	Flowers July through September; mature seeds usually formed by mid-August, followed by the death of the plant; dead plants break off at ground level and tumble with the wind to spread seed	Spring rosette to bloom stage or fall rosette; refer to individual label instructions for best timing of each herbicide
Russian knapweed (*Centaurea repens*)	Creeping perennial	2-3 years; once established very difficult to control	Seed and vegetative root buds; roots can grow as deep as 6' below surface after 1 years growth and 23' after 2 years; 1200 seeds per plant	June-September	Generally in the fall following several hard frosts; metsulfuron plus 2,4-D can also be effective in bud to early bloom stage; refer to individual label instructions for best timing of each herbicide
Field bindweed (*Convolvulus arvensis*)	Long-lived perennial; life span unknown but believed to be up to 30 years	20 years or more; seed that is 60 years old has been found to be alive! once established very difficult to control	Roots can reach depth of 20'; shoots capable of budding have been found at 14' depth; rhizomes develop from root buds and emerge as new plants; root fragments may generate new plants; 25-300 seeds per plant	June through fall frost	During periods of active growth and stems at least 12" long; bud to full-bloom; spring or fall depending on herbicide; refer to individual label instructions for best timing of each herbicide
Leafy spurge (*Euphorbia esula*)	Persistent, long-lived, deep rooted perennial; unknown life span	8 years or more	Regenerates from very small root fragments, vegetative root buds, and by seed; average 140 seeds per plant; first year plants do not produce seeds	Yellow-green bracts develop May – early June and true flowers develop a few weeks later; flowering is usually complete by mid-July; seeds mature approximately 30 days after pollination	True flower growth stage and seed development or during fall re-growth; refer to individual label instructions for best timing of each herbicide
Purple loosestrife (*Lythrum salicaria*)	Yes; individual plants may live up to 22 years	3+ years	Primarily by seed but also vegetatively by cuttings; estimated 2.7 million seeds per plant	Early June through mid-September	July – early September; refer to individual label instructions for best timing of each herbicide
Yellow starthistle (*Centaurea solstitialis*)	Winter annual or rarely biennial or short-lived perennial	10+ years	Reproduces by seed only; up to 80,000 seeds per plant	Early July through September	Refer to individual label instructions for best timing of each herbicide
Perennial sowthistle (*Sonchus arvensis*)	Creeping perennial	1-5 years	Vegetative root buds; rhizomes develop as deep as 10' below surface; average 30 seeds per flower with numerous flowers per plant; known to produce up to 9750 seeds on a single plant	Blooms June & July; seeds mature July & August	Spring pre-bud or bud stage or fall; refer to individual label instructions for best timing of each herbicide
Black henbane (*Hyoscyamus niger*)	Annual or biennial	up to 5 year	Reproduces by seed only; a single plant can produce up to a half million seed	Flowers June – August; seed production July - October	Rosette stage to early bolting; when the plant is actively growing; refer to individual label instructions for best timing of each herbicide
Dalmation toadflax (*Linaria dalmatica*) yellow toadflax (*Linaria vulgaris*)	Deep-rooted, short-lived perennials; individual plants live 3 – 5 years	Up to 10 years	Seed reproduction, vegetative buds on creeping roots, and by root fragments; a single plant can produce over 500,000 seeds	Late June through August; seed production July through October	Although slow to establish, this weed is difficult to control once it takes root because many herbicides are ineffective; requires repeated treatments at high rates; apply pre-bloom to flowering or in the fall; refer to individual label instructions for best timing of each herbicide

Hoary cress (*Cardaria draba*)	Deep-rooted perennial with spreading root system from which many aerial shoots are produced; individual plants can live up to 8 years	Approximately 3 years	Vegetatively by persistent, adventitious roots and by seed production; a single plant produces between 1200 – 4800 seeds	Flowers May – June; seed production by July; if conditions are favorable, hoary cress can produce a second crop of seeds by fall	Up to 76% of this plant's biomass is below ground; May or June, bud or flowering stage; refer to individual label instructions for best timing of each herbicide
St Johnswort (*Hypericum perforatum*)	Yes; individual plants can live up to 8 years	6-10 years	Vegetatively by short creeping stems and by seed production; a single plant can produce up to 100,000 seeds; average seed production is 15,000 – 30,000	Flowers May – September	Extensive root system makes it hard to eradicate; refer to individual label instructions for best timing of each herbicide
Saltcedar (*Tamarix ramosissima*)	Yes; long-lived; in New Mexico, plants up to 100 years old show no signs of deteriorating from age	Less than 6 months especially if subject to desiccation	Vegetatively by adventitious roots or by seed production; a single mature plant can produce >500,000 seeds per season	Early to mid-April through July; seeds are shed throughout the growing season	Refer to individual label instructions for best timing of each herbicide
Bull thistle (*Cirsium vulgare*)	Biennial or sometimes monocarpic perennial (flowers and fruits only once, then dies)	Up to 3 years if buried at least 5" deep; seeds on the surface usually don't remain viable for longer than a year	By seed only; a single mature, healthy plant can produce up from 5000 to 50,000 seeds	July-September	Late fall or early spring; seedling to rosette stage; bolting to bud stage; refer to individual label instructions for best timing of each herbicide
Musk thistle (*Carduus nutans*)	Herbaceous tap rooted biennial; spring annual; occasionally a winter annual	Approximately 10 years	By seed only; a single plant produces approximately 10,000 seeds	May or early June through August	Late fall or early spring; seedling to rosette stage; refer to individual label instructions for best timing of each herbicide
Plumeless thistle (*Carduus acanthoides*)	Winter annual or biennial	10 years or more	By seed only; up to 9000 seeds per plant	May to August; seeds are dispersed 1-3 weeks after flowering	Late fall or early spring; seedling to rosette stage; refer to individual label instructions for best timing of each herbicide
Houndstongue (*Cynoglossum officinale*)	Biennial or short lived perennial	2-3 years unless buried; then only approximately a year	Average 300-675 seeds per plant but single plants can produce over 2000 seeds	Flowering May through July; seeds mature July through August	1st year rosettes in spring, summer or fall; early spring before bloom for second year rosettes; when plant is actively growing; refer to individual label instructions for best timing of each herbicide
Hemp (*Cannabis sativa*)	Annual		By seed only	Flowering July to September; seed production August until frost	Refer to individual label instructions for best timing of each herbicide
Buckthorn (*Rhamnus cathartica*)	Perennial	Up to 5 years	Reproduces by seed or by stump sprouting	Flowers May – June; berries ripen during August and September	Late summer and throughout the fall; refer to individual label instructions for best timing of each herbicide
Common burdock (*Arctium minus*)	Biennial	2-10 years	By seed only; each plant produces 15,000 – 60,000 seeds	Flowers July – frost; seeds mature by September and are shed continuously throughout the fall, winter, and following spring	Herbicides are most effective when applied to first-year rosettes and before bloom stage; refer to individual label instructions for best timing of each herbicide
Halogeton (*Halogeton glomeratus*)	Winter annual; plants can germinate in fall, winter, or spring depending on soil moisture	Black seeds have no dormancy and are viable for up to 1 year; brown seeds have a dormancy and are viable for up to 10 years	By seed only; a single large plant can produce 100,000 seeds	Flowers July – August; seed maturity August - October	Apply when actively growing or very early in spring prior to flowering; refer to individual label instructions for best timing of each herbicide
Baby's breath (*Gypsophila paniculata*)	Herbaceous perennial	2 years	New shoots can grow from the crown, but not the root; reproduces by seed only; a single plant can produce up to 14,000 seeds	Flowers late June to late August	Bolting to pre-flower; refer to individual label instructions for best timing of each herbicide

3.2.5 Wildlife

Wildlife which may be present within the study area include over 160 species of common mammals, various bird species, raptors, and aquatic species. A biological survey was conducted within the survey area to identify critical habitat and species of concern, and is detailed in Appendix A. A coyote with a litter of puppies were noted within the vicinity of the proposed route during the field survey. The Endangered Species Act granted authority to the USFWS to maintain a list of threatened and endangered species of the United States. Species of concern which may be present within the study area are summarized in Table 3-3[15]:

Table 3-3 Threatened or Endangered Species in North Dakota

Species	Confirmed Sighting	Habitat Present	Determination
Endangered			
Black-footed Ferret (*Mustela nigripes*)	No	No	No Effect: The study area is outside of known range and no habitat suitable for re-introduction is present
Gray Wolf (*Canis lupus*)	No	No	No Effect: Species presence in North Dakota is sporadic, and typically near Minnesota and Manitoba borders
Interior Least Tern (*Sterna antillarum athalassos*)	No	No	No Effect: No habitat present within study area
Pallid Sturgeon (*Scaphirhynchus albus*)	No	No	No Effect: No habitat present within study area
Poweshiek Skipperling (*Oarisma poweshiek*)	No	No	No Effect: Critical habitat is generally present in Richland and Sargent Counties, but not listed in McKenzie County
Whooping Crane (*Grus americana*)	No	Yes	Unlikely Effect: Potential migratory habitat present, but not ideal
Threatened			
Dakota Skipper (*Hesperia dacotae*)	No	Yes	Unlikely Effect: Marginal habitat is present, but not ideal
Northern Long-eared Bat (*Myotis septentrionalis*)	No	Yes	Unlikely Effect: Potential habitat may be present, but not ideal
Piping Plover (*Charadrius melodus*)	No	No	No Effect: No habitat present within study area
Red Knot (*Calidris canutus*)	No	No	No Effect: No habitat present within study area
Sprague's pipit (*Anthus spragueii*)	No	Yes	Unlikely Effect: Potential habitat is present, but not ideal
Western Prairie Fringed Orchid (*Plantanthera praeclara*)	No	No	No Effect: Critical habitat is present in Ransom and Richland Counties, but is not listed in McKenzie County

[15] USFWS: "County Occurrence of Endangered, Threatened, and Candidate Species and Designated Critical Habitat in North Dakota", January 2015.

3.2.5.1 Black-footed Ferret (Mustela nigripes)

Although the historical range of Black-footed Ferrets included the northern plains, no populations currently reside in North Dakota. The Black-footed Ferrets have been re-introduced in various areas across Wyoming, Montana, and South Dakota, but no sites were chosen in North Dakota. As the diet of the Black-footed Ferret consists mostly of prairie dogs, large colonies of prairie dogs are needed for suitable habitat to be present. Although one small prairie dog colony was noted within the study area during the biological survey, it is not large enough to be eligible habitat, and no prairie dog colonies in McKenzie County are likely large enough to support a Black-footed Ferret population.

3.2.5.2 Gray Wolf (Canis lupus)

Gray Wolf habitat does not occur within the study area, and no known recent sightings have occurred. Due to current land use and the proximity to US Highway 85, Gray Wolves would likely avoid the study area.

3.2.5.3 Interior Least Tern (Sterna antillarum athalassos)

Suitable habitat for Interior Least Tern is located along the riverbanks and sandbars of the Missouri River and Lake Sakakawea. No suitable habitat is located within the study area.

3.2.5.4 Pallid Sturgeon (Scaphirhynchus albus)

Pallid Sturgeon are present in Lake Sakakawea and the Missouri River, over 17 miles to the north of the study area. Suitable habitat is not present within the study area.

3.2.5.5 Poweshiek Skipperling (Oarisma poweshiek)

Poweshiek Skipperling reside in areas of native prairie across the north-central United States and southern Canada. Poweshiek Skipperling are believed to have been extirpated from North Dakota, and the most recent sightings identified isolated populations only in Michigan, Wisconsin, and Manitoba. Critical habitat exists in Richland County, North Dakota, but no habitat is listed in McKenzie County.

3.2.5.6 Whooping Crane (Grus americana)

Whooping Cranes migrate through North Dakota en-route to breeding grounds in Alberta and wintering grounds in Texas. Habitat includes large wetland complexes and cultivated cropland which provide for suitable foraging and roosting. Although both wetlands and cultivated cropland are present within the study area, they are unlikely to serve as ideal habitat due to the proximity to US Highway 85 as well as heavy agricultural and industrial activity in the area.

3.2.5.7 Dakota Skipper (Hesperia dacotae)

Dakota Skipper habitat includes undisturbed moist bluestem prairie and dry upland prairie, usually associated with purple coneflower (*Echinacea angustifolia*), harebell (*Campanula rotundifolia*), smooth camas (*Zygadenus elegans*), and wood lily (*Lilium philadelphicum*). Although critical habitat has been identified in northern McKenzie County, the study area is located at least 16 miles to the south. Marginal habitat does exist within the study area, but due to agricultural activities, ideal habitat is not present.

3.2.5.8 Northern Long-eared Bat (Myotis septentrionalis)

Northern Long-eared Bat are typically forest dwelling, but their range extends into North Dakota. Summer habitat includes trees with a trunk diameter exceeding three inches, while winter habitat includes caves and mines. The greatest threats to the Northern Long-eared Bat are white-nose syndrome, habitat loss, and wind energy facilities. No known winter habitat is present within the study area, and any summer habitat would be minimal, as the study area is not heavily wooded.

3.2.5.9 Piping Plover (Charadrius melodus)

Suitable habitat for Piping Plover exists along Lake Sakakawea and the Missouri River, but is not present within the study area.

3.2.5.10 Red Knot (Calidris canutus)

Although migratory habitat may be present in North Dakota, Red Knots do not typically reside in the area, and suitable habitat is not present within the study area.

3.2.5.11 Sprague's Pipit (Anthus spragueii)

Sprague's Pipit migrate from their winter range in the southern U.S. and northern Mexico to breeding grounds in the northern plains in April and May. Fall migration occurs from September to November. Suitable habitat includes short and mixed-grass prairies. Although Sprague's Pipit may be briefly present within the study area during migration, ideal habitat in Alberta and Saskatchewan is typically used for breeding and summer habitat.

3.2.5.12 Bald and Golden Eagle (Haliaeetus leucocephalus; Aquila chrysaetos)

Suitable habitat for Bald and Golden Eagle include cliffs and tall trees. No suitable habitat is present within the study area.

3.2.6 Hydrology

Approximately 0.21% of the study area is composed of surface water features, which are located within the Cherry Creek watershed of the Lower Little Missouri Subbasin. Ten intermittent streams and 20 wetland features have been identified within the study area. Surface water drains into Cherry Creek approximately 0.6 miles to the north of the study area. Cherry Creek continues in a northeasterly direction before turning southeast and eventually draining into the Little Missouri River approximately 23.6 miles downstream of the study area.

3.2.6.1 Flooding

Flooding in North Dakota is typically caused by snow melt during spring. The study area is not located in a listed floodplain.[16] Flash floods are also possible during rare periods of heavy precipitation. The study area averages 14.67 inches of annual precipitation, with the largest amount occurring in June, making flash floods unlikely.

3.2.6.2 Wetlands

A desktop analysis identified 20 wetland features within the study area. These included 11 Freshwater Emergent Wetlands, 7 Freshwater Ponds, and 2 unspecified wetland areas. During a field recognizance, two palustrine emergent wetlands were identified with the 250 foot survey area. A detailed description of wetlands identified within the survey area is included in Appendix A.

3.2.7 Hydrogeology

Three groundwater aquifers are present within the study area, and are found within semi-consolidated sediments of Tertiary to Late Cretaceous age. The deepest Underground Source of Drinking Water (USDW) lies within the Fox Hills Formation at a maximum depth of approximately 1,981 feet.[17] The Tobacco Garden Surficial Aquifer is also present, making up approximately 12.7% of the total area within the study area.

One-hundred-sixty-three groundwater wellbores have been identified within the study area. Groundwater present within the study area is primarily used for domestic purposes (94.4%), with agricultural uses being limited to livestock use. Groundwater within the study area is not used for irrigation purposes. The average depth to groundwater within the study area is 88 feet.

[16] Per flood zone geospatial data provided by the Federal Emergency Management Agency.

[17] Based on gamma log run in Watford City SWD #1 wellbore (NDIC File No. 90166).

3.3 Demographic Studies

Although approximately 309 acres of the study area is included within the Watford City ETA, the study area remains sparsely populated at 1.1 people per square mile. Six occupied residences have been identified adjacent to the survey area. Farming and ranching remain the predominant economic activity, although oil and gas production facilities and other industrial developments make up approximately 17% of the total land use. Although 14 wellhead protection areas have been identified within the study area, no municipal water supplies are present within the survey area.

3.4 Cultural Resource Studies

A Class I and Class III cultural resource survey was conducted within the survey area. The results of the survey are included in Appendix B.

3.5 Alternative Routes

Several alternatives to the current proposed route were considered. However, none met Caliber's goal of minimizing impacts to the local community and the environment. The current proposed route was determined to be the most efficient and preferred route.

3.5.1 Trucking

The trucking alternative was rejected due to its likely impact on local infrastructure. As the average truckload of crude oil is 220 barrels, a significant amount of truck traffic would result from this alternative. This would facilitate the rapid deterioration of local roads, increase traffic congestion, decrease air quality, and disturb local residents. Disruption caused by weather and road construction would also result in delays. Therefore, this alternative was determined to be uneconomic and unfeasible.

3.5.2 Rail

Transport by rail is not an available alternative at this time. No rail infrastructure currently exists in the area, and the construction of rail infrastructure would likely cause significant impacts to the local community and environment. Transport of crude oil by rail would also present safety concerns, as demonstrated by recent high-profile derailments.

3.5.3 Eastern Route

An eastern route located within Township 149N, Range 98W was considered and ultimately rejected. This route would have added approximately 1.3 miles to the total length of the pipeline, resulting in a significant cost increase. This route would have also involved more waterbody crossings, more landowner disturbances, and significant impacts to an existing industrial development. Caliber rejected this route as it did not meet the goal of minimizing impacts to the local community and environment.

3.5.4 No Action

A "No Action" alternative would limit safe and reliable transportation of crude oil, and significantly constrain market options for producers. Impacts to the local community and environment due to the construction and operation of the proposed Bear Den Interconnect would be insignificant in comparison to the effects of taking no action.

4 Siting Criteria

4.1 Relative Value and Effects upon Each Criteria (N.D.A.C. § 69-06-05-01 (2)(K))

NDAC 69-06-05-01 (2)(K) requires "a discussion of the relative value of each criteria and how the applicant selected the proposed corridor location, giving consideration to all criteria and how the location, construction, and operation of the facility will affect each criteria." These criteria, as defined by NDAC 69-06-05-01 (2)(H), are discussed in section 4.2.

4.2 Factors to be Considered in Evaluating Applications and Designation of Sites, Corridors, and Routes (N.D.C.C. § 49-22-09)

NDAC 69-06-05-01 (2)(H) requires "a discussion of the factors in North Dakota Century Code section 49-22-09 to aid the commission's evaluation of the proposed route." These factors are detailed below:

4.2.1 Available Research and Investigations Relating to the Effects of the Location, Construction, and Operation of the Proposed Facility of Public Health and Welfare, Natural Resources and the Environment

Caliber is committed to minimizing effects to the local community and the environment. Upon reviewing the alternatives, the current proposed route was determined to be the least invasive option. A thorough review of the study area, as discussed in Section 3, revealed no adverse effects should be anticipated by the construction and operation of the proposed route. The area is not heavily populated, land use is compatible with pipeline operation, effects to the environment will be minimized, groundwater contamination is unlikely, and the production of natural resources will be enhanced rather than hindered by the proposed transmission line. This was confirmed by conducting environmental and cultural surveys within the survey area, as discussed in Appendices A and B.

4.2.2 Adverse Direct and Indirect Environmental Effects which cannot be Avoided Should the Proposed Site or Route be Designated

Unavoidable adverse environmental effects expected to arise due to the proposed route are limited to temporary constructed-related effects, including disturbance of soil and vegetation and increased noise during construction hours. Mitigative measures will be implemented during construction to minimize these effects. Operation of the proposed transmission line will result in a benefit to the local environment, as it will reduce truck traffic and emissions. Any adverse environmental effects arising from the operation of the proposed line will be limited to soil and surface water contamination in the unlikely event of an accidental release. Employees will be trained in best practices, the line will be constantly monitored and regularly maintained, and the Emergency Response Plan will be regularly reviewed and updated as needed to reduce the chance of an accidental release and mitigate adverse environmental effects should a release occur.

4.2.3 Alternatives to the Proposed Site, Corridor, or Route which are Developed During the Hearing Process and which Minimize Adverse Effects

The current proposed route was developed in conjunction with landowner input, extensive desktop studies, and field surveys. Alternative routes were rejected due to adverse effects on the local community and environment. However, any alternative routes proposed during the hearing process would be welcomed by Caliber, and addressed as applicable.

4.2.4 Irreversible and Irretrievable Commitments of Natural Resources Should the Proposed Site, Corridor, or Route be Designated

Irreversible and irretrievable commitments of natural resources resulting from the designation of the proposed route are not expected at this time. The proposed route is co-located within existing ROWs to the maximum

extent feasible, and landowners were consulted to minimize effects to agricultural production. No mining or gravel production operations will be affected by the proposed route. The transmission line would enhance extraction of oil and gas by providing a wider market to area producers.

4.2.5 The Direct and Indirect Economic Impacts of the Proposed Facility

The project has and will result in several beneficial economic impacts to the local community, including employment, increased tax revenue, and local spending. Direct effects include the investment of approximately $6 million in the local community during the development of the transmission line, employment of local consultants and contractors, and tax revenue and local spending in surrounding communities. Indirect effects include providing an efficient and economical means of transporting crude oil, increasing market opportunities and reducing isolation of local oil and gas producers, and reducing the burden and cost of local infrastructure.

4.2.6 Existing Plans of the State, Local Government, and Private Entities for Other Developments at or in the Vicinity of the Proposed Site, Corridor, or Route

The proposed route is located entirely on private land, and no known plans or proposed development will be affected by the route. All section lines crossed by the route are developed roads, and will be bored to prevent surface impacts. Most surface land use is compatible with the proposed route. Expansion of existing oil and gas pipelines and gathering lines may occur in the future, but no proposed projects are known within the study area at this time. Future drilling of oil and gas wells is not expected to be impacted by the proposed route, as approximately 98% of the route exists within developed spacing units. A review of well data provided by the NDIC revealed two proposed wells on an existing oil and gas well pad in the NENE of Section 13, T 149N, R 99W. The proposed route is not expected to negatively impact the drilling and operation of these proposed wells.

4.2.7 The Effect of the Proposed Site or Route on Existing Scenic Areas, Historic Sites and Structures, and Paleontological or Archaeological Sites

No designated scenic areas, historic sites, or structures are known to occur within the study area. Teepee Buttes, an undesignated potential scenic area, is located along the western edge of the study area, but is not expected to be affected by the proposed route. No significant effects to paleontological or archaeological sites were noted during the cultural survey.

4.2.8 The Effect of the Proposed Route on Areas which are Unique Because of Biological Wealth or Because They are Habitats for Rare and Endangered Species

Unique areas due to biological wealth were not identified within the study area. Ideal habitat for rare and endangered species is unlikely to occur within the study area, as discussed in Section 3.2.5. During the environmental survey, no rare or endangered species were identified within the survey area.

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

As discussed in section 2, various county, state, and federal regulatory agencies were consulted during the analysis of the proposed route. A summary of the agency consultations are listed in Table 4-1. A record of the agency consultations is also included in Appendix C.

Table 4-1 Agency Consultations

Agency	Communication Media	Date Sent	Date of Response	Comments
McKenzie County Weed Control Board	Emailed Letter	5/27/2016	06/01/2016	Weed Plan complies with state and county regulations
McKenzie County Office of Emergency Management	Emailed Letter	5/27/2016	06/07/2016	Emergency Response Plan approved
McKenzie County Rural Fire Department	Emailed Letter	5/27/2016	5/27/2016	No issues or comments
McKenzie County Sheriff's Office	Emailed Letter	5/27/2016	5/31/2016	No issues
North Dakota Department of Transportation	Letter	6/16/2016	Pending	Delivered 6/20/2016, response pending
North Dakota Department of Health	Letter	6/16/2016	Pending	Delivered 6/20/2016, response pending
North Dakota State Historic Preservation Office	Letter	6/5/2016	Pending	Submitted 6/5/2016, response pending
North Dakota Department of Trust Lands	Letter	6/16/2016	Pending	Delivered 6/20/2016, response pending
North Dakota Parks and Recreation Department	Letter	6/16/2016	Pending	Delivered 6/20/2016, response pending
North Dakota Game and Fish Department	Letter	6/16/2016	Pending	Delivered 6/20/2016, response pending
North Dakota State Water Commission	Letter	6/16/2016	6/24/2016	No issues
North Dakota Industrial Commission	Letter	6/16/2016	Pending	Delivered 6/17/2016, response pending
United States Army Corps of Engineers	Personal Communication	Not Required	Verbal	Per personal communication with the USACE, a letter requesting concurrence is not required or requested when project is demonstrated to be eligible for coverage under Nationwide Permit 12.
United States Fish and Wildlife Service	Letter	6/16/2016	Pending	Delivered 6/17/2016, response pending

4.3 Exclusion Areas (N.D.A.C. § 69-06-08-02 (1))

NDAC 69-06-08-02 defines exclusion areas as "geographical areas [which] must be excluded in the consideration of a route for a transmission facility." Exclusion areas may be located within a transmission facility corridor, but may not exceed 50% of the corridor width. Exclusion areas are summarized in Table 4-2:

Table 4-2 Exclusion Areas

Exclusion Area	Within Survey Area	Exceeds 50% of Survey Area	Intersected by Route	Comments
National Parks or Memorial Parks	No	No	No	North Unit of Theodore Roosevelt National Park is 4.1 miles south of study area
National Historic Sites or Landmarks	No	No	No	
Natural Landmarks or Monuments	No	No	No	
Federal Wilderness Areas	No	No	No	
State Historic Sites, Monuments, or Historical Markers	No	No	No	
Archaeological Sites	Yes	No	No	See Appendix B
State Parks	No	No	No	Little Missouri State Park is 24 miles to the southeast of the study area
State Nature Preserves	No	No	No	Killdeer Mountains Wildlife Management Area is 14.5 miles to the southeast of the study area
County Parks	No	No	No	
County Recreation Areas	No	No	No	
Municipal Parks	No	No	No	
Areas Critical to the Life Stages of Threatened or Endangered Flora or Fauna	No	No	No	See Appendix A
Areas where Flora or Fauna Unique or Rare to North Dakota would be Irreversibly Damaged	No	No	No	See Appendix A
Within 1,200' of an ICBM	No	No	No	No ICBMs in McKenzie County, nearest ICBM located 41 miles to the northeast in Mountrail County
Within 30' of a Direct Line Between ICBM Launch or Launch Control Facilities	No	No	No	

4.3.1 National Parks and Resources

No national parks, historic sites listed on the National Registry of Historic Places, national landmarks, natural landmarks, or federal wilderness areas are located within the study area. The North Unit of Theodore Roosevelt National Park is located approximately 4.1 miles to the south of the study area. ArcGIS 10.3 was utilized to conduct a 3D spatial viewshed analysis of the North Unit of Theodore Roosevelt National Park, and the resulting raster suggested an approximate viewshed boundary of 3.5 miles. Therefore, it can be reasonably concluded that local topography places the study area outside of the park's viewshed, as shown on page 5 of Figure 9. The proposed transmission line is not expected to negatively impact the national park. In addition, several federal agencies were consulted; their correspondence is included in Appendix C.

4.3.2 State Parks and Resources

No state parks or wildlife management areas are located within the study area. The closest state park, Little Missouri State Park, is located 24 miles to the southeast. The closest wildlife management area (WMA), the Killdeer Mountains WMA, is located approximately 14.5 miles to the southeast. The NDPRD and NDGFD were also consulted; their correspondence is included in Appendix C.

4.3.3 County Parks and Resources

No county parks are located within the study area. Two cemeteries are located within the study area, Tepee Buttes Cemetery and Salem Cemetery. Both cemeteries are located outside of the survey area.

4.3.4 Archaeological Sites

NDCC 55-10-02 defines a "state archaeological site" as "an area that primarily relates to prehistoric man, designated by the state historical society as possessing state or national significance." Furthermore, NDAC 69-06-01 defines a historical resource as a "district, site, building, structure, or other object which possesses significance in history, archaeology, paleontology, or architecture, or has other cultural value to the state or local community." Although several archaeological resources were discovered within the survey area, no significant effects are expected. Sensitive sites will be marked for avoidance prior to construction activities. See Appendix B for more information.

4.3.5 Sensitive Habitat

No sensitive habitat is present within the survey area. See Appendix A for more information.

4.3.6 Intercontinental Ballistic Missile Launch Sites and Launch Control Facilities

Approximately 450 known ICBM launch sites and associated launch control facilities are located within North Dakota. These sites are administered by the Minot Air Force Base's 91st Missile Wing. Geospatial data describing the location of known ICBM sites was provided by the University of Wyoming. No known ICBM site is located within McKenzie County, and the nearest known ICBM site is located approximately 41 miles to the northeast near New Town, ND.

4.4 Avoidance Areas (N.D.A.C. § 69-06-08-02 (2))

NDAC 69-06-08-2 defines avoidance areas as "geographical areas [which] may not be considered in the routing of a transmission facility unless the applicant shows that under the circumstances there is no reasonable alternative." Avoidance areas are summarized in Table 4-3:

Table 4-3 Avoidance Areas

Avoidance Area	Within Survey Area	Exceeds 50% of Survey Area	Intersected by Route	Comments
National Historic Districts	No	No	No	
National Wildlife Areas	No	No	No	
National Wildlife Refuges	No	No	No	
National Grasslands	No	No	No	Little Missouri National Grasslands located 0.87 miles to the southwest of the study area
National Wild, Scenic, or Recreational Rivers	No	No	No	No Federal Wild, Scenic, or Recreational Rivers listed in North Dakota
State Wild, Scenic, or Recreational Rivers	No	No	No	Little Missouri State Wild and Scenic River is located 5.3 miles to the south of the study area
State Game Refuges or Game Management Areas	No	No	No	Killdeer Mountains Wildlife Management Area is 14.5 miles to the southeast of the study area
State Forests or Forest Management Lands	No	No	No	No state forests in McKenzie County
State Grasslands	No	No	No	
Historic Resources not meeting Exclusion Areas Criteria	No	No	No	
Areas of Known Geologic Instability	Yes	No	No	Quaternary-aged landslide deposit
Areas within 500-feet of a Residence, School, or Place of Business	Yes	No	No	One residence, waiver signed
Reservoirs and Municipal Water Supplies	No	No	No	
Water Sources for Organized Rural Water Districts	No	No	No	
Areas of Recreational Significance which are not Designated as Exclusion Areas	No	No	No	

4.4.1 Federal Lands and Recreational Areas

No national historic districts, wildlife areas or refuges, national grasslands, or national wild, scenic or recreational rivers are located within the study area. The Little Missouri National Grasslands are located approximately 0.87 miles to the southwest of the study area. The USACE and USFWS were consulted; their correspondence is included in Appendix C.

4.4.2 State Lands and Recreational Areas

No state wild, scenic, or recreational rivers, state game refuges or game management areas, state forests or forest management lands, or state grasslands are located within the study area. The Little Missouri Wild and Scenic River is located approximately 5.3 miles to the south of the study area, but is shielded from the viewshed by local topography. The Little Missouri River is also downstream from the study area. Caliber has developed a SWPPP to mitigate the effects of stormwater runoff and sediments on area surface waters. No state forests are located in McKenzie County, and no state forest management lands are located within the study area. The NDDTL, NDGFD, and NDPRD were consulted; their correspondence is included in Appendix C.

4.4.3 Historic Resources Not Meeting Exclusion Areas Criteria

Several archaeological resources were identified within the survey area. However, none meet exclusion area criteria. See Appendix B for more information.

4.4.4 Areas of Known Geologic Instability

Areas identified as landslide deposits were mapped by the North Dakota Geological Survey in 2010. These maps were based on aerial photographs taken between June 21st, 1958 and September 7th, 1958. An area of Quaternary-aged landslide deposits was identified within the survey area between mile markers 1.7 and 1.8, as shown on page 3 of Figure 10. This area does not exceed 50% of the survey area width, nor does the proposed route intersect this area.

A penetrometer was used to measure the compressive strength of the soil in the area of the identified landslide deposits. A background sample was first measured outside of the landslide area to obtain a control reading; results indicated a reading exceeding 2.5 tons per square foot. Next, several readings were taken within the construction ROW, with readings ranging from 1.75-2.25. Several readings were then measured inside the identified landslide area, with readings ranging from 0.75-1.5 tons per square foot. The results of the penetrometer screenings suggest relatively stable soils exist within the construction ROW. However, somewhat unstable soils are present within the area of identified landslide deposits located approximately 25 feet to the west of the ROW. Mitigation measures proposed to prevent further destabilization of area soils are discussed in section 5.4.

4.4.5 Areas within 500-feet of a Residence, School, or Place of Business

One residence was identified within 422-feet of the centerline of the proposed route between mile markers 1.3 and 1.4. This residence is occupied by Mrs. Carla Schaible. Mrs. Schaible requested the route to be located at its current proposed location to minimize impacts to local topography and surface water. She has also signed a waiver allowing the proposed transmission line to be located within 500-feet of her residence.

In addition to the Schaible residence, one mancamp was identified within 507-feet of the centerline between mile markers 0.7 and 0.8. This mancamp was originally operated by Strategic Workforce Solutions, LLC, but is currently recorded with the McKenzie County Auditor's Office as being owned by Fertile Fields, LLC. Fertile Fields does not appear to be currently registered in good standing with the North Dakota Secretary of State. The proposed route was shifted slightly to the west to avoid the Fertile Fields Mancamp, as shown on page 5 of Figure 10.

4.4.6 Reservoirs and Municipal Water Supplies

No reservoirs or municipal water supplies are located within the study area.

4.4.7 Water Sources for Organized Rural Water Districts

Fourteen wellhead protection areas have been identified within the study area. However, none are located within the survey area, and no other water sources for organized rural water districts are located within the survey area.

4.4.8 Areas of Recreational Significance which are not Designated as Exclusion Areas

No known areas of recreational significance are located within the study area.

4.5 Selection Criteria (N.D.A.C. § 69-06-08-02 (3))

NDAC 69-06-08-02 (3) states a route may only be designated "when it is demonstrated to the commission by the applicant that any significant adverse effects which will result from the location, construction, and maintenance of the facility as they relate to the following [selection criteria], will be at an acceptable minimum, or that those effects will be managed and maintained at an acceptable minimum."

Table 4-4 Selection Criteria

Selection Criteria	Impacts Within Study Area	Impacts Within Survey Area	Intersected by Route	Comments
Agricultural Production	No	Yes	Yes	Less than 37.6 acres, impacts are temporary
Family Farms and Ranches	No	Yes	Yes	Temporary impacts during construction
Surface Drainage	No	No	Yes	Four intermittent stream crossings
Groundwater Flow	No	No	Yes	Surficial aquifer crossed by route
Sound-sensitive land uses	No	No	No	Noise limited to construction
Visual Effects	No	No	No	No degradation of aesthetic landscape
Extractive and Storage Resources	No	No	No	Enhanced effects
Wetlands, Woodlands, and Wooded Areas	No	No	No	No woodlands or wooded areas within survey area
Radio and Television Reception	No	No	No	No communication transmission facilities within survey area
Human Health and Safety	No	No	No	See Emergency Response Plan
Animal Health and Safety	No	No	Yes	Impacts to livestock and wildlife are expected to be negligible
Plant Life	No	No	Yes	Areas of disturbance will be re-vegetated with a native seed mix

4.5.1 Agricultural Production

Within the survey area, land use is primarily agricultural, with spring wheat and barley consisting of the primary crops. Pastureland is also present, and used for livestock grazing. Some industrial development is also present, with the heaviest use occurring along the southern end of the route. Land lying within the 25-foot ROW is expected to be temporarily affected during the construction of the transmission line. Less than 37.6 acres of agricultural cropland and pasture are expected to be affected by the construction of the proposed route. After the line is constructed, the land will be restored to its pre-construction contours and original land use. Agricultural production is not expected to be impacted by the operation of the transmission line.

4.5.2 Family Farms and Ranches

The proposed route passes through seven family farm and ranch lands. The ROW consists of approximately 37.6 acres. Use of farm and ranchlands during the construction of the transmission line will be limited to the maximum extent feasible. Construction activity may result in the temporary disruption of agricultural activities. Actions will be implemented as needed to minimize impacts to the operation of family farms and ranches, such as installing access across the ROW for the movement of farm equipment and livestock.

Easements have been negotiated with all affected landowners, and sufficient compensation will be provided. Impacts upon family farms and ranches will be limited to the construction of the transmission line; no impacts are expected during the operation of the line.

4.5.3 Surface Drainage Patterns

Care will be taken during construction to avoid disturbance or alteration of surface water drainage. Areas where surface water is present, such as stream beds and wetlands, will be bored to minimize disturbance. After construction, disturbed areas will be restored to the original contours, allowing drainage patterns to remain unchanged. A SWPPP has been developed, and best management practices will be implemented and maintained until final reclamation has been achieved to ensure surface drainage patterns are not altered.

4.5.4 Groundwater Flow Patterns

Area groundwater well data provided by the ND State Water Commission (NDSWC) was reviewed to determine hydrogeological characteristics. Within the study area, 163 wells were recorded with the NDSWC. Five freshwater wellbores are located within the survey area. The Tobacco Garden surficial aquifer was also found to be located within the survey area. Six freshwater wellbores were drilled into this aquifer within the study area. These wells are summarized in Table 4-5:

Table 4-5 Freshwater Wells in Vicinity of the Proposed Route

Well Location	Groundwater Depth	Date Drilled	Driller	Purpose	Surficial Aquifer	Status
14909830	250’	2015-01-31	Agri Industries	Domestic	No	Active
14909819CCA	24’	1973-03-24	Wold Well Drilling	Stock	No	Active
14909901ACC	68’	1988-07-06	Thompson Drilling	Stock	No	Active
14909913BA	17’	1984-10-30	Thompson Drilling	Domestic	Yes	Active
14909912CCC	149’	1982-09-10	Wold Well Drilling	Domestic	Yes	Active
14909912CC	Not Recorded	1980-08-10	Thompson Drilling	Domestic	Yes	Active
14909912BB	74’	1976-04-09	B. K. Water Well Drilling	Domestic	Yes	Active
14909911BBB	21’	Unknown	Dennis J. Bingeman	Domestic	Yes	Active
14909911BBB	Not Recorded	1979-03-08	Thompson Drilling	Domestic	Yes	Active

After reviewing driller’s logs recorded with the NDSWC, it was determined that the average depth to groundwater within the survey area is 122 feet. Within the Tobacco Garden surficial aquifer, the average depth to groundwater was found to be 65.25 feet, with the shallowest depth recorded at 17 feet next to Spring Creek. Excavations during the construction of the transmission line will not exceed 10 feet in depth, and will not intersect the shallowest point of the water table. In addition, a brown clay layer was recorded on the shallowest well log, occurring at a depth of 2 feet with a thickness of 23 feet. This suggests an aquitard is present, which would protect groundwater flow patterns and prevent contamination in the unlikely event of an accidental release.

4.5.5 Impact on Noise Sensitive Land Uses

Land use in the vicinity of the proposed route is primarily agricultural, with significant industrial development along the US Highway 85 corridor. Noise generated during construction of the transmission line will be limited to equipment and heavy machinery during normal working hours. Noise generated as a result of transmission line operations is expected to be negligible. Hunting and other recreational uses may be sensitive to noise, but do not constitute a significant portion of land use within the study area. While construction of the line is expected to occur during the regular deer hunting season, wildlife are unlikely to frequent the area due to the proximity to US Highway 85 and the existing industrial development.

4.5.6 Impact on Visual Effect on the Adjacent Area

Visual impacts resulting from the Bear Den Interconnect includes line construction and surface facilities. Line construction visual effects will be temporary, as disturbed soils will be re-contoured and re-vegetated to match original conditions. Surface facilities include two truck offload stations, a temporary 5-acre pipe laydown yard, and temporary ROW access routes. Surface facilities are located within areas of existing industrial development, and will not significantly alter the aesthetic landscape.

4.5.7 Impact on Extractive and Storage Resources

The proposed transmission line would enhance oil and natural gas extractive resources, and would not result in a negative impact on any extractive and storage resources.

4.5.8 Impact on Wetlands, Woodlands, and Wooded Areas

One freshwater pond and one freshwater emergent wetland were noted within the survey area. Impacts to these wetlands are expected to be minimal, and a SWPPP has been developed to prevent contamination. Operation of the transmission line is not expected to negatively impact these wetlands. No trees, woodlands, or wooded areas lie within the proposed route. See Appendix A for more information.

4.5.9 Impact on Radio and Television Reception, and Other Communication of Electronic Control Facilities

No radio, television, or other communication or electronic control facilities will be impacted by the construction or operation of the proposed transmission line.

4.5.10 Impact on Human Health and Human Safety

An Emergency Response Plan has been developed in conjunction with the McKenzie County Emergency Manager. Best practices and engineering controls will be implemented to prevent adverse effects to the environment and human health and safety. Caliber will work with local emergency responders to ensure a safe and effective response strategy is implemented should an adverse event occur.

4.5.11 Impact on Animal Health and Safety

Due to the proximity to US Highway 85 and existing industrial development, the survey area is not expected to provide significant habitat to wildlife. Animals within the survey area are limited to livestock and occasional common wildlife species. Best practices will be implemented during construction to allow for the unhindered movement of local livestock and wildlife. No species of concern will be impacted by the construction or operation of the proposed transmission line. See Appendix A for more information.

4.5.12 Impact on Plant Life

A survey of existing vegetation along the proposed route was conducted, and is included in Appendix A. Noxious weeds currently growing along the proposed route will be removed prior to the start of construction activities. A weed control plan has been developed in conjunction with the McKenzie County Weed Control Board. Best practices will be implemented to prevent the spread of noxious weeds. Areas of disturbed soil will be re-vegetated with a native seed mix developed in conjunction with the local landowners. See Section 6 for re-vegetation procedures and a typical native seed mixture.

4.6 Policy Criteria (N.D.A.C. § 69-06-08-02 (4))

Per NDAC 69-06-08-02, the Public Service Commission "may give preference to an applicant that will maximize benefits that result from the adoption of the following policies and practices, and in a 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 Location and Design

The proposed Bear Den Interconnect is located in central McKenzie County, approximately 2.9 miles south of Watford City. The line will originate at a proposed truck offload station (connected to Enable Midstream's Devore Terminal) to be located approximately 7.2 miles south of Watford, and terminate at DAPL's Watford City Terminal.

The proposed line will meet or exceed design criteria as specified in 49 CFR 195 (c), will be constructed of 12.75" OD steel pipe, and will have a nominal wall thickness of 0.188 inches. The maximum transportation rate is 75,000 bbls/day, with a maximum operating pressure of 1,440 psi.

4.6.2 Training and Utilization of Available Labor in this State for the General and Specialized Skills Required

Both local and out-of-state labor will be utilized during the construction and operation of the Bear Den Interconnect. Cardno, Inc. was contracted to provide technical, environmental, and cultural support during the planning and construction of the line. Included within this scope of work was the employment of North Dakota Public Land Surveyors, support staff in Cardno's Williston, ND office, and two landmen based in western North Dakota. Other non-local technical staff contributed to the local economy during work performed for this project. Local construction crews will be utilized to the maximum extent feasible. All of Caliber's assets are located in North Dakota, and operation of the line will be conducted by qualified personnel who will reside in-state.

4.6.3 Economies of Construction and Operation

The development of the Bear Den Interconnect will result in the investment of approximately $12 million by Caliber, much of which is direct investment in North Dakota. Indirect benefits to the local and state economy will also be realized in the form of tax revenues generated from the labor force. The operation and maintenance costs of the line are expected to be minimal, and local labor will be utilized to the maximum extent feasible. The line will provide a wider market for local oil producers, reduce operating and transportation costs, provide a safer and more efficient means of transportation, and increase revenues to local mineral owners.

4.6.4 Use of Citizen Coordinating Committees

Caliber is committed to continuously improving operations, training personnel and contractors, and ensuring the highest health and safety standards are maintained. To achieve this goal, Caliber believes establishing trust and respect as well as maintaining open communication with the local community is vital. Caliber has collaborated with the local emergency response manager to develop an appropriate Emergency Response Plan, and will continue to encourage a culture of teamwork and collaboration with local communities to address challenges as they arise.

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

The proposed transmission line will provide North Dakota producers with wider access to markets for locally produced crude oil. This line will also facilitate the delivery of crude oil to in-state and out-of-state markets by connecting to DAPL.

4.6.6 Labor Relations

Caliber maintains good relations with its labor force, and no adverse labor relations are expected. North Dakota is a "right to work" state, and conflicts between organized labor and employers is not common. In addition,

NDCC 34-09-13 declares labor protests such as boycotting and striking to be against the public interest of North Dakota and unlawful.

4.6.7 Coordination of Facilities

The Bear Den Interconnect and associated surface facilities will be owned and operated by Caliber. The line will be used in conjunction with DAPL to optimize market access to North Dakota producers.

4.6.8 Monitoring of Impacts

Caliber will implement best management and engineering practices to monitor the ROW for impacts. During construction, communication will be maintained with all affected landowners to ensure negative impacts are minimized or eliminated to the maximum extent feasible. After construction, areas of disturbance will be re-vegetated and a weed control plan will be implemented to ensure the return of the ROW to pre-construction conditions. A SWPPP has also been developed, and will be implemented to minimize erosion and the transportation of disturbed sediments. During operation, the line will be regularly inspected to search for signs of accidental release and to ensure mechanical integrity is maintained.

4.6.9 Utilization of Existing and Proposed Rights-of-way and Corridors

The proposed route was chosen to utilize existing ROWs to the maximum extent feasible. Approximately 1.4 miles (25.92%) of the current proposed route is co-located with existing utility corridors.

4.6.10 Other Existing and Proposed Transmission Facilities

Appendix H details Caliber's 10-year Plan, which details existing and planned transmission facilities.

5 Mitigation Measures

5.1 Winter Construction

Winter construction will be avoided, if possible. However, Caliber acknowledges that winter construction may be required for the Bear Den Interconnect due to the proposed project schedule. Therefore, Caliber is prepared to take all necessary measures to mitigate adverse effects caused by winter construction.

The ROW will first be prepared by removing any snow which may be present. Snow removal will be limited to the area of construction during the working day. Frozen ground can inhibit effective soil segregation by freezing topsoil and subsoil together. This will be mitigated by using a ripper to loosen the frozen soil to the maximum depth of topsoil or 12 inches, whichever is less. Excavated topsoil will be loosened to ensure no clumps larger than 1-2" in diameter remain. Under no circumstances will topsoil be allowed to mix with subsoil.

Areas of open excavation will be minimized to reduce the amount of frozen backfill and facilitate the restoration to pre-construction contours. Any snow accumulation within the trench will be removed prior to lowering the pipe. Any snow present on or within backfill material will be removed prior to backfill activities to prevent subsidence during warmer weather.

Excavated subsoil will be loosened to ensure no clumps larger than 2-3" remain to ensure proper compaction. The first 2 feet of backfill will be returned to the trench, and the first lift will be compacted by using vibratory compactors or other mechanical tampers. The remaining backfill will be compacted in one-foot lifts to prevent subsidence during warmer weather. Regular probes will be taken during backfilling to ensure proper compaction is achieved.

Topsoil will be re-spread over disturbed areas to match original contours. Dormant seeding and weed-free mulching will be spread to facilitate the regrowth of vegetation in the spring. The ROW will be inspected after the last frost of the spring to ensure the successful achievement of final grading and cleanup. Any areas of subsidence or lack of successful vegetation will be promptly repaired.

5.2 Public Health and Safety

All waste materials, litter, and debris will be collected daily and disposed of at an approved off-site facility. All contractors will be held accountable to ensure all employees are properly trained in the proper storage, handling, and disposal of wastes. Any wastes which are classified as hazardous by federal and state regulations will be properly labeled and stored within secondary containment as needed.

All employees will receive proper safety training prior to reporting for work. A Tailgate safety meeting will be conducted daily prior to the start of work. A safety plan will be available on-site at all times, with emergency contact numbers and directions to the work site included.

Noise and dust will be minimized to the maximum extent possible. A SWPPP has been develop to address erosion control. No pollutants are expected to be generated from the construction of the transmission line. Measures to ensure public health and safety during the operation of the transmission line are addressed in the Emergency Response Plan.

5.3 Land Use

All surface facilities, drains, fences, or private roads which may be incidentally damaged or destroyed during the construction of the proposed transmission facility will be promptly repaired or replaced. Any gates will remain closed to prevent the escape of livestock. The proposed transmission line will be placed at a sufficient depth to prevent accidental damage due to routine agricultural activities.

5.4 Terrain and Soils

All disturbed areas will be re-contoured to original site conditions. Erosion control devices will be installed in areas of disturbed soils until revegetation is complete. One area with potential landslide susceptibility was identified between mile markers 1.7 and 1.8. Additional erosion control devices, including a “super silt fence” reinforced with straw bales and/or chain-link fence will be installed and maintained in this area until vegetation is reestablished.

5.5 Vegetation and Wildlife

A weed control plan was developed in conjunction with the McKenzie County Weed Control Board to prevent the spread of noxious weeds during construction. Areas with noxious weeds present within the survey area were identified, and additional measures will be taken during construction in these areas to prevent the spread of seeds, including the cleaning of all equipment prior to leaving the site and the treatment of all disturbed soils with herbicides as approved by the landowner(s).

No threatened or endangered plant species were noted during the biological survey, and none are expected to be affected by the construction of the proposed transmission line. Disturbed areas will be re-seeded with a native weed-free seed mix as approved by the landowner(s). No trees will be removed during construction.

No threatened or endangered wildlife species were noted during the biological survey. Any area wildlife and livestock will likely avoid the area during construction, and are not expected to be negatively impacted by project activities. Temporary access routes will be maintained across the ROW to allow the movement of livestock and wildlife. Trenches will also be regularly sloped to allow any trapped wildlife to escape.

5.6 Water Resources

Of the three wetland/waterbodies identified within the survey area, one wetland (WMK-001) will be crossed via open cut, and the other two identified features (WMK-002 and SMK-001) will be crossed utilizing horizontal drilling or conventional bore techniques, which would minimize adverse impacts. Woody vegetation was rare within the survey area, and limited to shelterbelts and waterbody banks. A SWPPP has also been developed to prevent discharge of sediments or pollutants to surface water bodies. As the shallowest groundwater level is below the deepest point of the proposed transmission line trench, and is separated by a clay layer which appears to act as an aquitard, no mitigation measures to protect groundwater are anticipated at this time.

5.7 Cultural Resources

During the cultural survey, several archaeological resources were noted within the survey area. The significance of four identified sites is currently unknown; however, these resources will be avoided by all project activities. As a result, no mitigation measures are recommended at this time. Additional detail is included in Appendix B.

6 Right-of-Way Preparation, Construction, and Reclamation Procedures

Construction of the transmission line will typically begin with surveying and marking or staking of the construction work areas. As the marking is completed, it will be followed by these activities: clearing, fencing, grading, trenching, pipe laying, stringing, bending, welding, coating, lowering in, backfilling, hydrostatic testing, and cleanup and restoration. Areas that typically require special construction techniques include: agricultural areas with irrigated crops, drain tiles, or active croplands; crossings including roads and other foreign utilities; waterbodies and wetlands; unusual topographies, such as steep slopes or unstable soils.

Caliber is committed to mitigate potential environmental impacts associated the development and operation of its infrastructure. To achieve this goal, Caliber employs Environmental Inspectors to oversee contractors during Right-of-Way preparation, construction, and reclamation. Caliber has also developed an Environmental Construction Standards Manual to serve as a guide to its contractors during construction. A copy of Calibers Environmental Construction Manual is included as Appendix I.

6.1 Survey and Staking

Before the start of construction, land surveys will be finalized, the transmission line centerline and construction work space will be marked, and land or easement acquisitions will be addressed. The construction work area (*e.g.*, nominal construction ROW, pipe laydown yards, truck off load facilities and additional work areas) will first be surveyed and staked. Typically, the construction ROW will be a nominal 75 feet wide. The centerline of the transmission line will be marked at 200-foot intervals, at known crossings of foreign lines, and at points of inflection. A shapefile of the approved route will also be provided to the contractor(s) prior to construction. Existing utility lines and other sensitive resources such as wetland boundaries, cultural resources sites, and sensitive species habitat identified during field surveys, will be located and marked to prevent accidental damage during construction.

Foreign pipelines and utilities will be identified during preliminary surveys. Prior to construction, Caliber's contractors will contact the North Dakota One Call System, to verify and mark all utilities along the Project workspaces to minimize the potential for damage to other buried facilities in the area. Where there is a question as to the location of utilities, such as water, cable, gas, and sewer lines, they will be located by field instrumentation and soft digs if required. Contractors will be notified that all construction activities are strictly confined to the construction ROW.

6.2 Clearing

The transmission line ROW and the temporary construction workspaces will be cleared and graded to remove brush, trees, roots, and other obstructions. Initial clearing operations will include the removal of vegetation within the construction work area either by mechanical or hand cutting. As noted above, all construction workspaces will be surveyed and marked prior to construction to ensure that clearing and other construction activities are limited to the permitted construction ROW. To ensure understanding of and compliance with these boundaries, an environmental training program will be implemented for construction personnel. In addition, the construction drawings will clearly demarcate the limit of work. The proposed Bear Den Route does not transect any forested areas, and all areas of brush and woody vegetation are minimal. Therefore, extensive clearing of woody vegetation is not anticipated at this time. Any necessary clearing of vegetation will be conducted in accordance with the standards as outlined in Appendix I. Cleared vegetation will be disposed of at an approved landfill off-site, and no burning will occur within the ROW. A fence crew, typically operating in conjunction with clearing crews, will cut and brace fences along the route where necessary. Temporary gates will be installed to control livestock and limit public access where necessary. The crew will also fence off sensitive avoidance areas with temporary construction fence.

Closely following clearing and before and during grading activities, Caliber will install erosion control devices as outlined in its Environmental Construction Manual and Stormwater Pollution Prevention Plan (SWPPP) provided in Appendices G and I.

6.3 Grading

Grading will be performed as necessary to create a safe working area, accommodate pipe-bending equipment, and allow the operation and travel of construction equipment. The natural drainage will be preserved to the extent practical. As most of the proposed Bear Den route transverses relatively flat terrain, extensive grading is not expected to be needed. All areas of grading will be re-contoured to match original site conditions upon the completion of construction activities.

6.4 Topsoil Stripping

Caliber recognizes the value of healthy topsoil, and will take all measures to protect this resource during construction and reclamation. Topsoil segregation methods will be used in the following areas, unless otherwise approved in writing by the landowner prior to the commencement of grading: actively cultivated or rotated crops and pastures; residential areas; hayfields; and other areas at the landowner's or land managing agency's request. Topsoil will be stripped and stockpiled along the ROW either from the full work area or from the trench and subsoil storage area (ditch plus spoil side method). A minimum of 12 inches of topsoil will typically be removed or stripped and segregated in these areas. If the topsoil is less than 12 inches in depth, the actual depth of the topsoil will be removed and segregated. The actual depth, if less than 12 inches, will be determined during construction by the contractor in the field. The contractor will strip to a depth where the topsoil and lower horizon of soil are visible in equal amounts as determined by soil color. Topsoil that has been removed or stripped will typically be stored on the spoil side of the construction ROW. However, circumstances may require that the topsoil be stored or placed on the working side adjacent to the ditch or at the edge of the construction ROW. In residential areas, up to 12 inches of topsoil may be removed and segregated unless topsoil replacement is deemed more efficient by the contractor. If requested by the landowner during easement negotiations, Caliber will document the location and depth of topsoil stripped and will provide this documentation to the landowner.

It is anticipated that the nominal 75-foot-wide construction ROW is sufficient to accommodate topsoil segregation; where additional workspace is required for topsoil stockpiling, it will occur only within approved Additional Temporary Work Space (ATWS) areas. When possible, a minimum of 1 foot of separation between topsoil and subsoil piles will be maintained to prevent mixing. Physical barriers will be used to prevent mixing of topsoil and subsoil in areas where separation cannot be maintained or guaranteed. Temporary erosion control measures will be implemented to prevent the spread of excavated and disturbed soils.

6.5 Trenching

A trench will be excavated to the proper depth to allow for the burial of the pipe. The depth of the trench may vary depending on soil type and the class of pipe being buried. In general, the trench will be deep enough to provide for approximately 4 feet of cover over the pipelines as required by 49 CFR Part 195. When crossing a foreign pipeline, the depth of the proposed pipeline will typically be greater than that specified above, and will depend on the depth of the foreign line. At least 12 inches of clearance will be maintained when crossing foreign lines. Trenching near foreign utilities will only begin after completing the appropriate procedures, including the use of the one call system and the identification and flagging of the utility lines.

A rotary wheel ditching machine, backhoe, or ripper will be used to excavate the trench. Typically, when backhoes are used, the trench will be excavated before the welding of the pipe. Similarly, when rotary wheel ditching machines are used, the trench will be excavated after the welding of the pipe and shortly before the pipe laying. If backhoes are used to excavate, the trench will typically be wider than a rotary wheel ditched trench due to soil stability concern, particularly in areas with high water tables. Caliber will coordinate trenching activities with landowners to minimize disruptions to existing land use. Where needed, temporary access routes will be

constructed across the ROW to allow for the movement of livestock, wildlife, and landowner equipment. Trenches will also be regularly sloped to allow for the escape of any trapped livestock or wildlife.

6.6 Directional Drilling and Guided Boring

The HDD crossing method is a trenchless construction technique used to construct pipelines in certain areas to minimize impacts to resources, such as major waterbodies, major roadways (e.g., highways and interstates), significant cultural resources, or other sensitive areas. Using this procedure, the pipeline is installed below the resource using equipment and techniques derived from oil well drilling technology. Pipeline installation using HDD is a multi-stage process that includes establishing a small diameter pilot hole along the crossing profile, followed by enlargement of the pilot hole to accommodate pull back of the pipeline. The HDD rig and associated equipment are set up on one side of the crossing while the prefabricated pipeline sections are placed on rollers on the opposite side of the crossing. Enlarging the pilot hole is an incremental process accomplished with several reaming passes for the installation of the pipeline. The rotating reaming/cutting tool is attached to the drill string at the exit point, and drawn back toward the drilling rig situated at the entry point of the pilot hole. Bentonite drilling fluid is used during the drilling and reaming process to remove cutting spoil from the hole as well as to maintain the integrity of the hole. Once reaming is completed and the hole is of sufficient diameter, the prefabricated pipeline is attached to the drill string at the exit point, and drawn back toward the drilling rig at the entry location. Although HDD may be the preferred method for crossing sensitive resources, it is important to note that there are also impacts associated with this type of construction technique which must be considered when selecting where this method should be applied. Due to the specialized equipment and area requirements associated with HDD technology, ATWS is necessary on both sides of the crossing to successfully stage and operate the equipment (drill side) and to string and weld the HDD pipe for pullback (pipe side). These ATWS can be quite large, depending on the required equipment and the length of the planned HDD. HDD durations are also typically longer than conventional construction techniques. Additionally, there is a risk of an inadvertent release of bentonite fluid; an HDD contingency plan, which will minimize and mitigate for such a release, is provided in Appendix E. These factors along with the expense of HDD, which can be economically prohibitive to a Project, must be considered to evaluate locations where the benefits of the HDD justify the costs. Drilling mud and drill cuttings will be disposed of at an approved facility, and will not be discharged to surface water bodies.

At this time there are two HDD and three conventional bore locations along the Project route to facilitate construction and ROW acquisition across Highway 85, Spring Creek, and three county roads, respectively.

6.7 Pipe Delivery, Bending, and Welding

Prior to construction, pipe will be moved into the Project area by rail or truck and placed in staging areas or strung directly onto the ROW. The pipe laying or stringing operation involves transporting 40- to 60-foot lengths of pipe (joints) from staging areas into position along the prepared ROW. Typically, the pipe will be off-loaded from tractor-trailers and placed next to the trench using a sideboom tractor or vacuum hoe so they are easily accessible to construction personnel. The pipe joints are lined up end-to-end to allow for welding into continuous lengths known as strings. The joints are usually strung on the working side of the trench for bending, welding, coating, and lowering-in operations and associated inspection activities.

Once the sections of pipe have been placed on the ROW, the pipe is bent as necessary so the pipe fits the horizontal and vertical contours of the excavated trench. The bending engineer will survey the trench to determine the location and amount of each field bend. This information is marked on each piece of pipe so the bending foreman can make the appropriate pipe bends. Pipe is usually bent with a track-mounted hydraulic pipe-bending machine. After the pipe has been bent, it will be aligned and welded. The pipe is welded into long strings to minimize the number of welds that have to be made in the trench (tie-in welds). Gaps in the pipe welding process are often left by the welding crews at water/wetland crossings, road crossings, and other locations where access across the work area is required or when the pipe will be installed later in the construction process. Typically, the joints will be welded together with assistance of external line-up clamps or internal traveling line-up clamps. As each weld is completed, the pipe will be placed on supports adjacent to the trench. Each weld will be visually and radiographically (or some other non-destructive testing method) inspected

by one or more qualified inspectors. All bending, welding, and coating in the field will comply with USDOT 49 CFR Part 195 and will also comply with the latest edition of the API Standard No. 1104 and Caliber's specifications. Those welds that do not meet the requirements established by the API Standard 1104 and Caliber's specifications will be marked for repair or replacement. The contractor may establish a weld repair crew, usually one welder and helper working independently, to follow the radiography crew to make any weld repairs that are required. All repaired and replaced welds are inspected to ensure proper repair and integrity.

All pipe will be protected with an external coating designed to protect the pipe from corrosion. Except for a small area at the end of the pipe joint, this coating is applied at the pipe mill before shipment to the site. After welding together in the field, pipe joints will be coated with similar or compatible materials.

6.8 Pipe Inspection

As required by PHMSA, at least 10% of the joint welds will be inspected using x-ray radiography or other equivalent testing. Any welds deemed to be structurally unsound will be promptly repaired.

6.9 Lowering Pipe Into Trench

Before lowering-in, the pipe coating will be inspected for defects, with special attention given to all field-applied coatings. All defects will be repaired prior to lowering in following construction specifications. After coating, side boom tractors will lower the pipe into the trench so as to conform to the alignment of the ditch and also not to damage the coating. The ditch will be free of debris and foreign material. If the bottom of the trench is rocky, the pipe may be lowered onto sandbags or support pillows. Alternative sources of padding for pipe in rocky soil may be sand, gravel, or screened soil, excluding topsoil. In areas where the excavated trench material may damage the pipe, the pipe will be protected with a protective wrap of rock shield. Once the sections of pipe are lowered-in, the tie-in crew makes the final welds in the trench. Additional excavations, as needed, lowering-in, lining up, welding, and coating the final welds will be accomplished by this crew.

6.10 Backfilling

Backfilling will follow pipe lowering as closely as possible. The trench will be backfilled using a bulldozer, backhoe, auger-type backfilling machine, mormon board, or other suitable equipment. Backfill usually consists of the material originally excavated from the trench. However, in some cases additional backfill from other sources may be required. Any excess excavated materials or materials unsuitable for backfill will be spread evenly over the ROW or removed from site and properly disposed. In areas where topsoil has been segregated, the subsoil will be placed in the trench first, and then the topsoil will be placed over the subsoil. Backfilling will occur to grade or higher (*i.e.*, slightly crowned) to accommodate any future soil settling. Crowning will not occur in wetlands, where the crown could affect hydrology, or paved areas where standard compaction methods will be employed. Tilling of the subsoil and topsoil will be done at the request of the landowner.

During backfilling, special care will be taken to minimize erosion, restore the natural contour of the ground, and restore surface drainage patterns as close to pre-construction conditions as practice. To minimize the possibility of subsurface water flow on slopes along the pipeline, sand bags or foam-type trench breakers will be placed across the trench prior to backfilling. In other areas like terrace, levee, and stream crossings, and the banks at stream and ditch crossings, the trench backfill will be solidly compacted Erosion control best management practices (BMPs) will be implemented in accordance with the SWPPP to protect disturbed soils until a successful stand of vegetation is reestablished.

6.11 Restoration and Re-vegetation

Areas of disturbed soils will be re-seeded with certified weed-free native seed mixtures developed in conjunction with the landowner(s). The seedbed will be prepared by contour cultivating four to six inches depth ensuring no depressions that would trap or pool water exist. The area will be seeded via broadcast seeder or drill seeder. Straw mulch will be used to ensure soil stabilization until vegetation is successfully reestablished. Mulch will only be obtained from certified weed-free sources. Seeded areas will continue to be monitored and maintained

until a successful stand of vegetation is established. A typical seed mixture per USDA recommendations for McKenzie County is included in Table 6-1:

Table 6-1 Typical Seed Mix

Column 1	Column 2	Column 3	A	B	C	D	E
Species	**Preferred Cultivar, Ecotype, or Germplasm**	**Common Name**	**% of Mix**	**Number Seed per lb.**	**Number Seed per ft²**	**Number Seed per acre**	**Drilled PLS lb./acre**
Cool Season Grasses:							
Elymus canadensis	Mandan	Canada wildrye	15	115,000	7.5	326,700	2.8
Nassella viridula	Lodorm	Green needlegrass	20	180,000	10.0	435,600	2.4
Pascopyrum smithii	Rodan	Western wheatgrass	25	112,000	12.5	544,500	4.9
Warm Season Grasses							
Bouteloua gracilis	Bad River	Blue grama	10	750,000	5.0	217,800	0.3
Calamovilfa longifolia	Goshen	Prairie sandreed	10	275,000	5.0	217,800	0.8
Schizachyrium scoparium	Badlands	Little bluestem	10	286,000	5.0	217,800	0.8
Alternate Warm Season (for one of above species)							
Bouteloua curtipendula	Pierre	Sideoats grama	10	180,000	5.0	217,800	1.2
Forbs							
Dalea purpurea	Local	Purple prairieclover	4	290,000	1.8	78,408	0.25
OR							
Dalea candida	Antelope	White prairieclover	4	278,000	1.8	78,408	0.3
Helianthus pauciflorus	Bismarck	Stiff sunflower	3	85,000	1.4	60,984	0.7
OR							
Solidago rigida	Local	Stiff goldenrod	3	656,000	1.4	60,984	0.1
Echinacea angustifolia	Bismarck	Purple coneflower	3	120,000	1.4	60,984	0.5
OR							
Ratibida columnifera	Local	Prairie coneflower	3	737,000	1.4	60,984	0.1
Totals			100%		49.6	Forbs 13.4 Alternate Forbs (12.5)	

Seeding Rates Formulas
A - % of Mix
B - Number of seeds per lb.
C - Number of seeds per ft2 (C=A x 50)
D - Number of seeds per acre (D=C x 43560)
E - Drilled Pure Live Seed (PLS) lb./acre (E=D/B)

Planting is based on approximately 50 seed per square foot and/or 12-16 pounds PLS per acre. All seed mixtures listed give the rate of PLS for each species per acre. The following equation will be used to calculate seed quantity needed to provide the required pounds of PLS:

%Purity X Germination Rate % = %PLS
Pounds of PLS Desired divided by %PLS = Pounds of Seed Required

Cultivars listed in Column 2 of Table 6-1 are preferred. However, local seed collections grown for harvest may be used if performance and origin are certified or documented. All seed sources will be derived from local collections or a general area extending 300 miles north and 200 miles south of the surface location. Seed

sources will be verified as local collections and will not be obtained from a distant source that is distributed by a local dealer.

Fall seeding will be completed after September 1 prior to ground frost and Spring seeding will be completed after the frost has left the ground (approximately May 15-30). The seeding will be repeated should a satisfactory stand not be attained following the completion of the first growing season.

6.12 Waste Management

Upon completion of construction activities, all stakes, flags, construction equipment, litter, and other debris will be promptly removed from the ROW and adjacent areas as needed. All liter and debris generated by construction crews will be collected and disposed of daily at an approved off-site facility.

6.13 Hydrostatic Testing

Testing of all newly constructed pipelines is required by 49 CFR Part 195. After cleaning, the pipeline will be tested in accordance with these standards to verify integrity and to ensure its ability to withstand the designed maximum operating pressures. Prior to hydrostatically testing the pipeline, it will be cleaned using a cleaning pig. Test water will be withdrawn from municipal supplies and pumped into the test section behind a fill pig. A high-pressure pump will be used to pressurize the test section to design test pressure. The test pressure will be maintained for a minimum of 8 hours (4 hours for testing fabricated units and for short, visible sections). Test water will contact only new pipe. After testing is completed, the line will be depressurized and the water discharged by means of displacement pigs. Test water discharge will be in accordance with applicable state water regulations and federal and state discharge requirements. The hydrostatic test water will typically be discharged into a well vegetated upland area adjacent to the ROW. Discharge waters will be dispersed by a splash plate and filtered through hay bales or equivalent to minimize erosion and sedimentation. Use of grassy areas as the final discharge point will provide additional filtering, as well as an impediment to rapid run-off. Test water will not be discharged directly into streams/rivers. If the water is discharged into a dry waterway (e.g., intermittent stream), the discharge rate will not exceed the flow of the stream during normal flow periods and will not create additional scour or erosion of the existing bed and bank. Test water will contain no chemical additives and no chemicals will be used after testing (e.g., to dry the pipe).

The testing will be conducted in segments and will be dependent on parameters such as surface topography, class locations, and available water sources. During detailed design, a Hydrostatic Test Plan will be developed that identifies the number and location of test sections required. Determination of the exact locations of test sections depend on a number of factors, including pipeline class location, elevation differences along the route, weather conditions, and construction constraints.

6.14 As-Built Survey

Upon completion of pipeline construction, the entire route will be surveyed, and as-built plats will be drafted.

7 Landowner Relations

Maintaining landowner relations is vital to achieving Caliber's goal of being a good neighbor. Upon determining the proposed route, a title review of land records recorded with the McKenzie County Auditor's office was conducted to identify landowners along the route. Each individual landowner was contacted directly by a Caliber landman, and all landowner concerns were addressed during the design of the proposed route. All easements along the proposed route have been obtained. The strategy and means of maintaining landowner relations are described below.

7.1 Procedures of Landowner Relations

Caliber is committed to maintaining open and transparent communications with all landowners along the proposed route. To that end, Caliber has provided contact information to landowners to identify and address any concerns. Caliber has offered fair and just compensation to affected landowners, and will negotiate damage settlements to address unique concerns as needed.

7.2 List of Landowners

Table 7-1 details landowners along the proposed route, as well as the easement status:

Table 7-1 Route Easement Status

Landowner	Legal Description	Permanent Easement	Construction Easement	Easement Length	Status
Norstog, Konrad P. & Sharon M.	S2NW4, W2SW4 Sec 1, T 149N, R 99W	25	75	291.2 rods	Acquired
Shilke, Edward I. & Charlotte A.	W2W2, Sec 12, T 149N, R 99W	25	75	336 rods	Agreed to Terms
Sorenson, Curtis M. & Jennifer J.	W2NW4, SE4NW4, NE4SW4, NW4SE4, Sec 13, T 149N, R 99W	25	75	299.5 rods	Acquired
Syverson, Floyde	SW4SE4 Sec 13, T 149N, R 99W	25	75	80 rods	Acquired
Syverson, Floyde	NW4NE4, Sec 24, T 149N, R 99W	25	75	115.2 rods	Acquired
Schaible, Carla	NE4SE4, E2NW4SE4, E2SW4NE4 Sec 24, T 149N, R 99W	25	75	235.2 rods	Acquired
Sondrol, Norman E. & Marlene J.	W2SW Sec 19, T 149N, R 98W	25	75	145 rods	Acquired
Sondrol, Norman E. & Marlene J.	Lots 1-4, NE4SW4, Sec 30, T 149N, R 99W	25	75	265.6 rods	Acquired

8 Operations and Safety

8.1 Pipeline Operation and Control

The Bear Den Interconnect will be solely owned and operated by Caliber Bear Den Interconnect, LLC (Calber). Caliber will monitor and control the pipeline system by qualified and trained operation personnel 24 hours per day. The new pipeline will be incorporated into Caliber existing Supervisory Control and Data Acquisition (SCADA) remote sensing system located at its control center in Watford City, North Dakota. The control center also serves as an emergency center to receive calls from employees, pubic, or public officials reporting unusual conditions of the pipeline and its operating facilities.

Land-line and/or satellite communications are used to exchange pipeline operation data. Caliber will also implement the use of cellular phones as needed to facilitate personnel communications during operation, maintenance, or emergency activities.

8.2 Protection of the Pipe from Damage

Caliber instills a safety program designed to educate construction contractor equipment operators and the general public about the presence of pipelines to alleviate pipeline damage caused by nearby excavation and construction activities. Caliber also participates and supports the North Dakota One Call System. Upon completion of the pipeline, Caliber will stall Pipeline Markers at road and fence line crossings indicating the presence of an underground pipeline. Each Pipeline Marker will have an emergency contact number, as well as the North Dakota One Call logo.

The Project will be protected from long term corrosion by utilizing industry standard factory coated steel pipe, epoxy coating all welded joints, and the installation of a cathodic protection system, as required by the US Department of Transportation Pipeline and hazardous Materials Safety Administration (PHSMA).

8.3 Inspections

As part of its operational activities, Caliber will conduct routine inspections of the pipeline to determine that the system is operating properly and in compliance with PHMSA regulations. All inspections will be conducted on a timeline consistent with federal guidelines. Rectifier readings for the cathodic protection system will be taken and monitored by taking pipe-to-soil readings. Additionally, each rectifier and anode ground bed used to impose cathodic protection on the pipeline will be inspected to ensure proper operation. Repairs and adjustments to the cathodic protection system are either made during the survey or during later maintenance activities. Caliber will also conduct periodic aerial inspections. Road crossings will be inspected via foot/vehicle patrol. These inspections are to verify that no abnormal conditions or dangerous activities, e.g., unauthorized excavation, have taken place along the routes of the lines.

Aboveground facilities, such as valves, load/unload stations and piping will be regularly inspected to ensure proper operation and void of leaks. Caliber will also periodically inspect the line internally with a caliper pig. These devices travel through the inside of the pipeline and either mechanically, ultrasonically, or magnetically examine the condition of the pipe using on-board computers. Results of the inspection are analyzed, and the pipe is manually inspected to verify preliminary findings. Repairs will be conducted where necessary.

All overpressure safety devices capable of limiting, regulating, controlling, and/or relieving operating pressures will be inspected and tested to ensure the device is in good mechanical condition and functioning properly.

Periodically, government officials may inspect compliance with applicable government regulations. PHMSA routinely inspects written procedures, records, and facilities.

8.4 Maintenance

Many other maintenance activities will be performed on the Project. Caliber has a comprehensive preventative maintenance program that meets and, in many cases exceeds, minimum federal safety standards set forth in PHMSA regulations, including 49 C.F.R. Part 195. When facilities are added or replaced, there are comprehensive standards for their design and installation. Repair pipe is pre-tested and other components used to repair the pipeline meet national standards and regulatory requirements. Other procedures, such as welding procedures, movement of the pipe, coating repair, corrosion control, and tank maintenance are all guided by written procedures which have been reviewed by the PHMSA inspectors.

8.5 Training of Personnel

Training of personnel for the Project will conform to the policies and procedures put in place by Caliber. Caliber has established a comprehensive orientation, technical, safety, emergency, and on-the-job training program that is in compliance with the Operator Qualification rules issued by PHMSA under 49 C.F.R. Part 195. As personnel progress in pipeline operation and maintenance positions, they receive hundreds of hours of formal and on-the-job training. Demonstrations of competence are shown through review of job performance, periodic pipeline control system simulators, emergency exercises, welding certification tests, and other functions required to continue safe pipeline operation and maintenance.

8.6 Public Awareness Program

Caliber will conduct a public education program to ensure that the affected public (i.e., those who work and live near the Project), excavators, local public officials, and emergency responders can recognize and avoid or respond to a pipeline emergency. Caliber will also be active at the local, county, and state levels in emergency response planning and joint training to prepare all potential responders to deal with emergencies related to pipeline operations.

The Project route will be marked at all public roads to increase the public's awareness of the underground pipeline. Additional markings will be posted at valves, other pipeline facilities, and stations along the pipeline route.

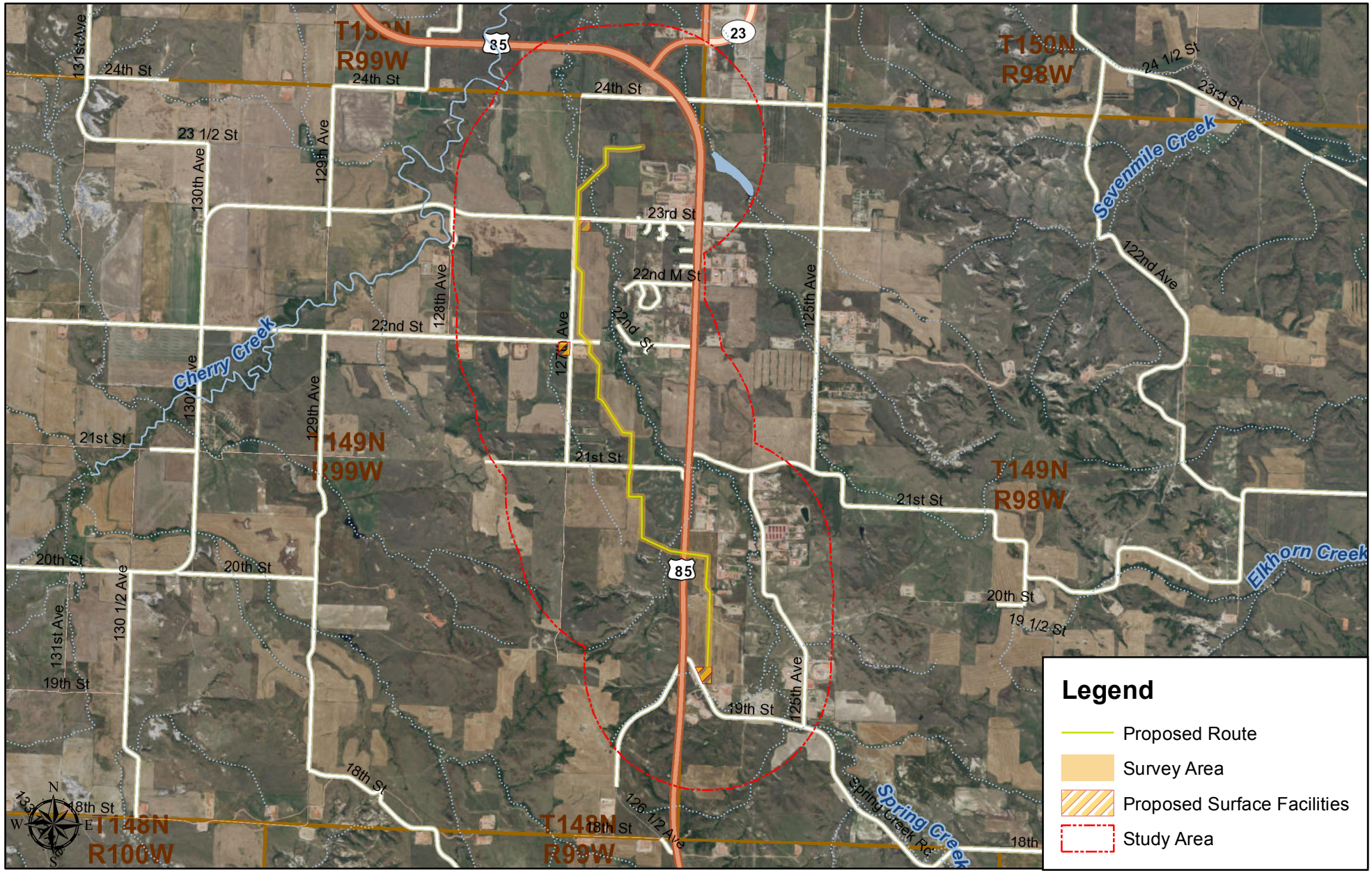
8.7 Emergency Preparedness

Caliber's operating and maintenance practices are aimed at preventing emergencies. However, it is imperative that Caliber be prepared to respond to an emergency should one occur. In addition to the preventative activities described above, Caliber's emergency response program includes pre-planning, equipment staging, notifications, emergency and leak containment procedures, and procedures for engaging the services of area contract spill responders. A copy of Caliber's Emergency Response Plan is included in Appendix E.

MAPS AND FIGURES

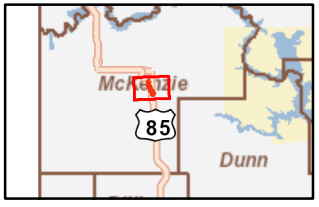


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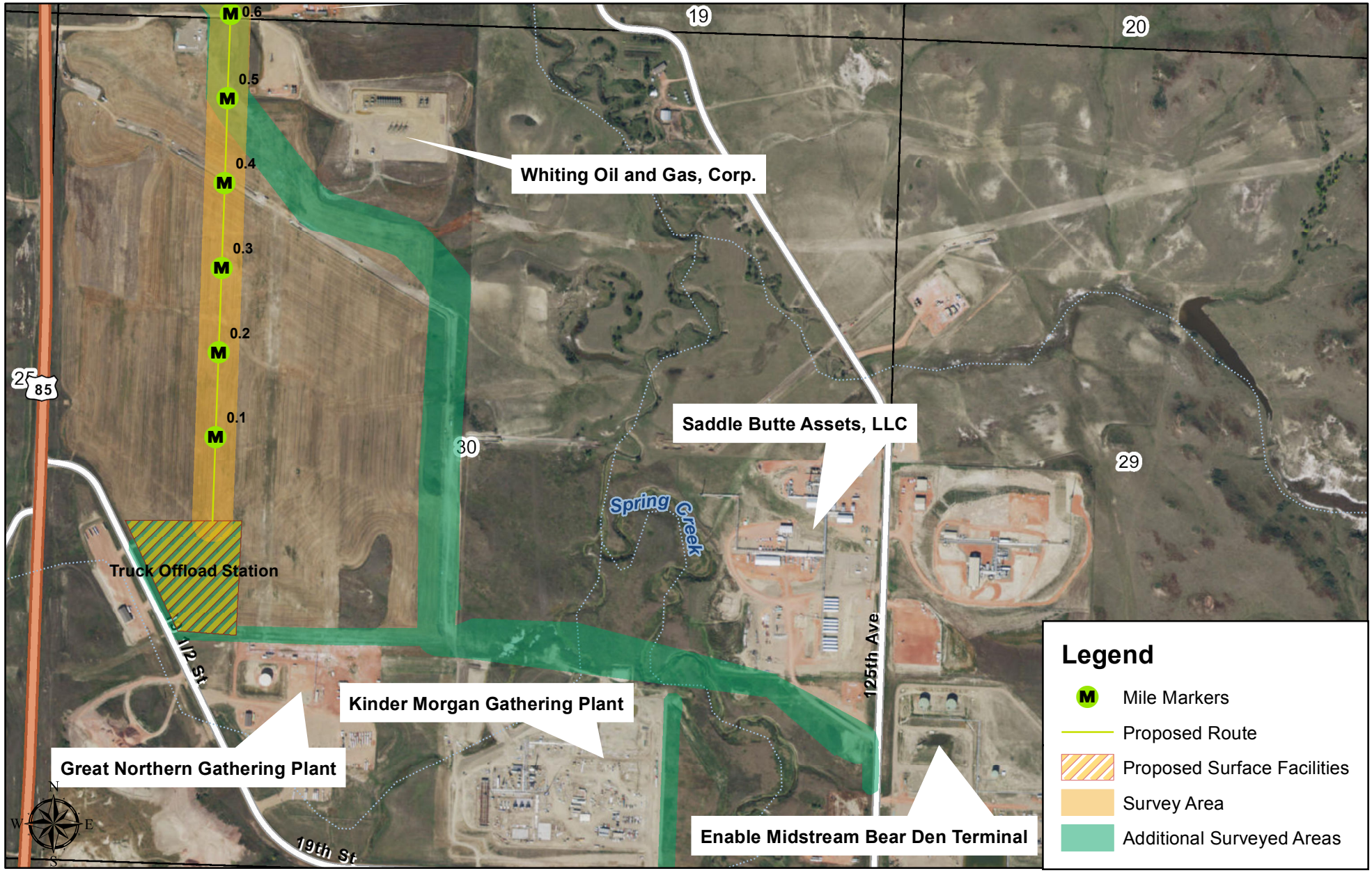
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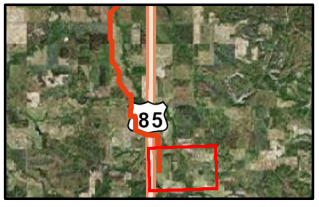
CALIBER BEAR DEN INTERCONNECT, LLC
PROPOSED BEAR DEN INTERCONNECT
FIGURE 1: PROPOSED ROUTE OVERVIEW

Township 149N, Range 98W
Township 149N, Range 99W
McKenzie County, ND



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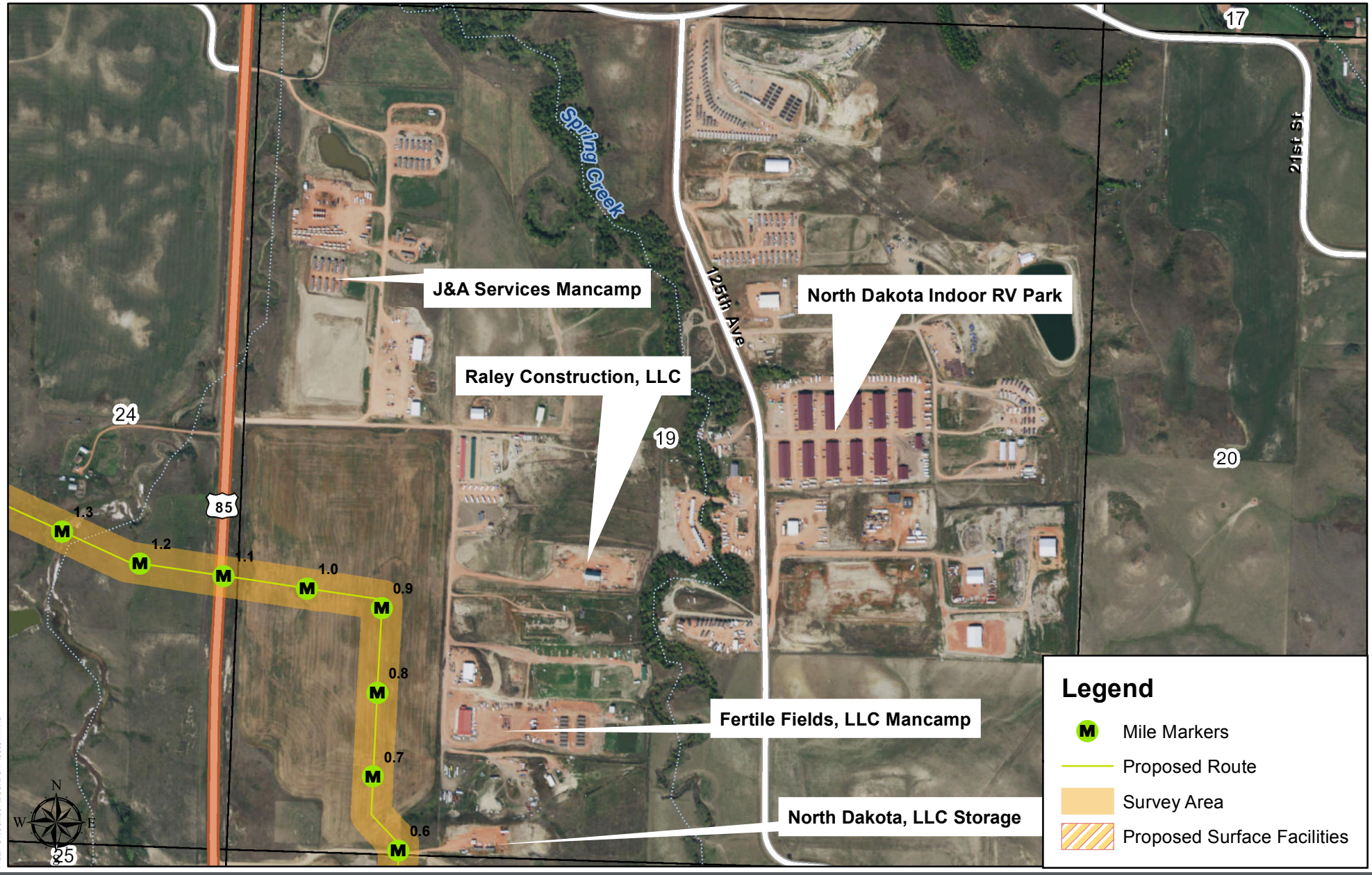


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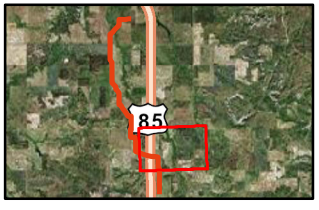
CALIBER BEAR DEN INTERCONNECT, LLC
PROPOSED BEAR DEN iNTERCONNECT
FIGURE 2: ROUTE DETAIL (1 OF 6)

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Section 30, T 149N, R 98W
McKenzie County, ND



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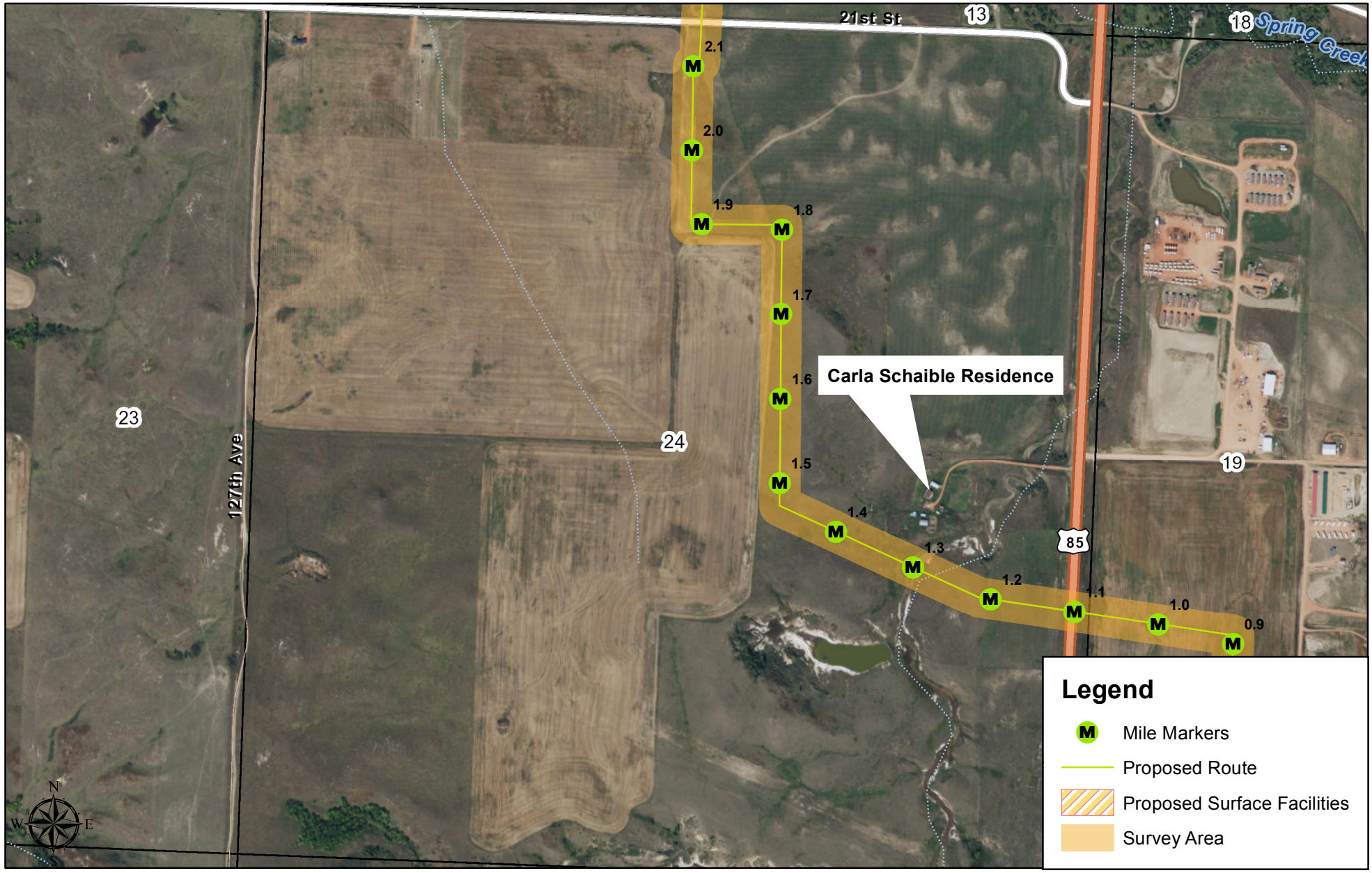


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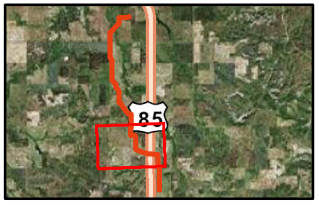
CALIBER BEAR DEN INTERCONNECT, LLC
PROPOSED BEAR DEN INTERCONNECT
FIGURE 2: ROUTE DETAIL (2 OF 6)

Date 6/29/2016
Scale 1:10,008
Section 19, T 149N, R 98W
McKenzie County, ND



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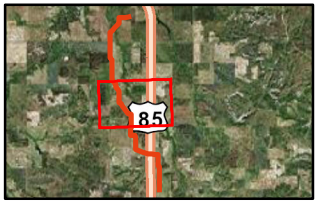
CALIBER BEAR DEN INTERCONNECT, LLC
PROPOSED BEAR DEN INTERCONNECT
FIGURE 2: ROUTE DETAIL (3 OF 6)

Date 6/29/2016
Scale 1:10,008
Section 24, T 149N, R 99W
McKenzie County, ND



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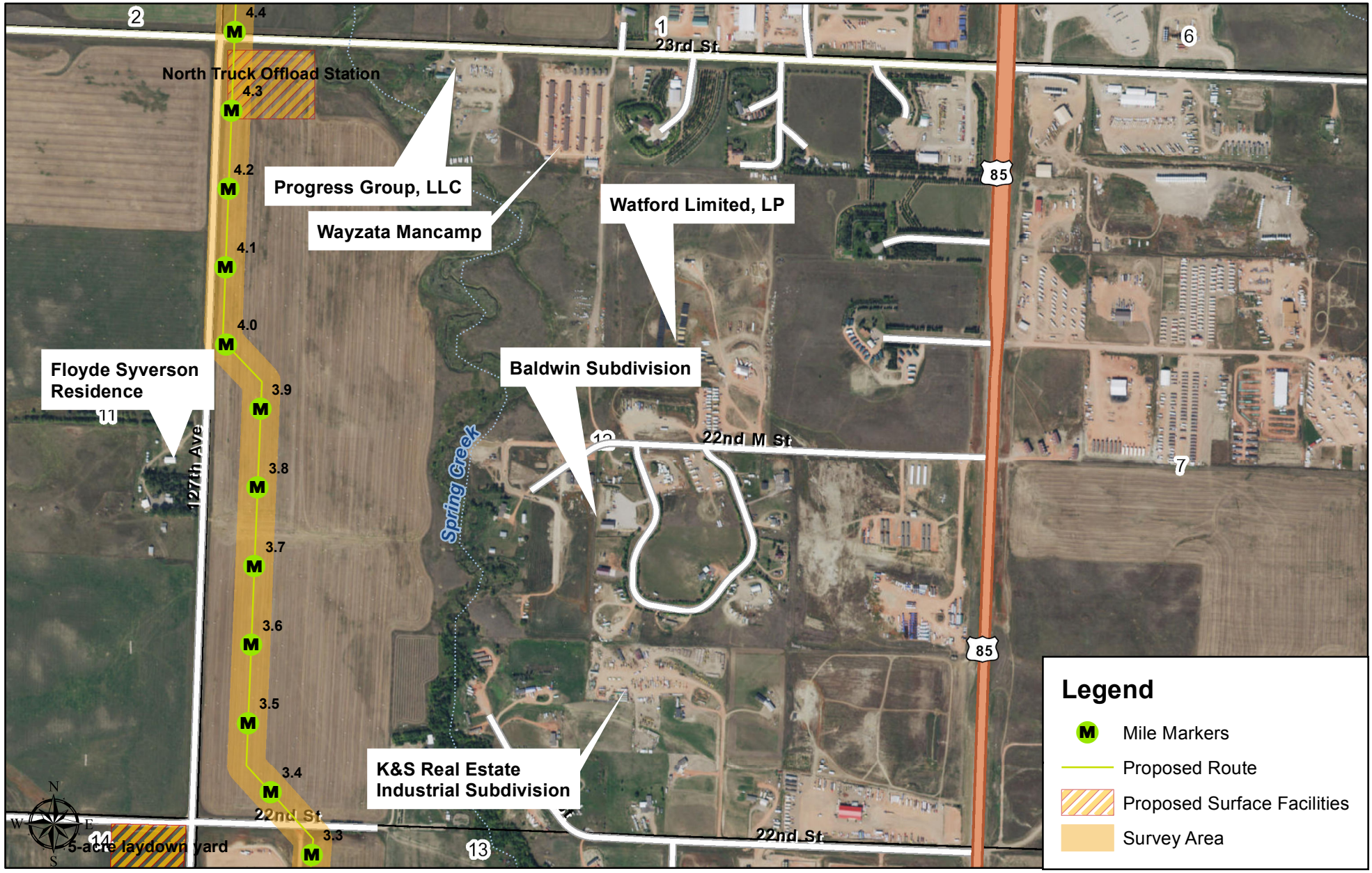
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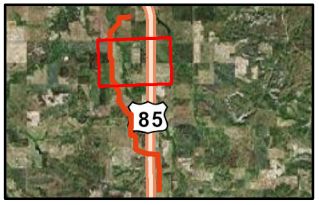
CALIBER BEAR DEN INTERCONNECT, LLC
PROPOSED BEAR DEN INTERCONNECT
FIGURE 2: ROUTE DETAIL (4 OF 6)

Section 13, T 149N, R 99W
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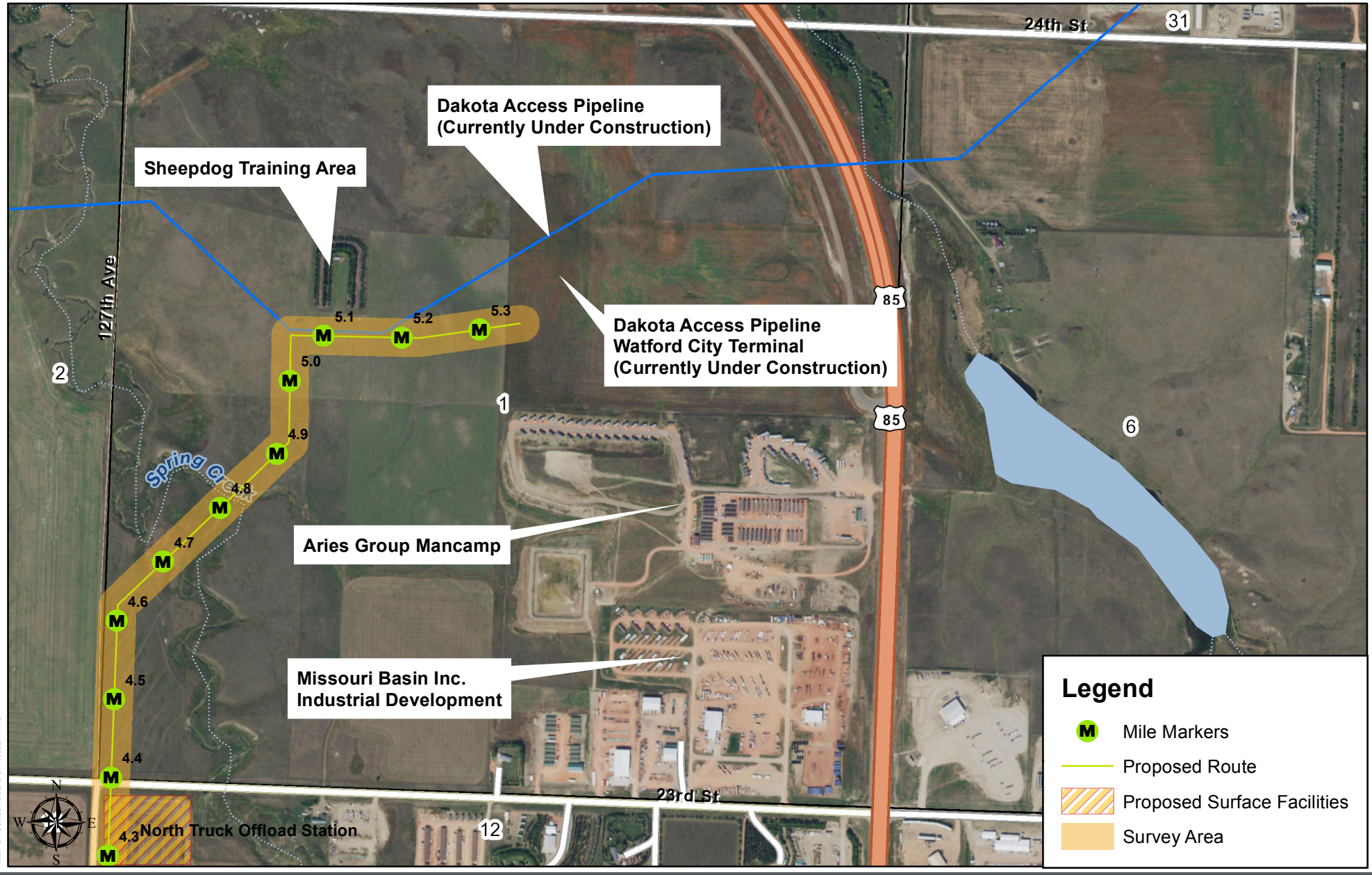
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CALIBER BEAR DEN INTERCONNECT, LLC
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FIGURE 2: ROUTE DETAIL (5 OF 6)

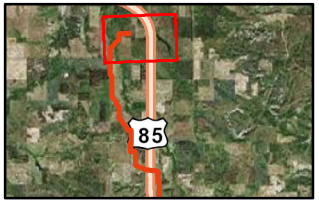
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Section 12, T 149N, R 99W
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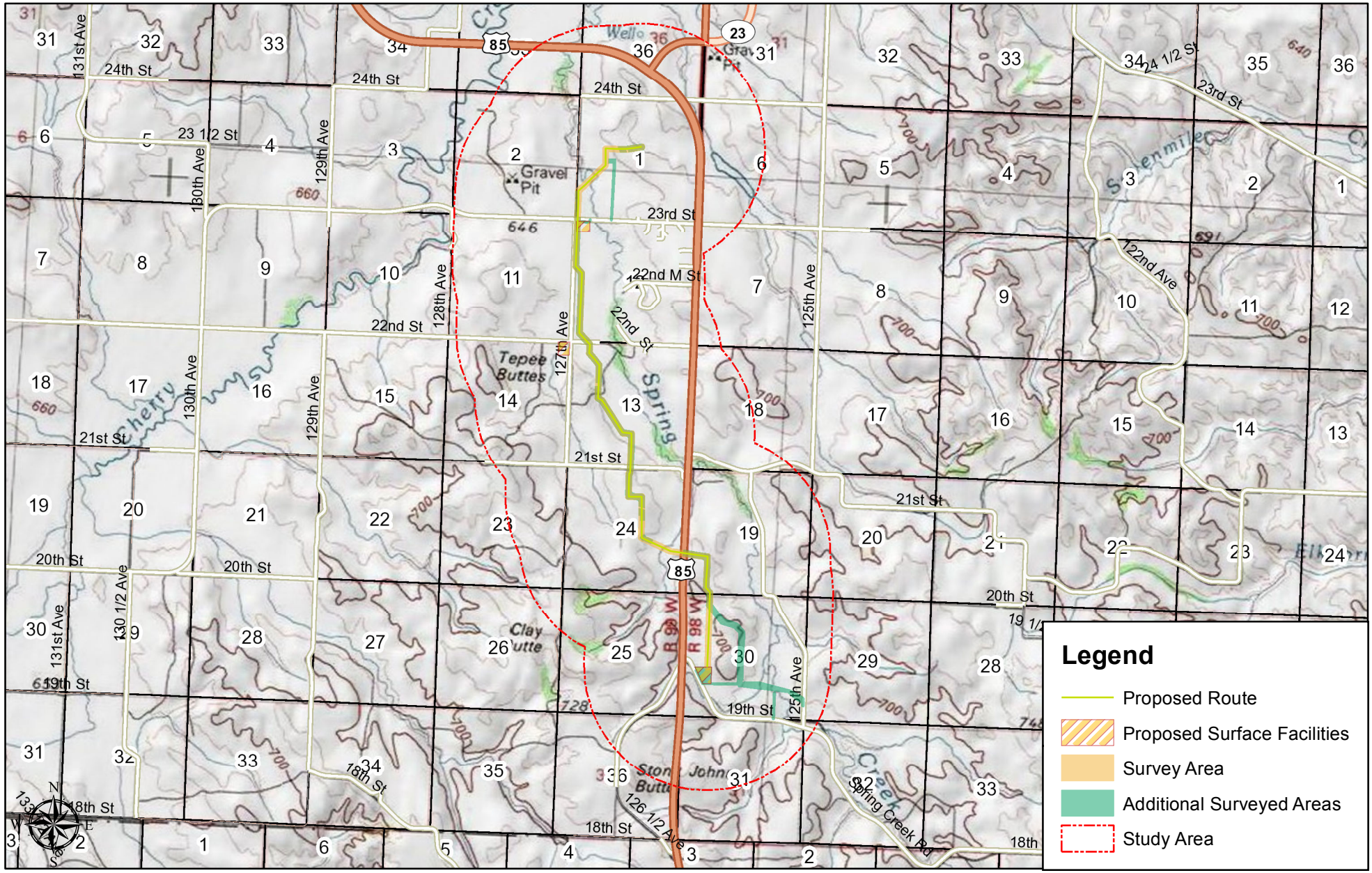


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PROPOSED BEAR DEN INTERCONNECT
FIGURE 2: ROUTE DETAIL (6 OF 6)

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Section 1, T 149N, R 99W
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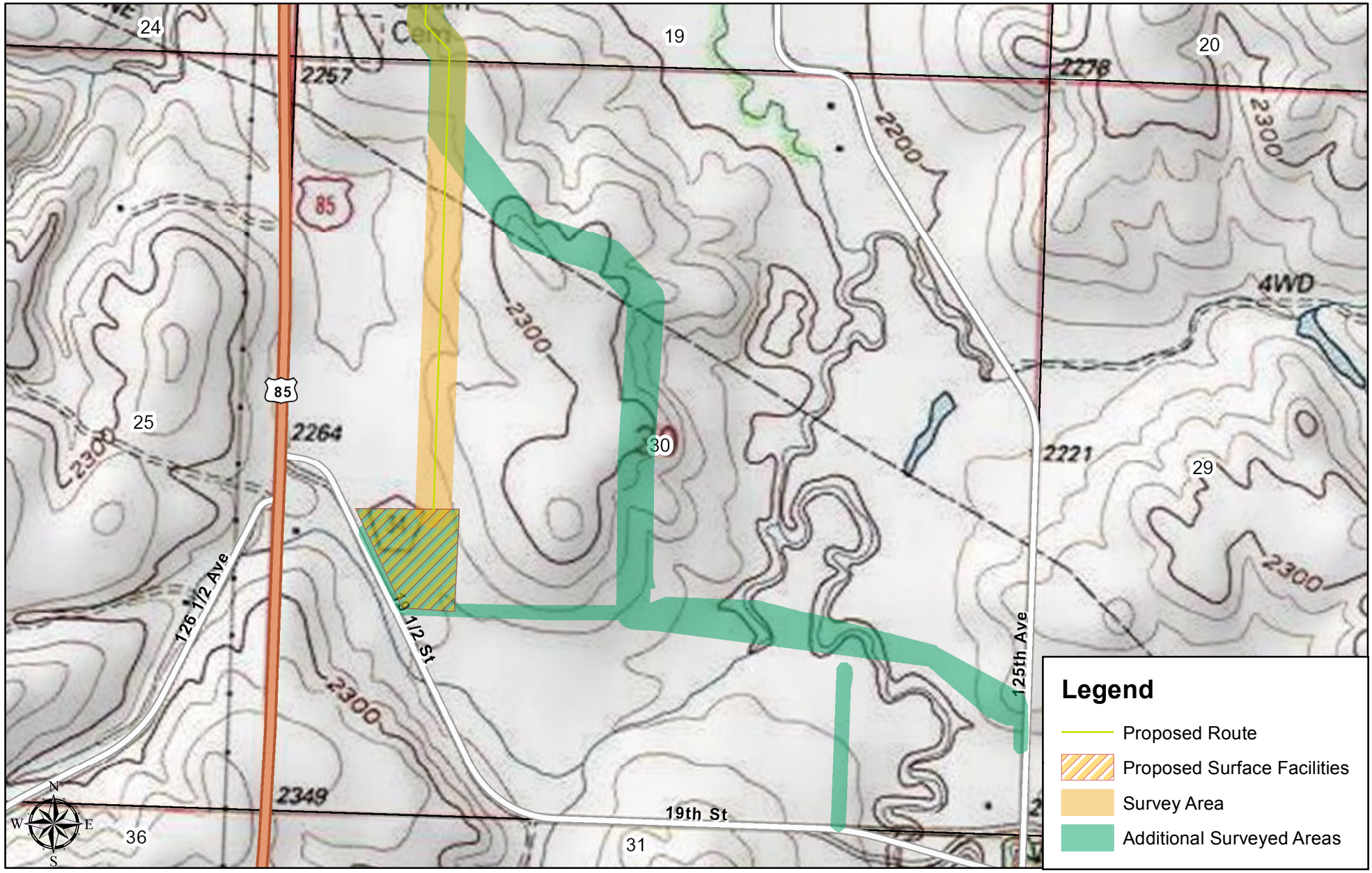
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FIGURE 3: ROUTE TERRAIN OVERVIEW

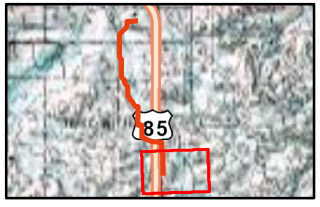
T 149N, R 98W
T 149N, R 99W
McKenzie County, ND

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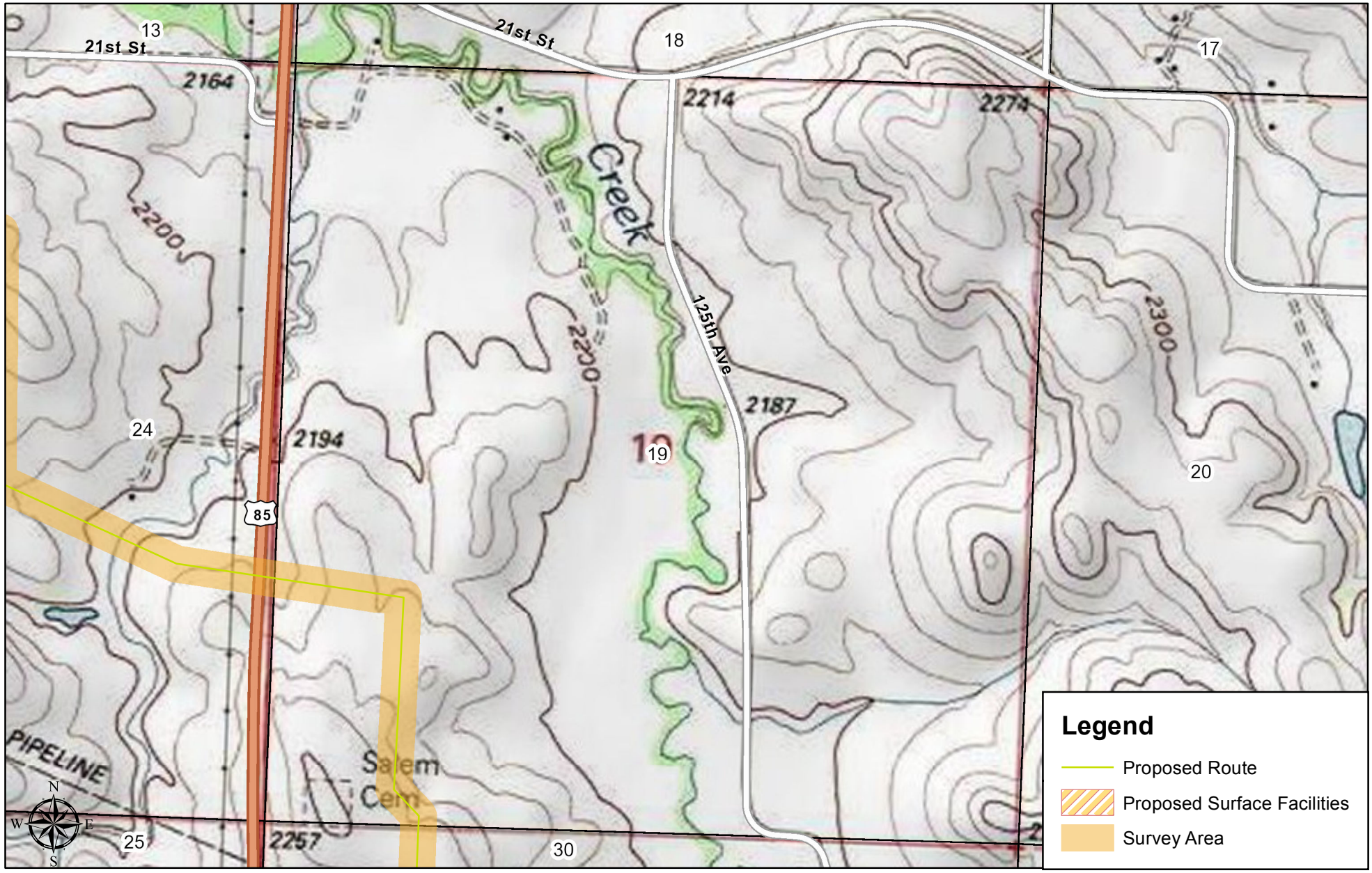


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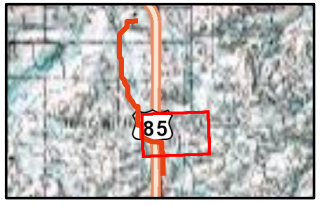
CALIBER BEAR DEN INTERCONNECT, LLC
PROPOSED BEAR DEN INTERCONNECT
FIGURE 4: ROUTE TERRAIN DETAIL (1 OF 6)

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Section 30, T 149N, R 98W
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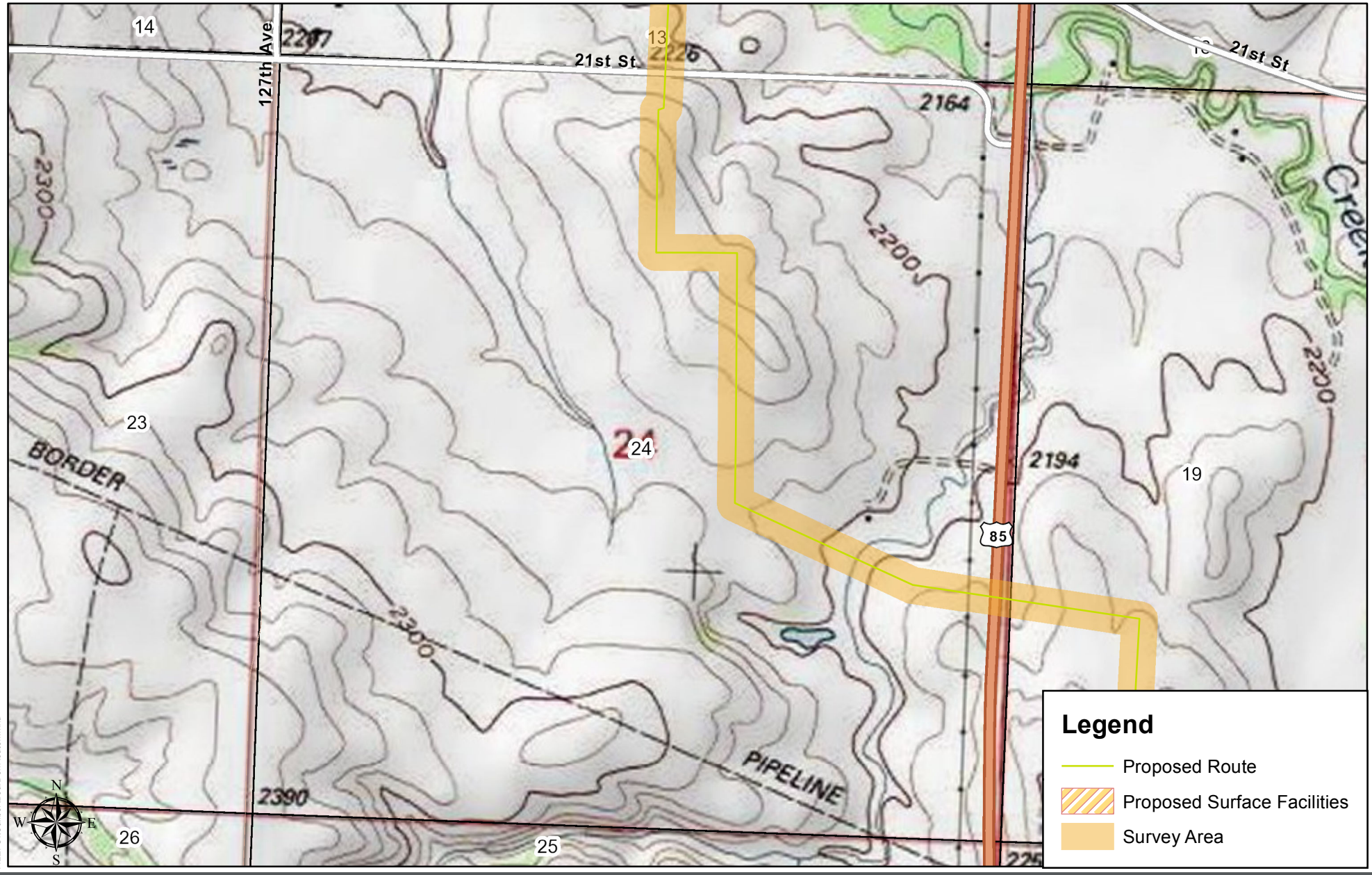
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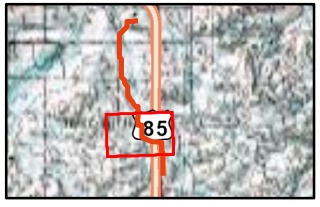
CALIBER BEAR DEN INTERCONNECT, LLC
PROPOSED BEAR DEN INTERCONNECT
FIGURE 4: ROUTE TERRAIN DETAIL (2 OF 6)

Section 19, T 149N, R 98W
McKenzie County, ND



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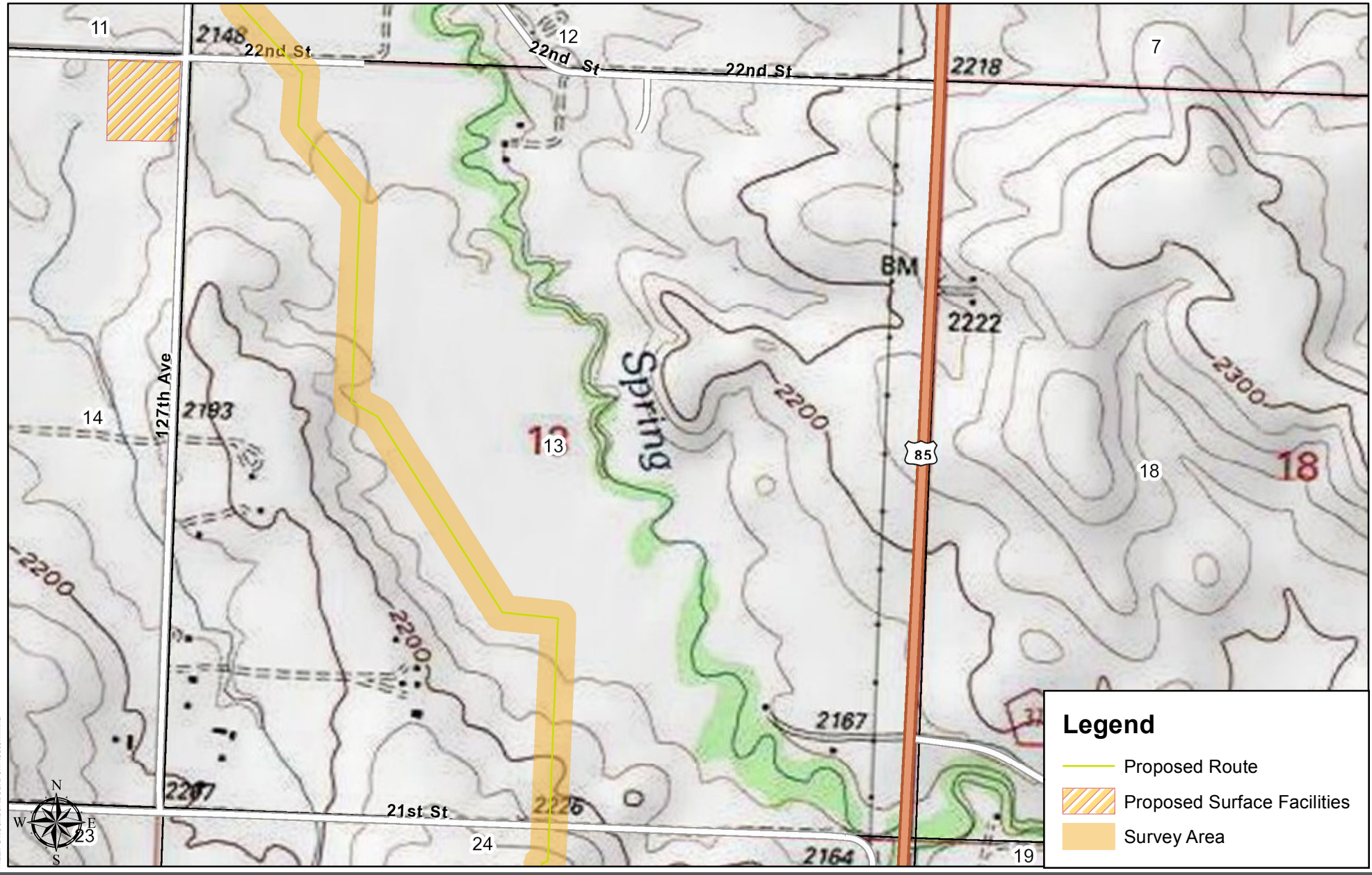
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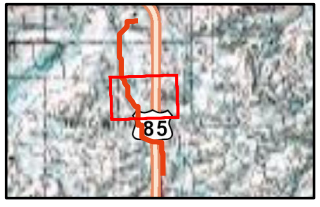
CALIBER BEAR DEN INTERCONNECT, LLC
PROPOSED BEAR DEN INTERCONNECT
FIGURE 4: ROUTE TERRAIN DETAIL (3 OF 6)

Section 24, T 149N, R 99W
McKenzie County, ND



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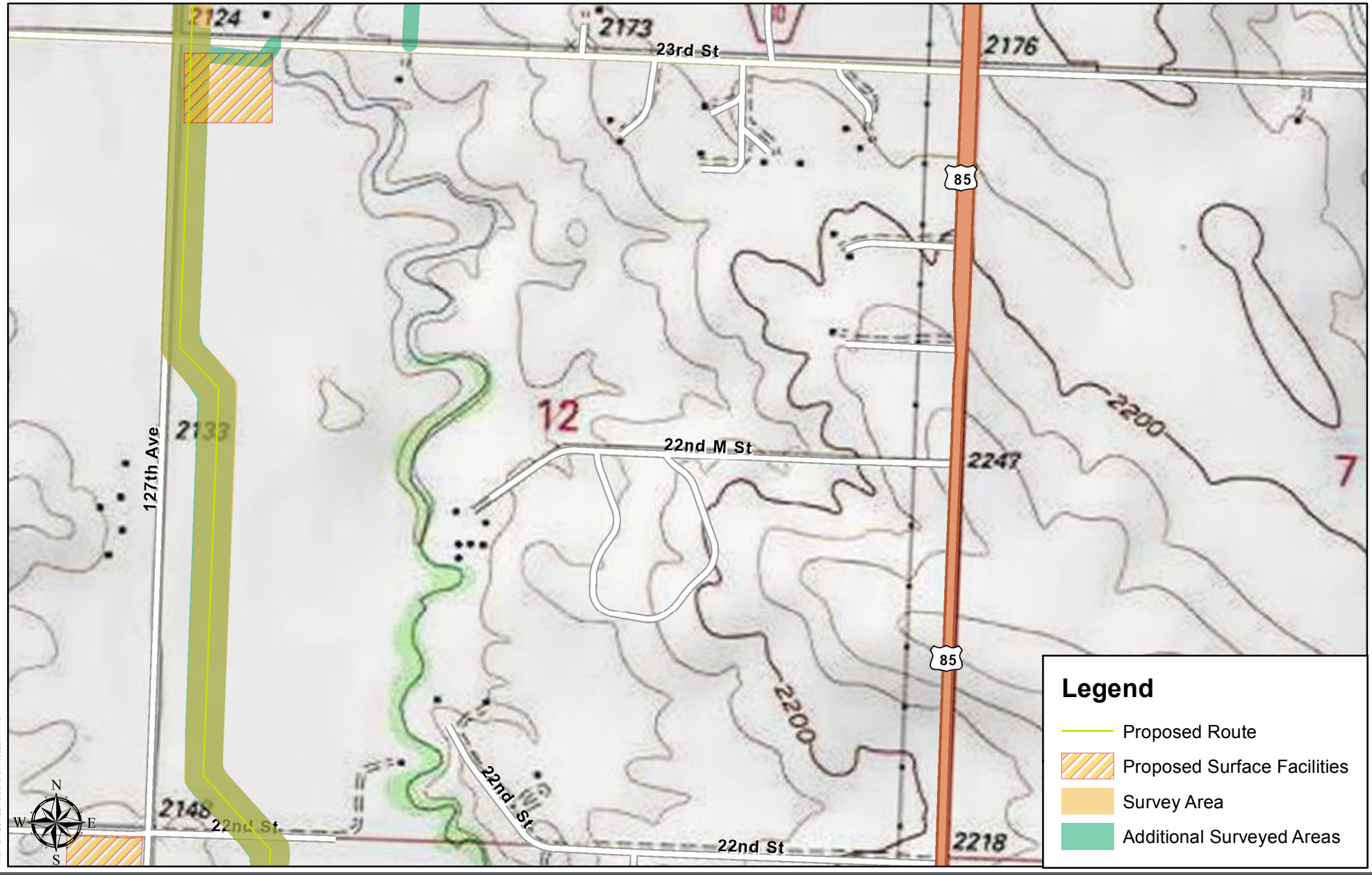
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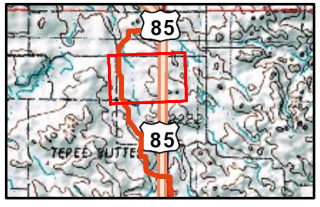
CALIBER BEAR DEN INTERCONNECT, LLC
PROPOSED BEAR DEN INTERCONNECT
FIGURE 4: ROUTE TERRAIN DETAIL (4 OF 6)

Section 13, T 149N, R 99W
McKenzie County, ND



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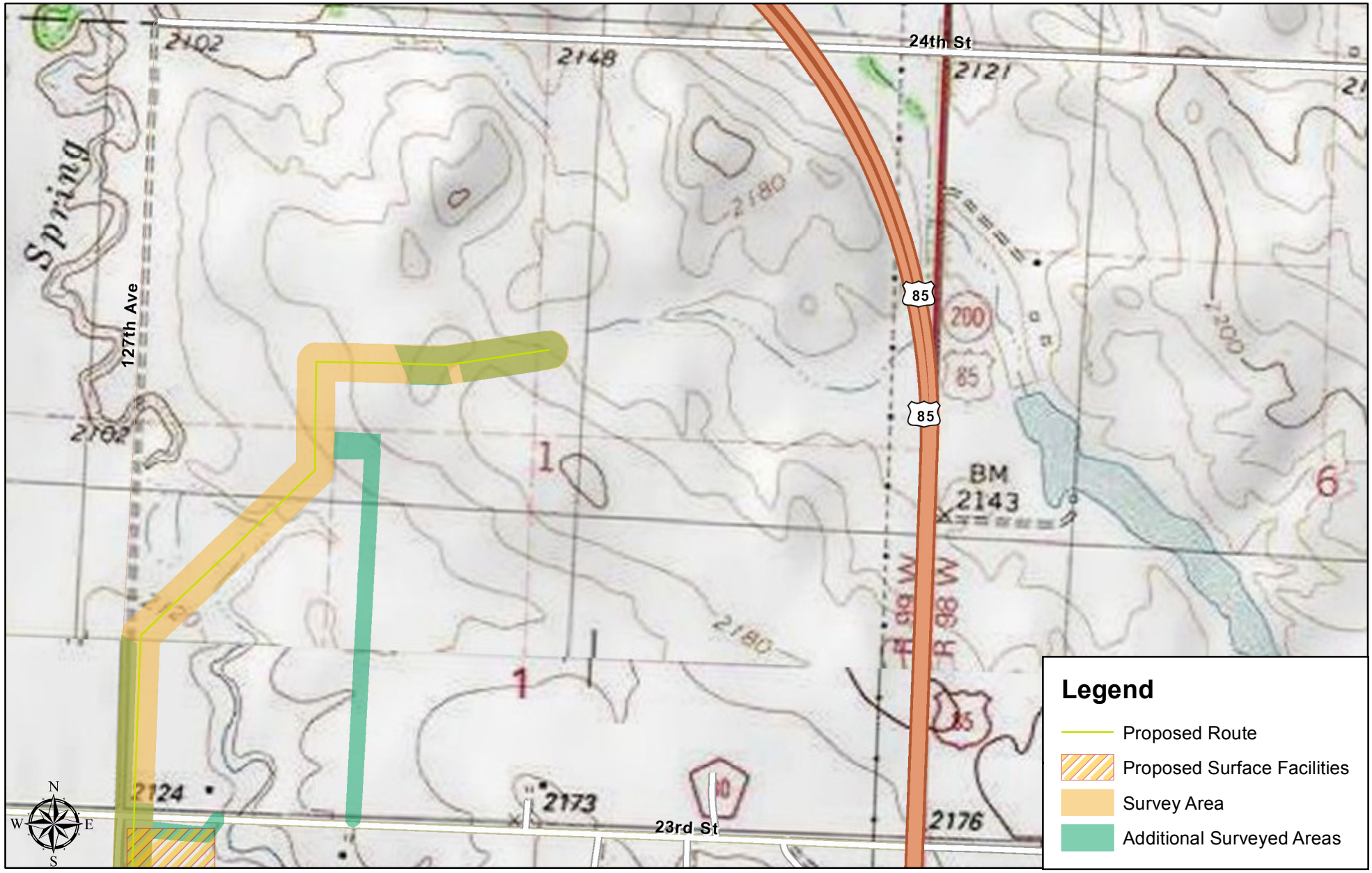
CALIBER BEAR DEN INTERCONNECT, LLC
PROPOSED BEAR DEN INTERCONNECT

FIGURE 4: ROUTE TERRAIN DETAIL (5 OF 6)

Date 6/29/2016

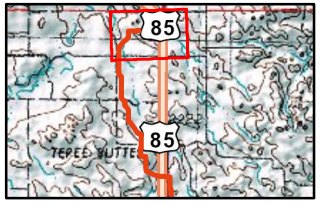
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Section 12, T 149N, R 99W
McKenzie County, ND



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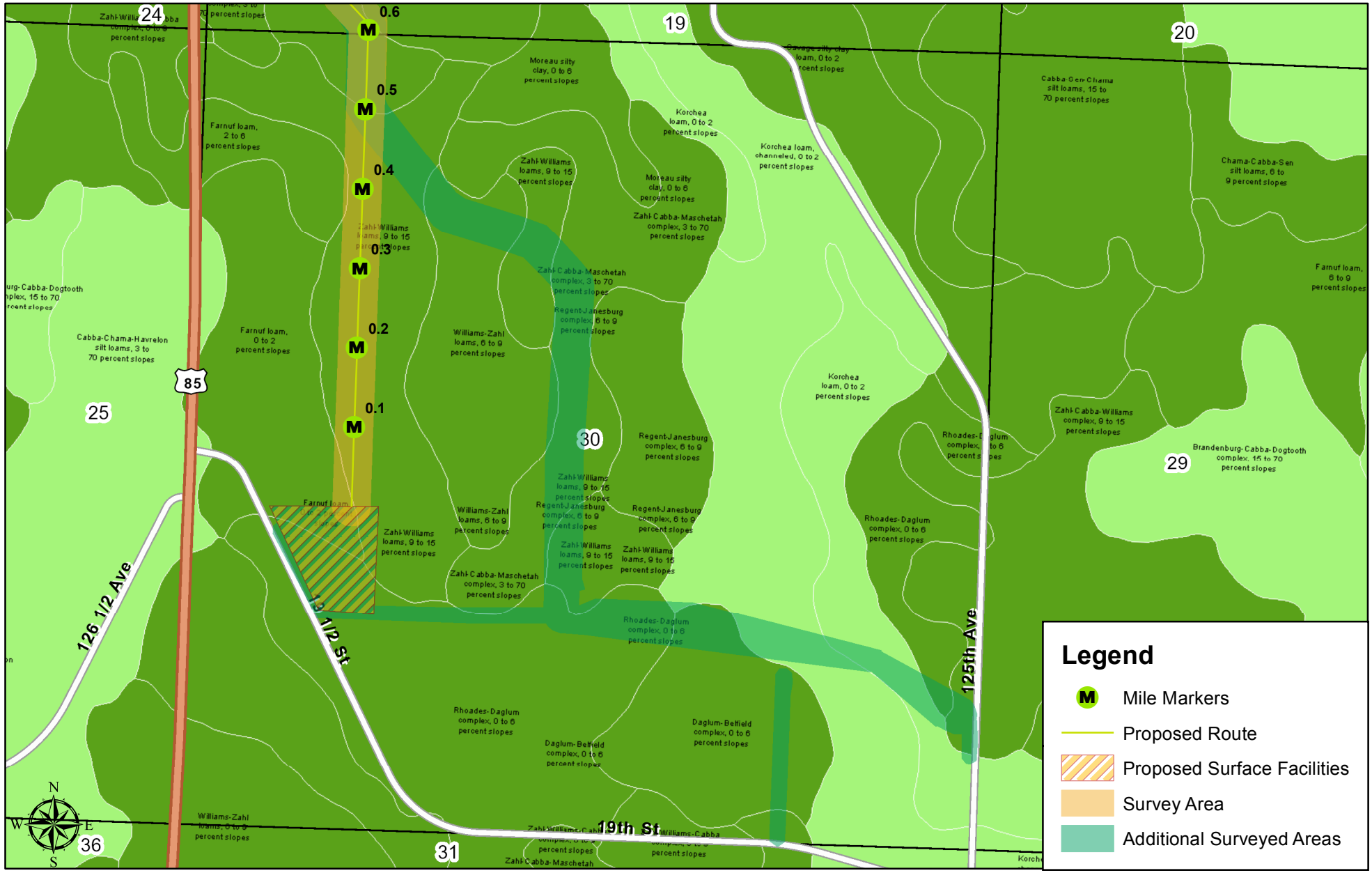
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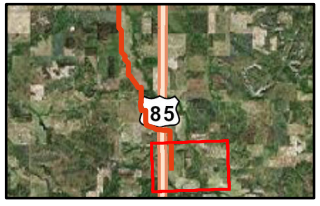
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FIGURE 4: ROUTE TERRAIN DETAIL (6 OF 6)

Section 1, T 149N, R 99W
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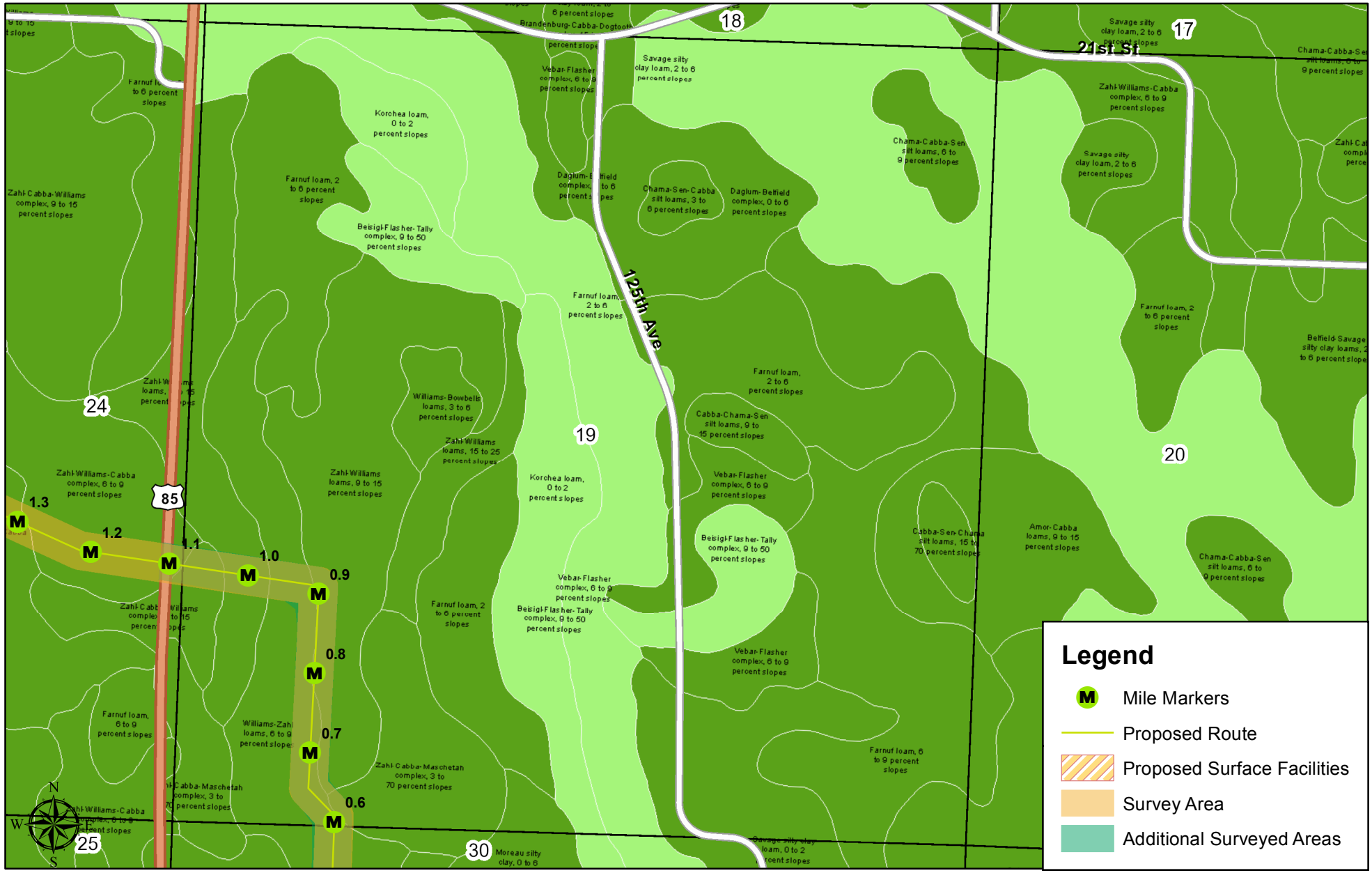
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CALIBER BEAR DEN INTERCONNECT, LLC
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FIGURE 5: STUDY AREA SOILS (1 OF 6)

Section 30, T 149N, R 98W
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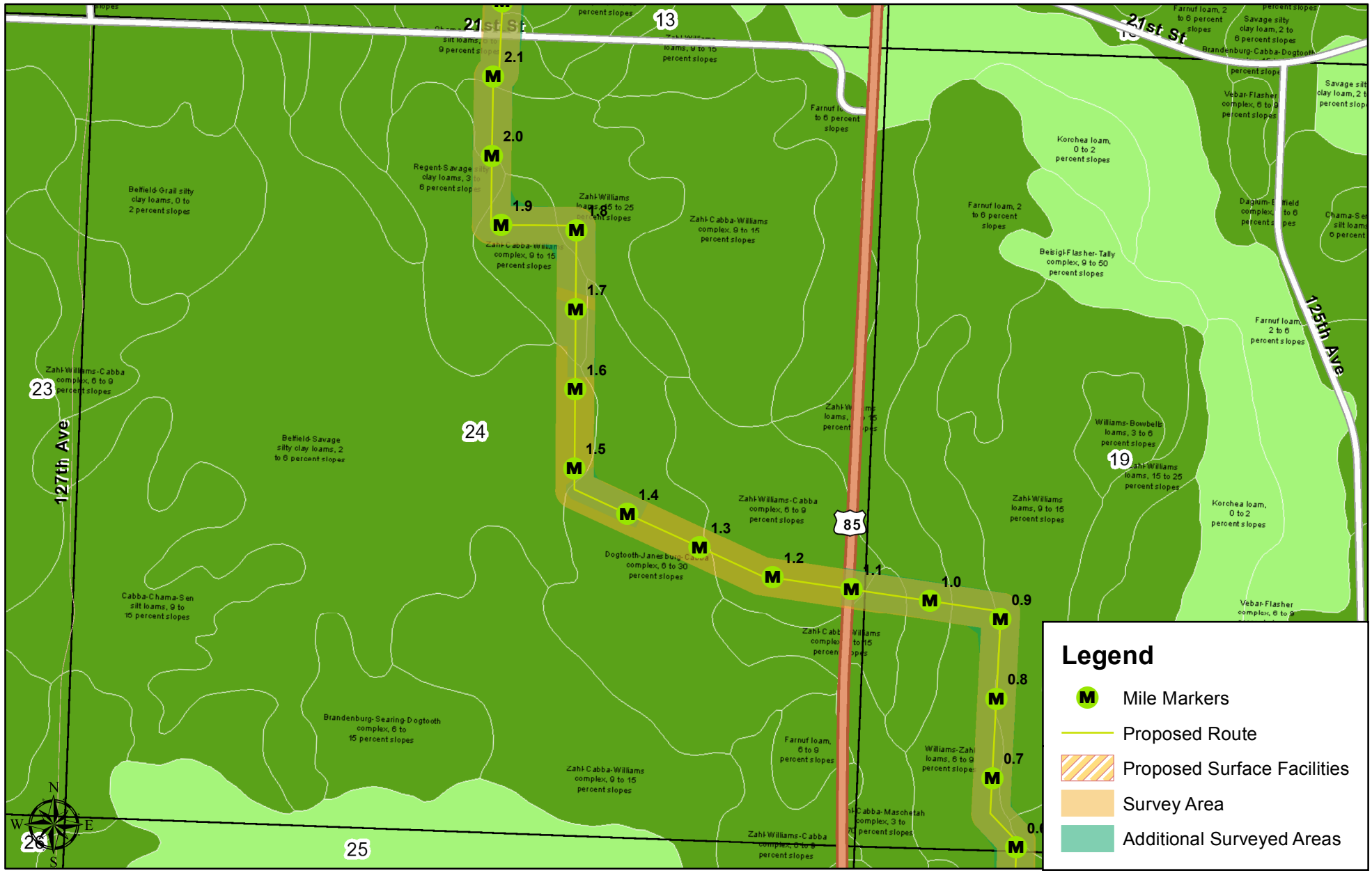
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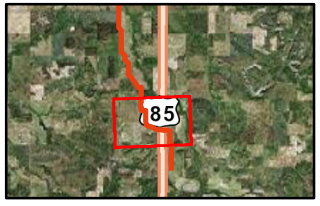
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FIGURE 5: STUDY AREA SOILS (2 OF 6)

Section 19, T 149N, R 98W
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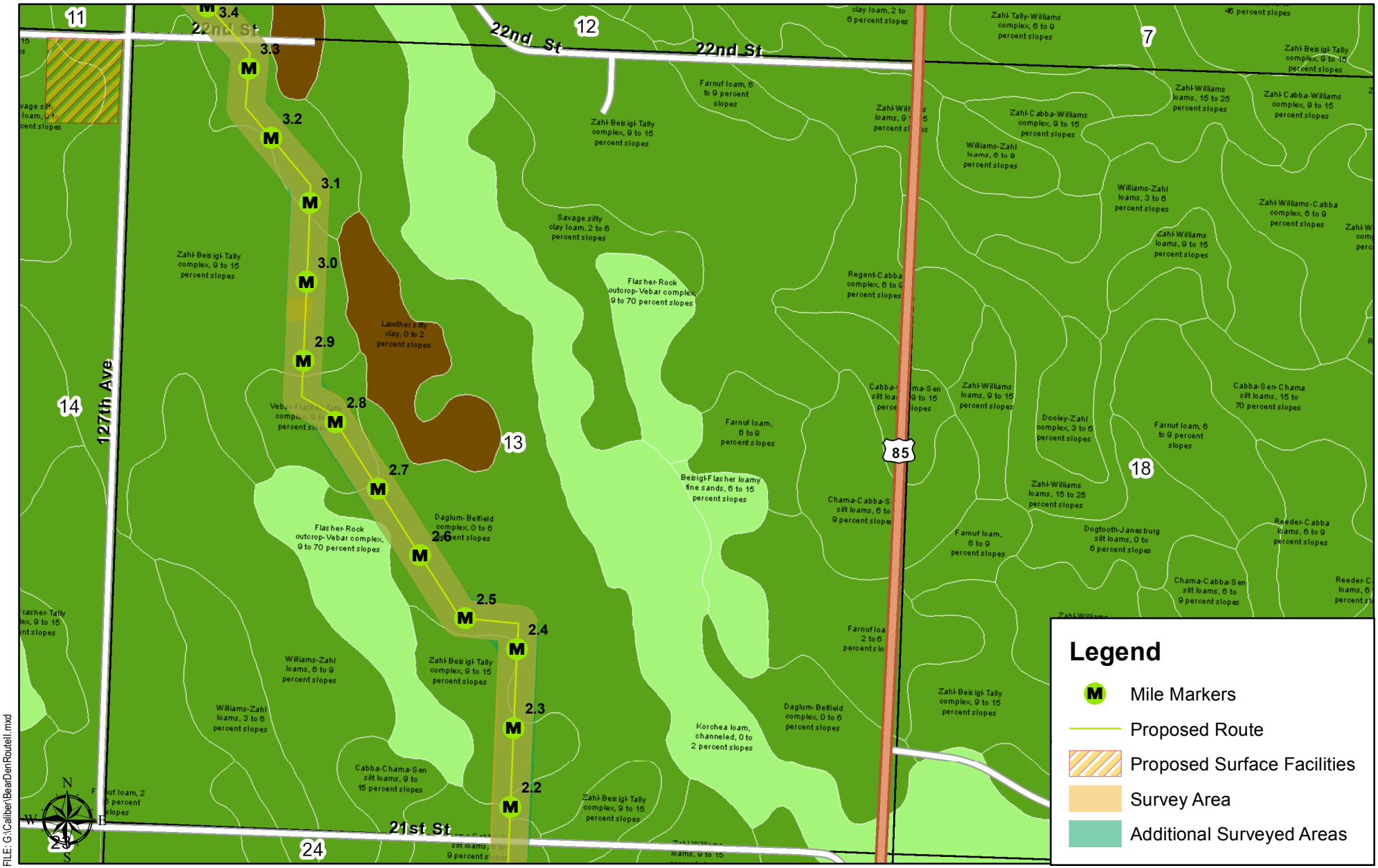
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FIGURE 5: STUDY AREA SOILS (3 OF 6)

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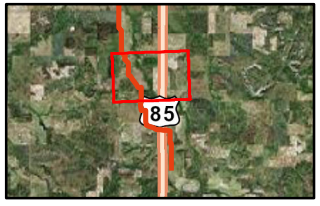
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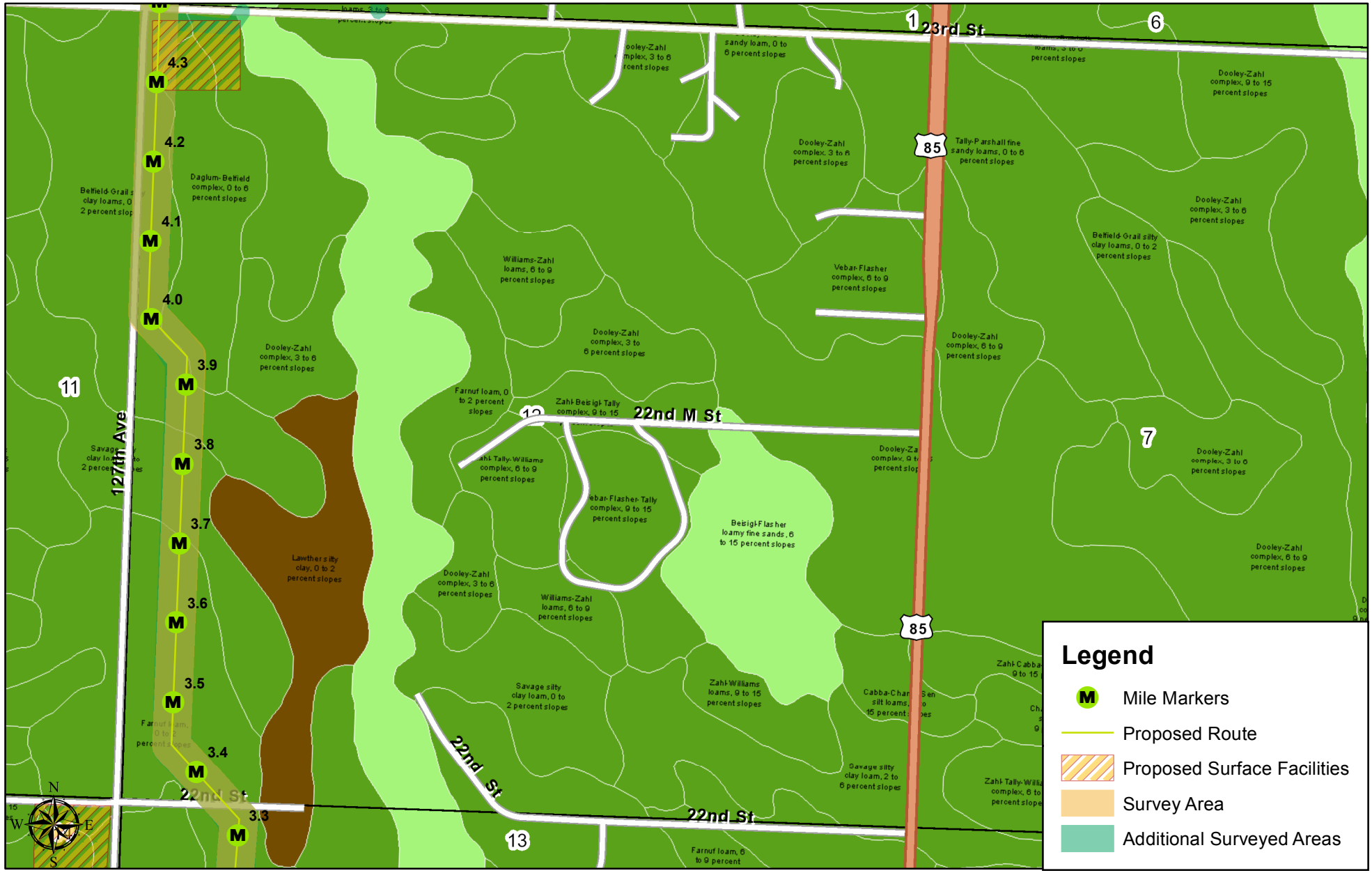
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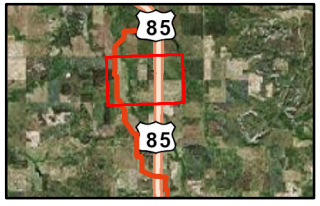
CALIBER BEAR DEN INTERCONNECT, LLC
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FIGURE 5: STUDY AREA SOILS (4 OF 6)

Section 13, T 149N, R 99W
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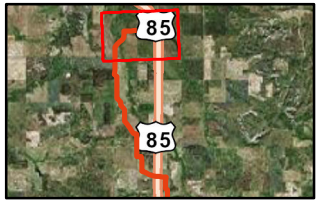
CALIBER BEAR DEN INTERCONNECT, LLC
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FIGURE 5: STUDY AREA SOILS (5 OF 6)

Section 12, T 149N, R 99W
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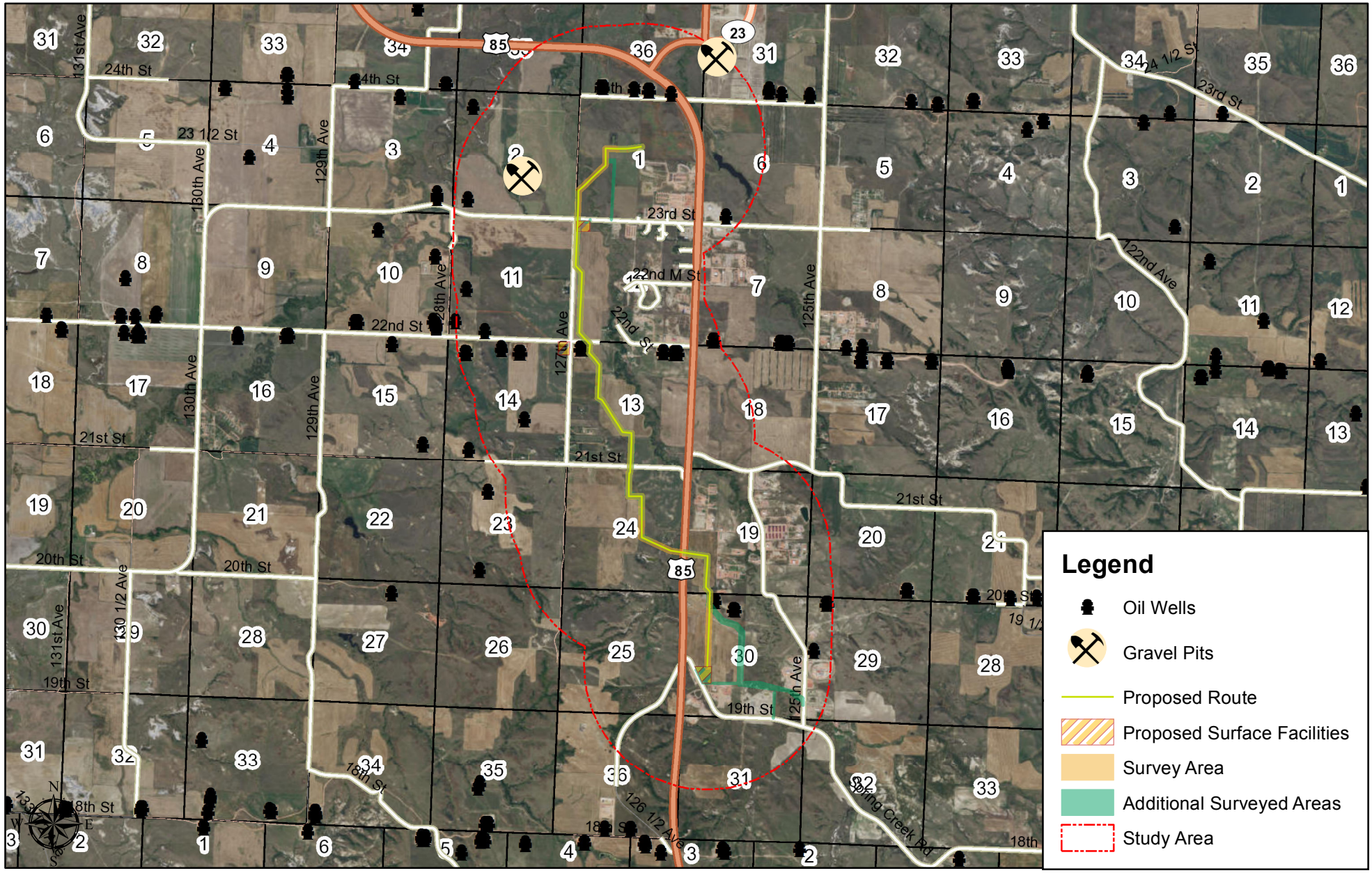
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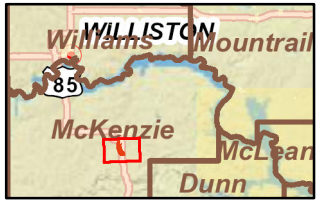
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FIGURE 5: STUDY AREA SOILS (6 OF 6)

Section 1, T 149N, R 99W
McKenzie County, ND



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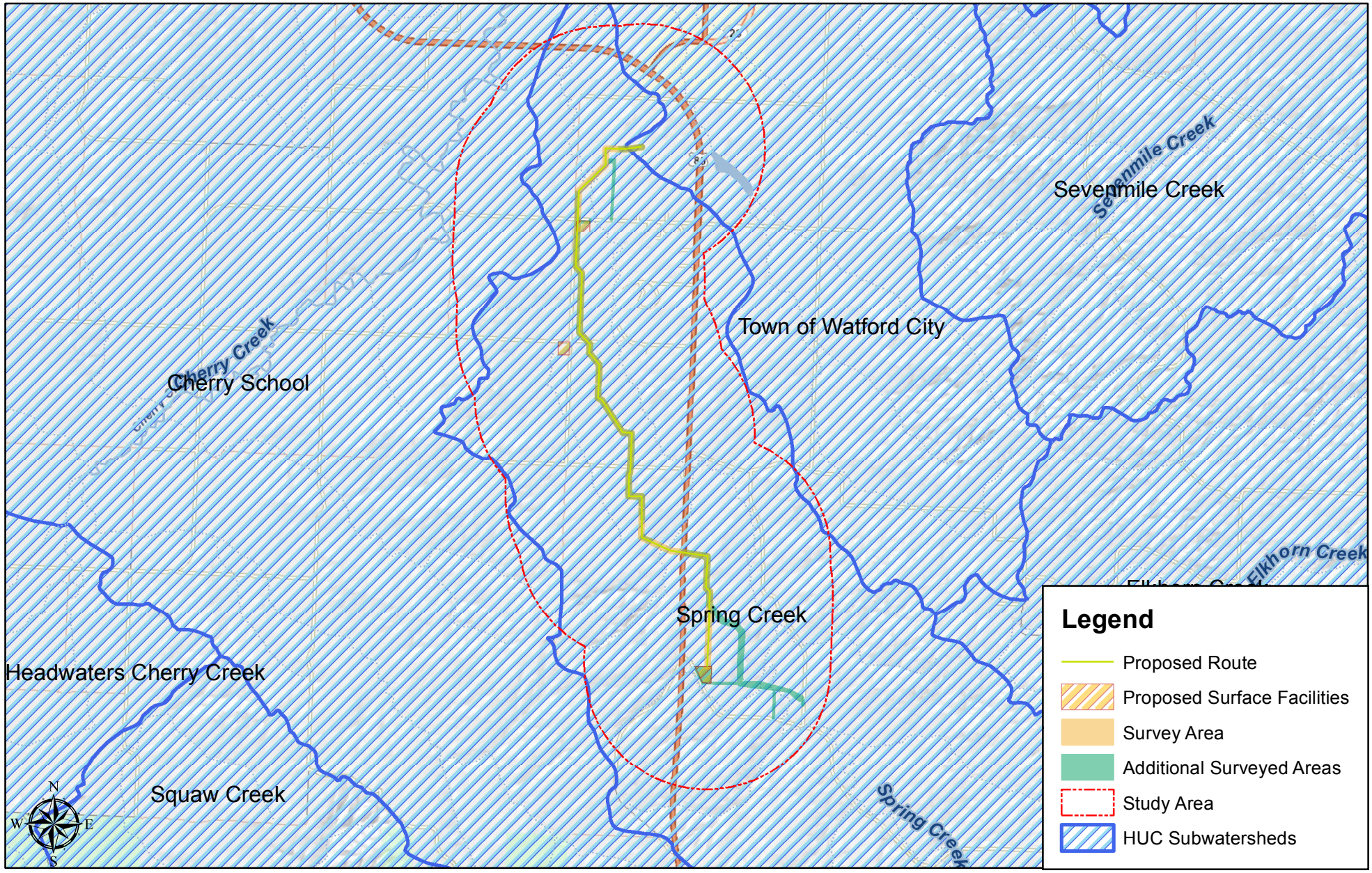
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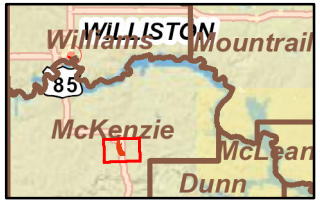
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FIGURE 6: STUDY AREA NATURAL RESOURCES

T 149N, R98W
T 149N, R 99W
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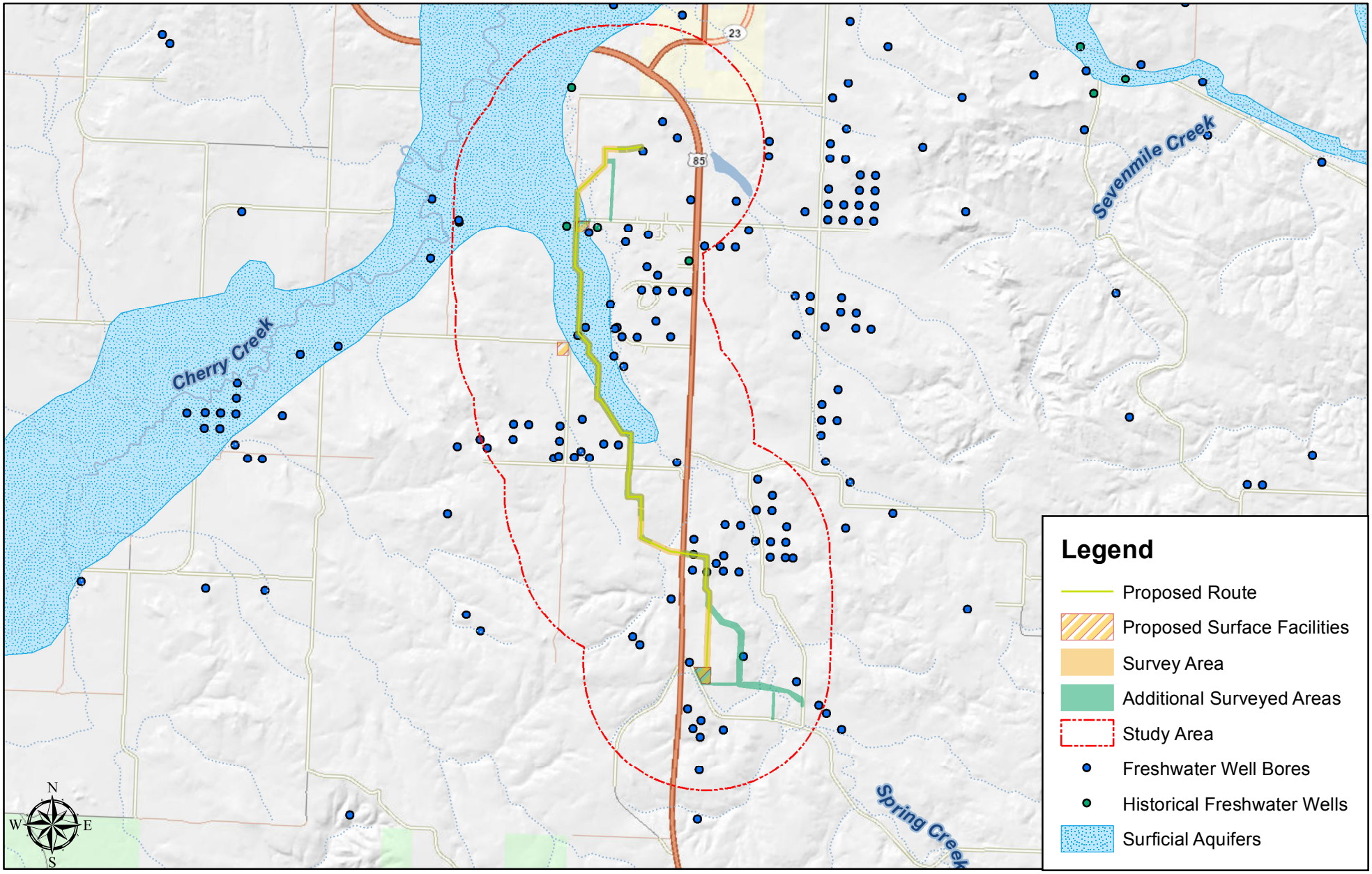
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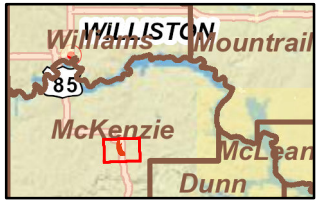
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FIGURE 7: STUDY AREA HYDROLOGY

T 149N, R98W
T 149N, R 99W
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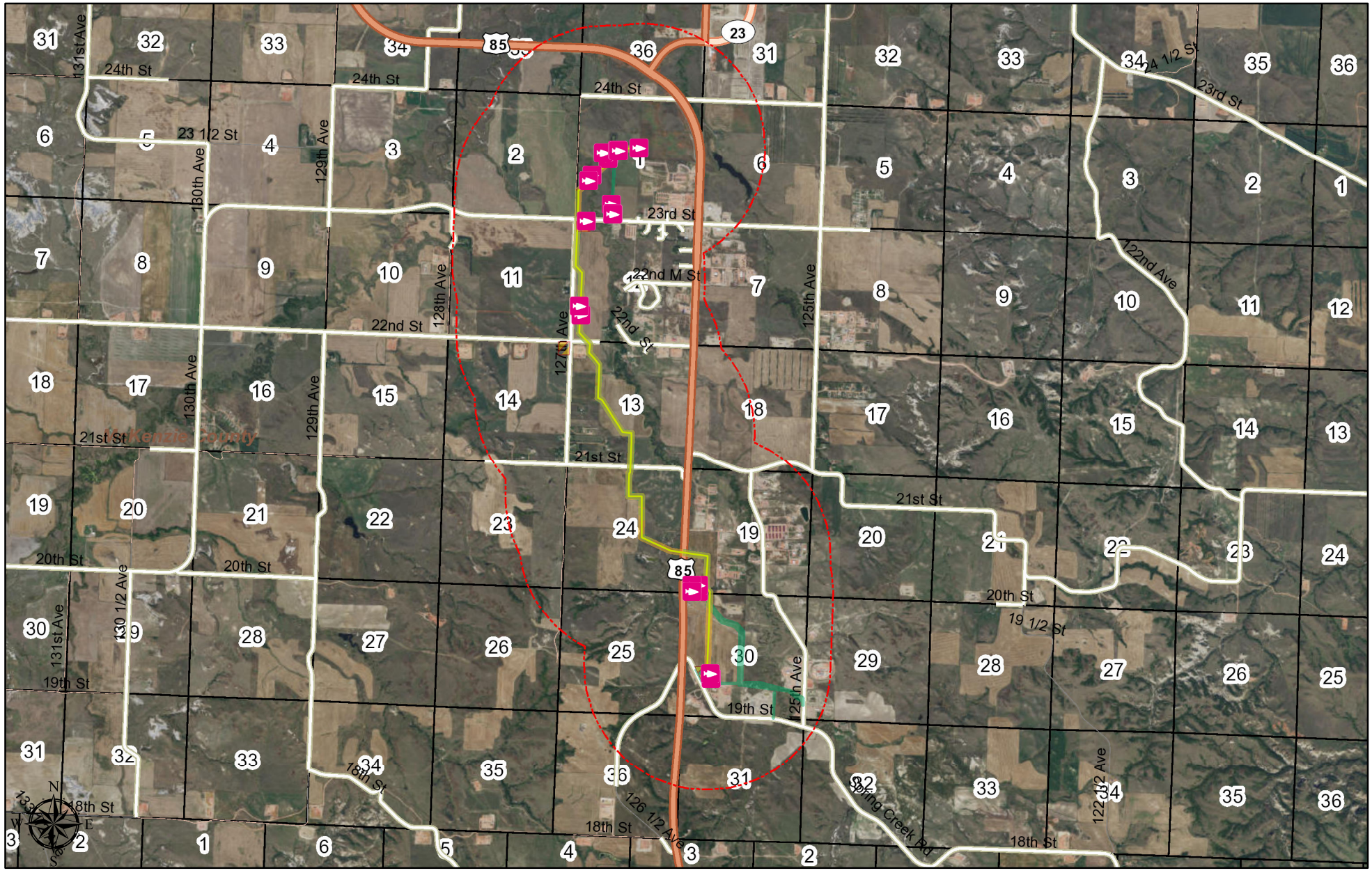


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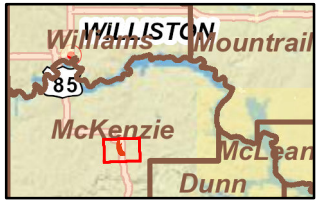
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FIGURE 8: STUDY AREA HYDROGEOLOGY

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T 149N, R98W
T 149N, R 99W
McKenzie County, ND



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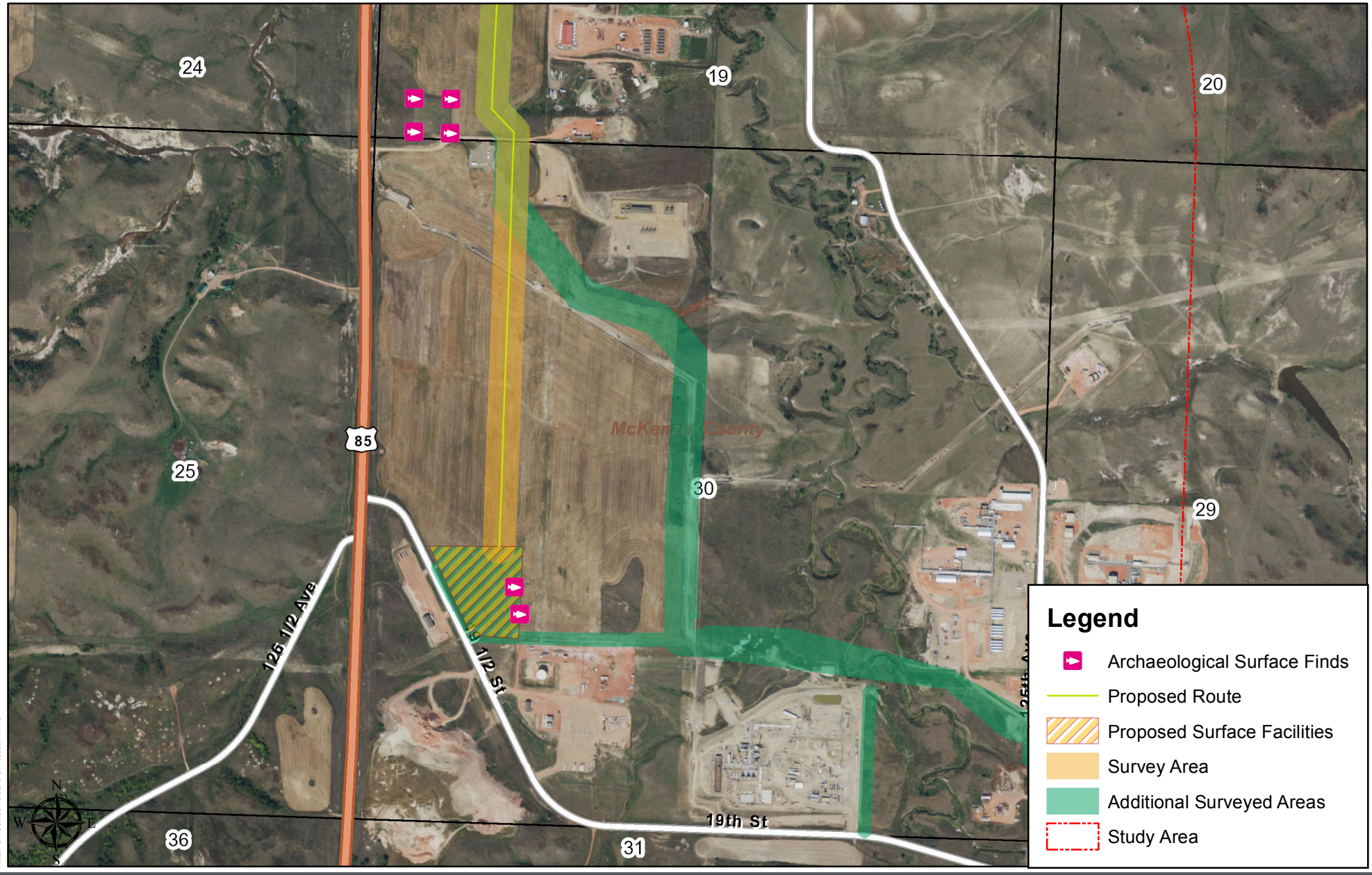
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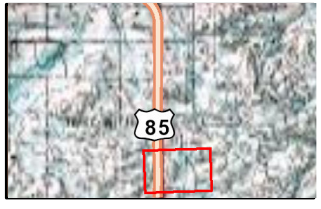
CALIBER BEAR DEN INTERCONNECT, LLC
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FIGURE 9: EXCLUSION AREAS (1 OF 8)

T 149N, R98W
T 149N, R 99W
McKenzie County, ND



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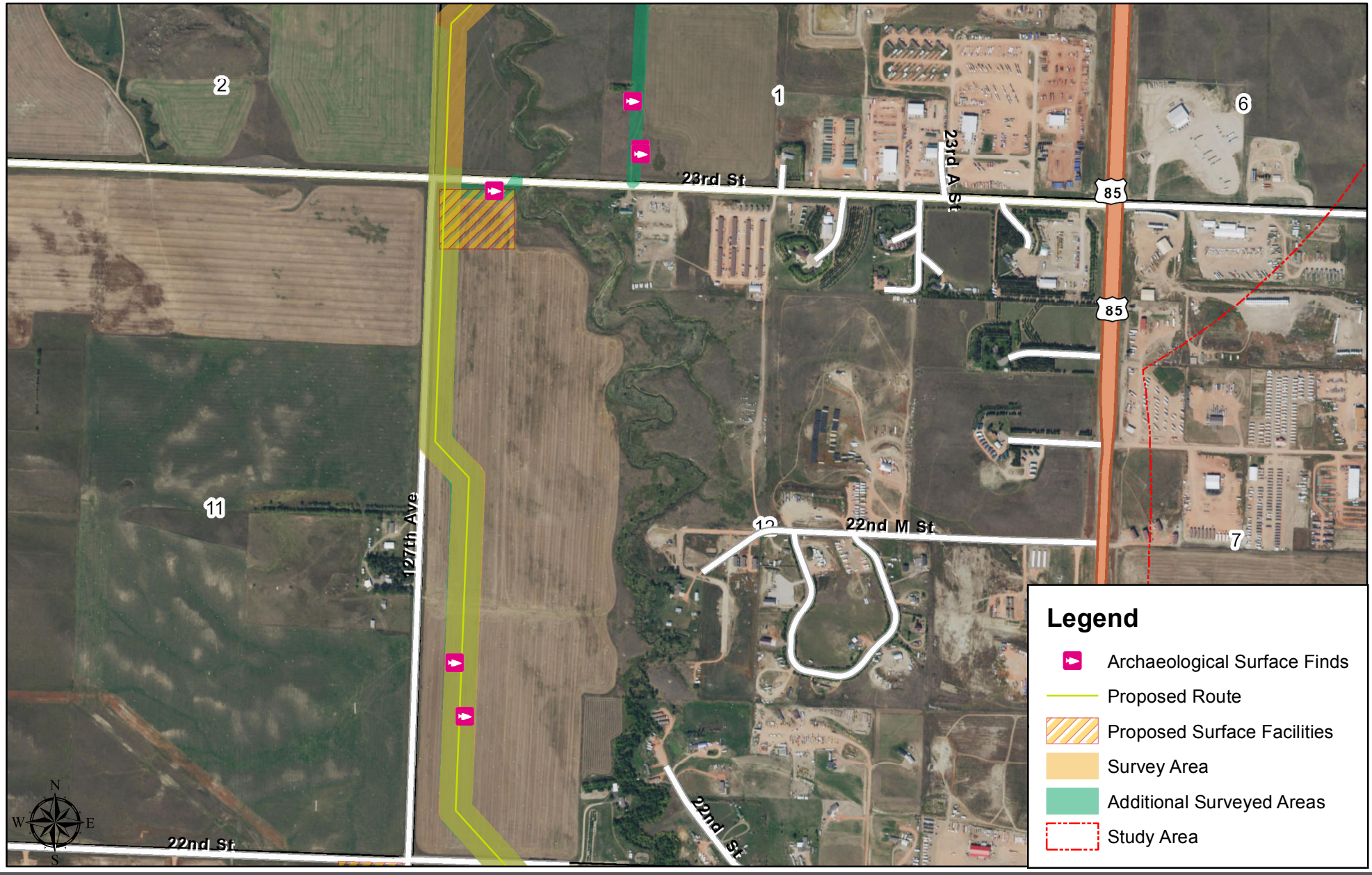
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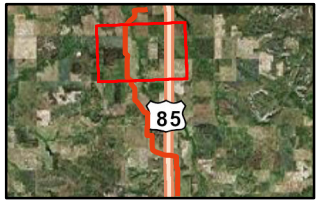
CALIBER BEAR DEN INTERCONNECT, LLC
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FIGURE 9: EXCLUSION AREAS (2 OF 8)

Section 30, T 149N, R98W
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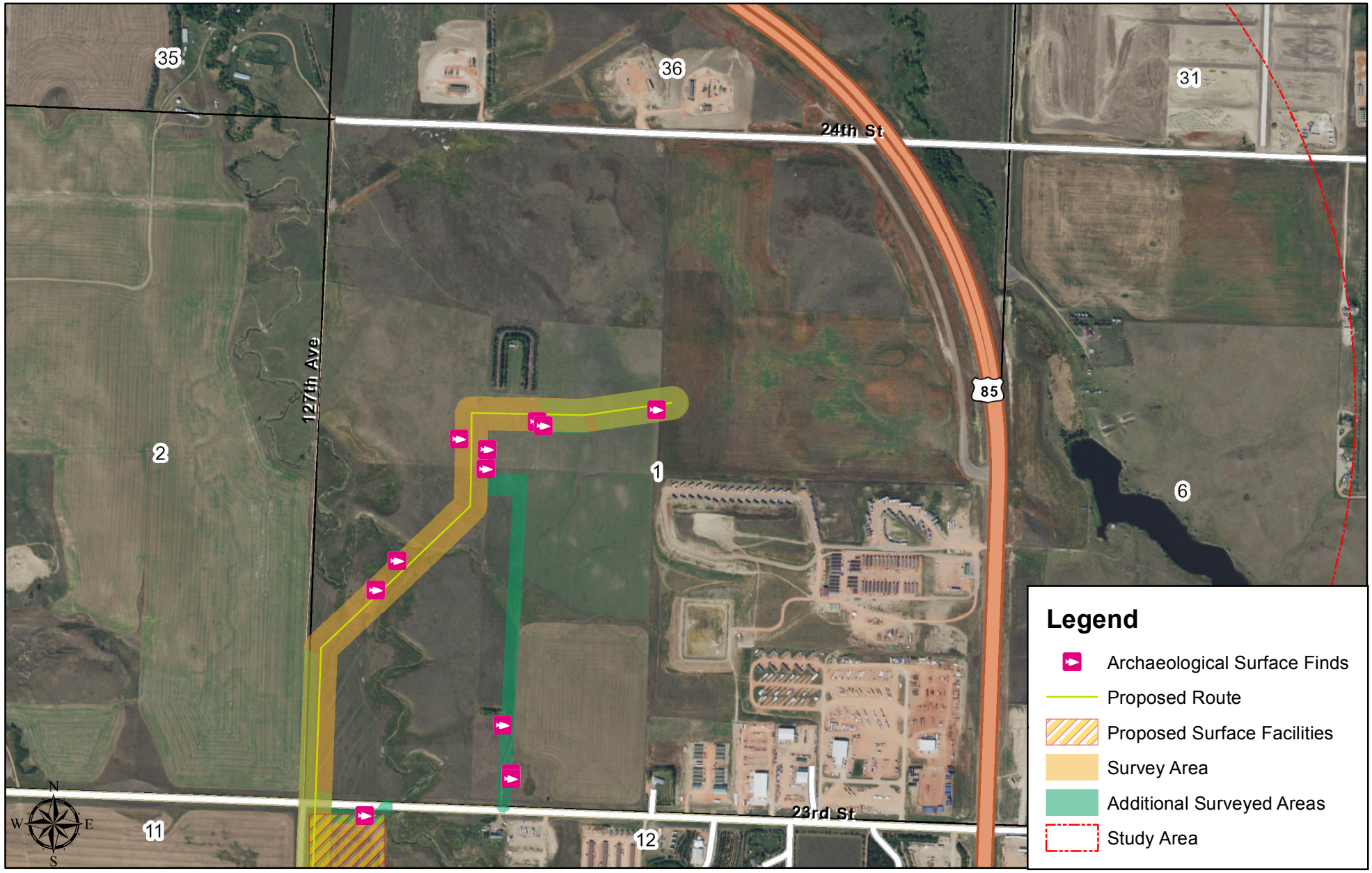


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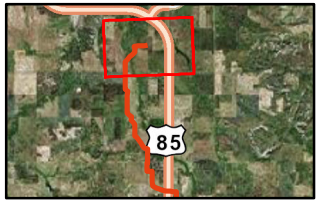
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CALIBER BEAR DEN INTERCONNECT, LLC
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FIGURE 9: EXCLUSION AREAS (3 OF 8)
Section 12, T 149N, R99W
McKenzie County, ND



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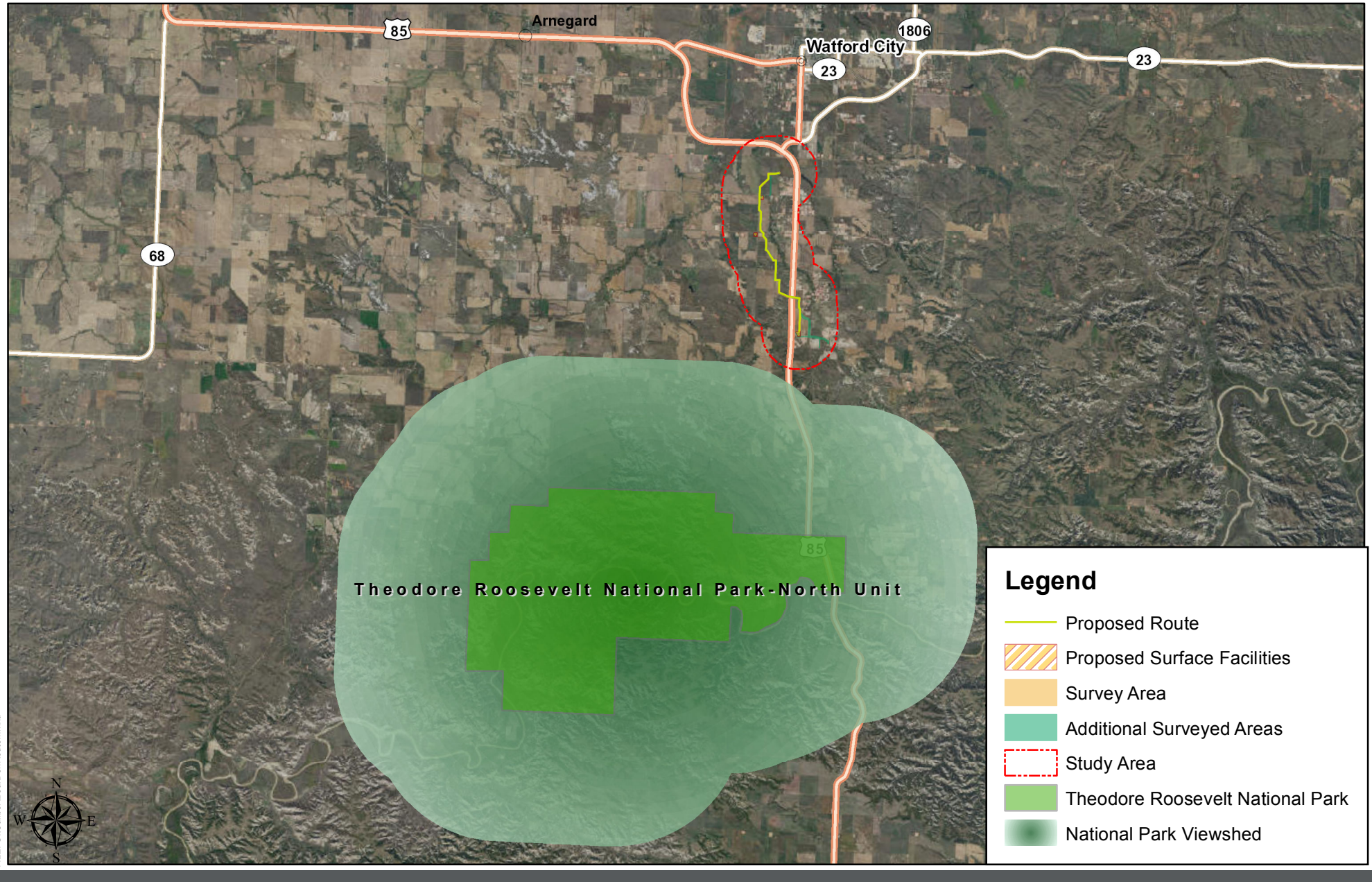
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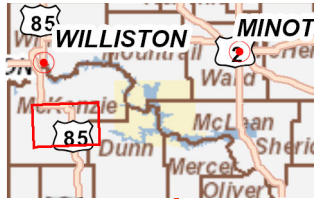
CALIBER BEAR DEN INTERCONNECT, LLC
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FIGURE 9: EXCLUSION AREAS (4 OF 8)

Section 1, T 149N, R99W
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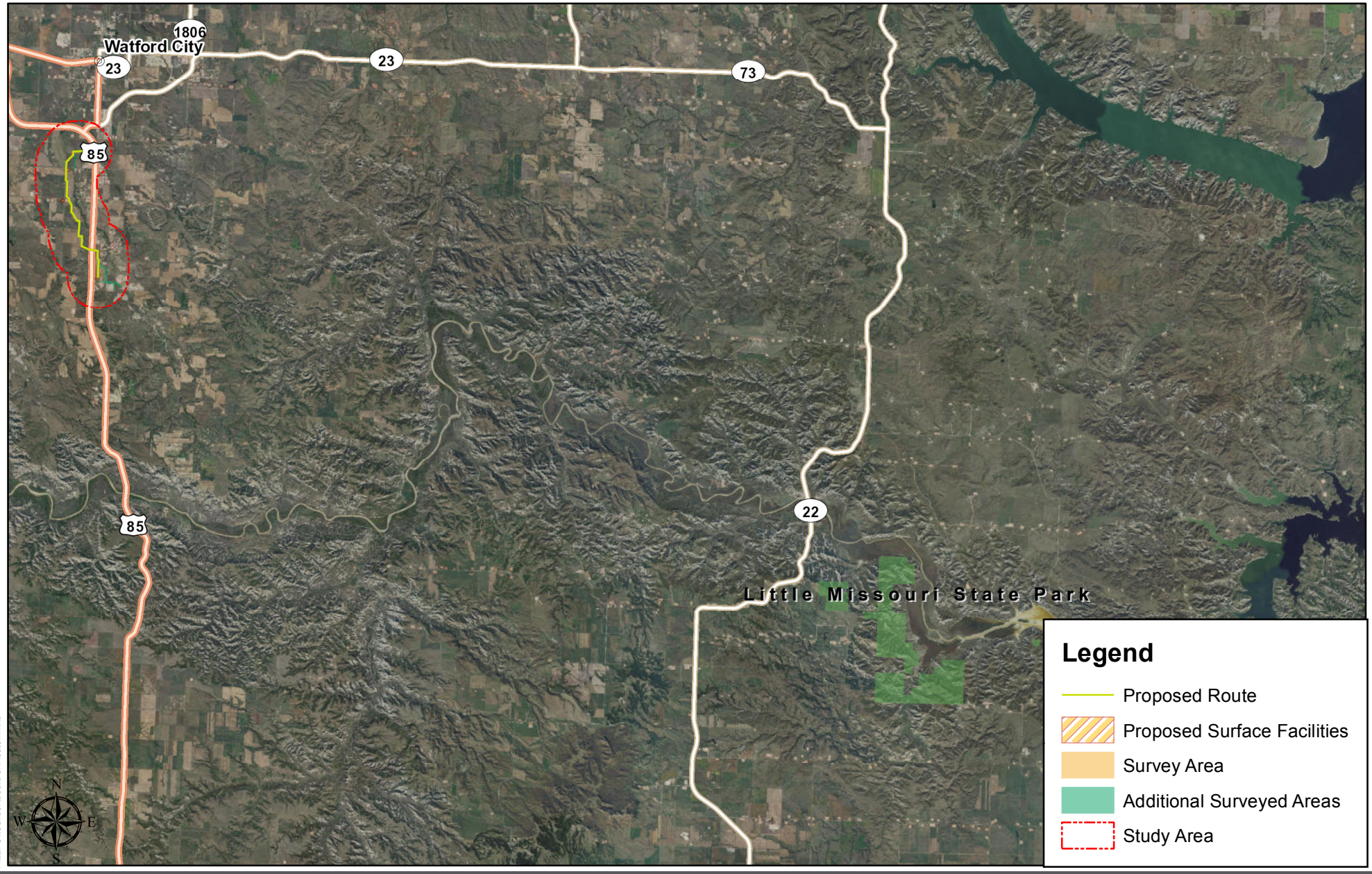
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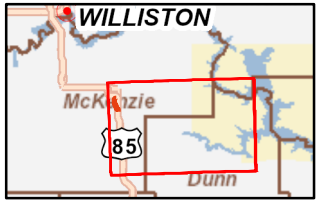
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FIGURE 9: EXCLUSION AREAS (5 OF 8)

T 149N, R98W
T 149N, R99W
McKenzie County, ND



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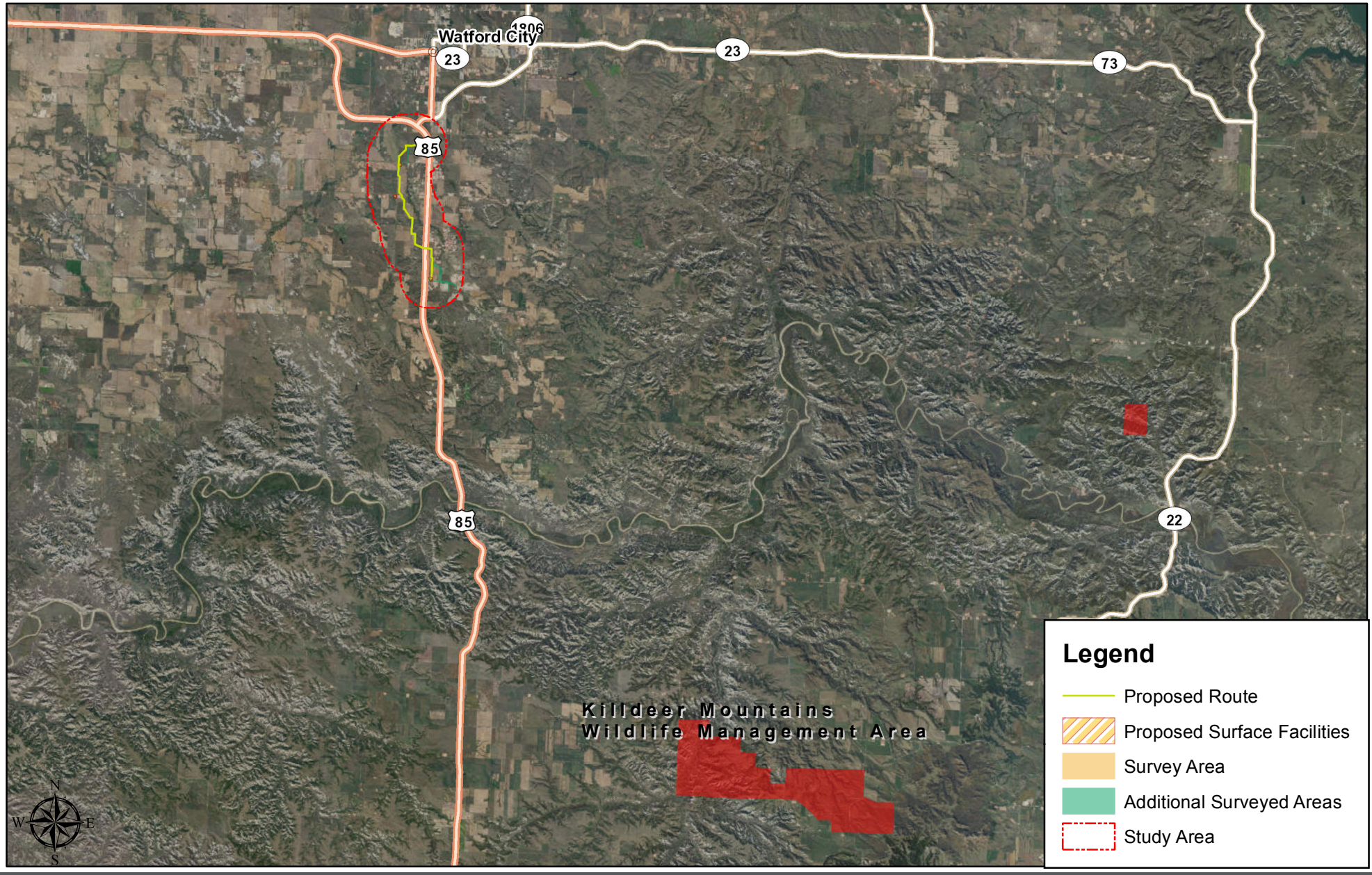
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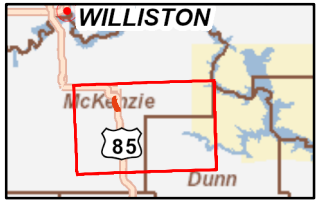
CALIBER BEAR DEN INTERCONNECT, LLC
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FIGURE 9: EXCLUSION AREAS (6 OF 8)

T 149N, R98W
T 149N, R99W
McKenzie County, ND



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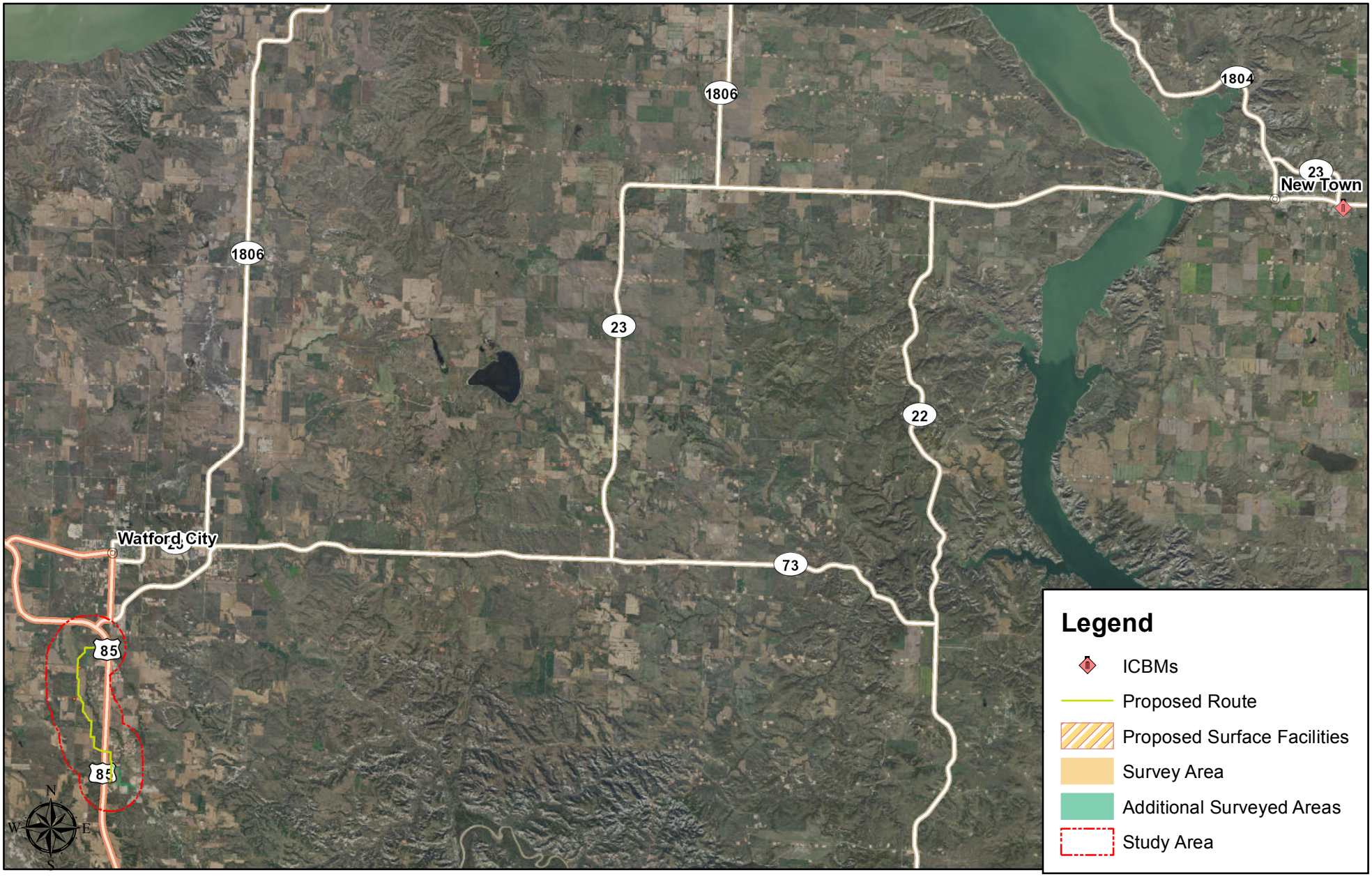
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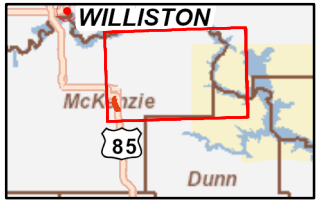
CALIBER BEAR DEN INTERCONNECT, LLC
PROPOSED BEAR DEN INTERCONNECT
FIGURE 9: EXCLUSION AREAS (7 OF 8)

T 149N, R98W
T 149N, R99W
McKenzie County, ND



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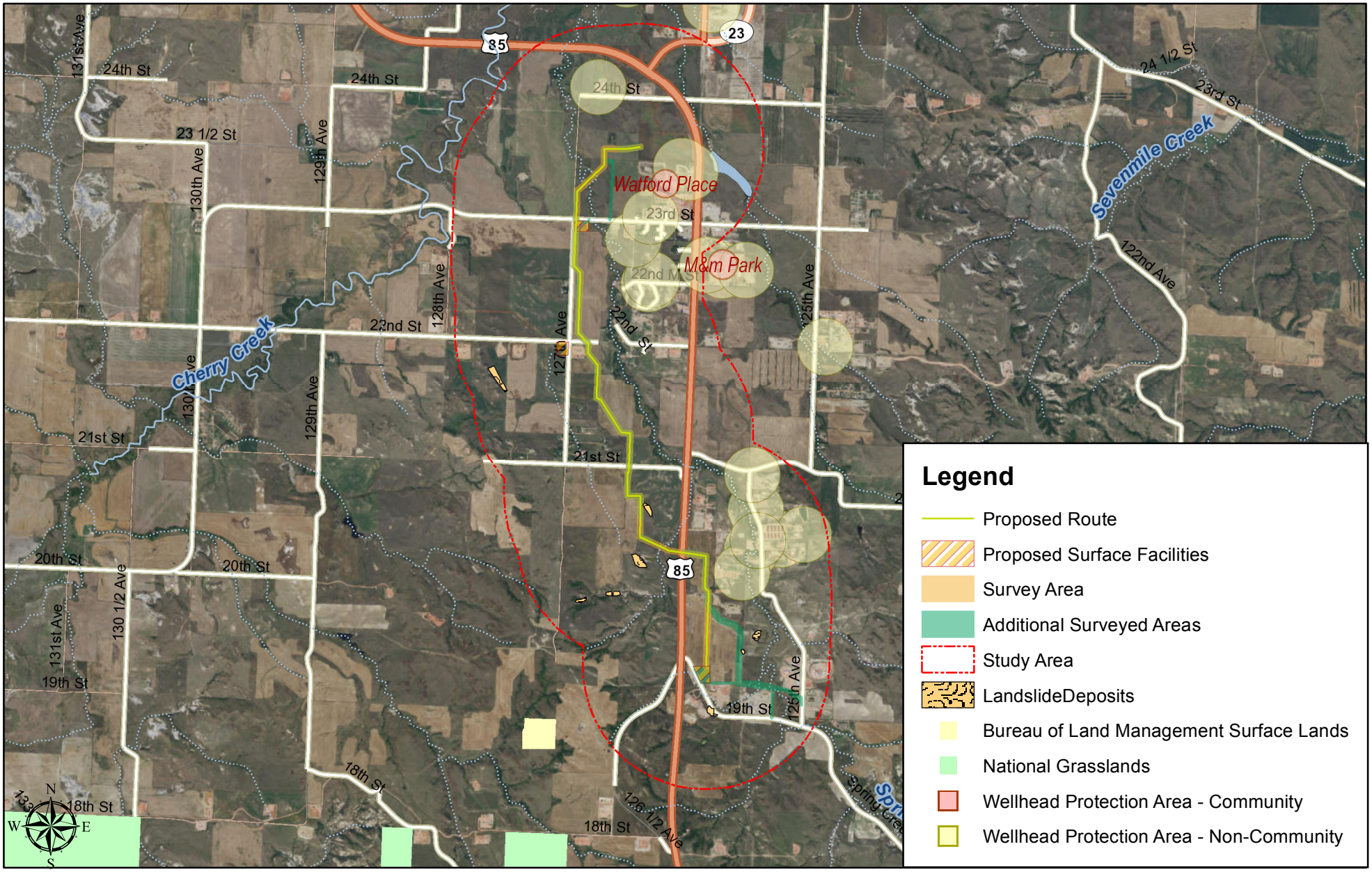
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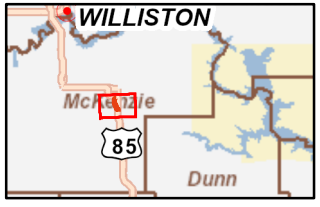
T 149N, R98W
T 149N, R99W
McKenzie County, ND

FIGURE 9: EXCLUSION AREAS (8 OF 8)



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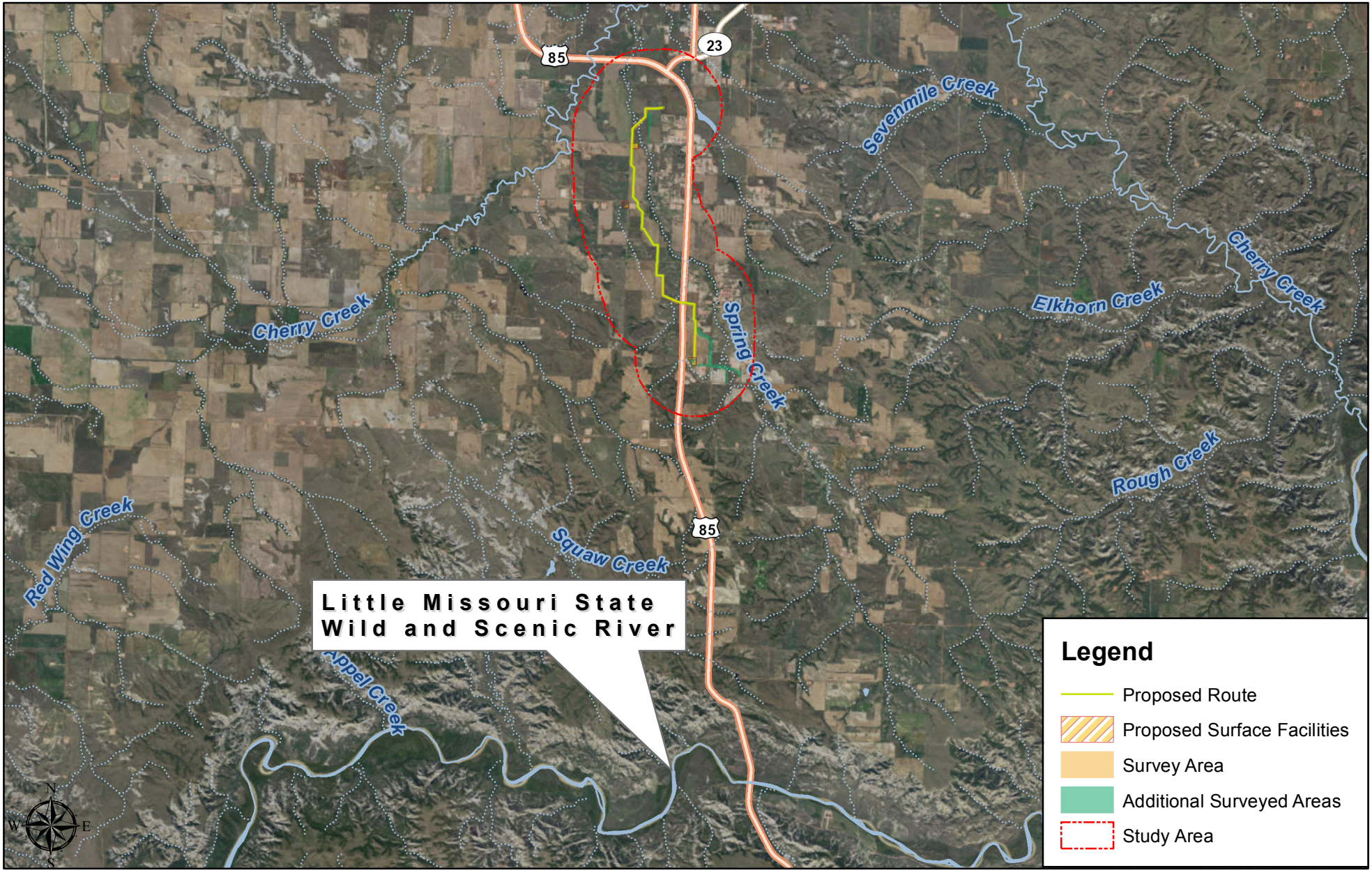


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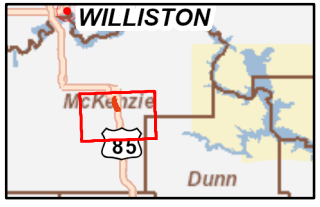
CALIBER BEAR DEN INTERCONNECT, LLC
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FIGURE 10: AVOIDANCE AREAS (1 OF 5)

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T 149N, R98W
T 149N, R99W
McKenzie County, ND



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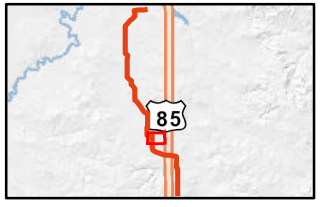
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PROPOSED BEAR DEN INTERCONNECT
FIGURE 10: AVOIDANCE AREAS (2 OF 5)

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T 149N, R98W
T 149N, R99W
McKenzie County, ND



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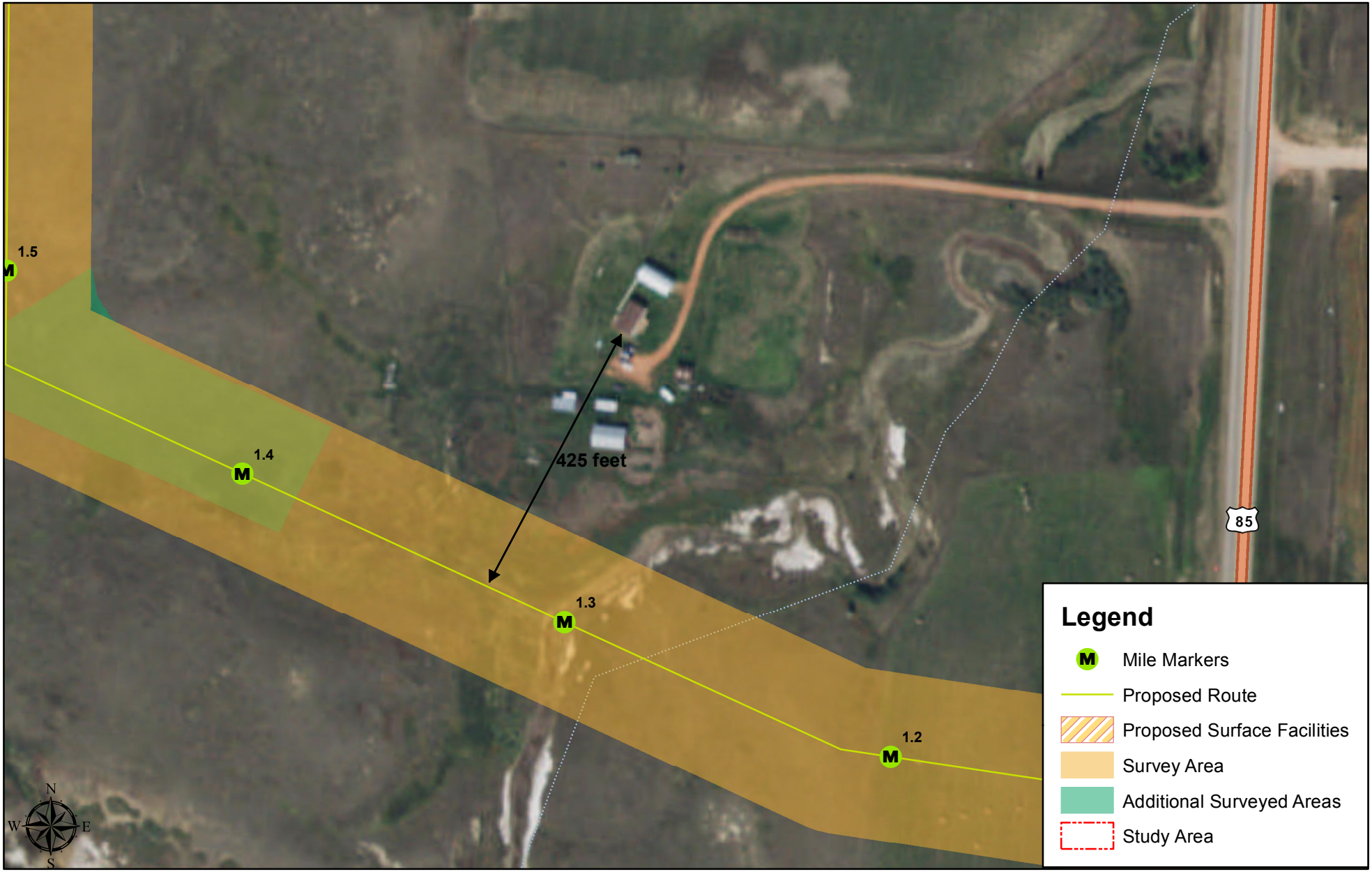


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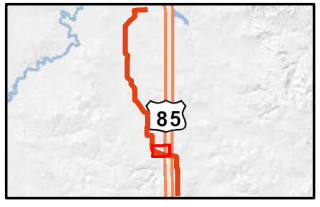
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PROPOSED BEAR DEN INTERCONNECT
FIGURE 10: AVOIDANCE AREAS (3 OF 5)
Section 24, T149N, R99W
McKenzie County, ND



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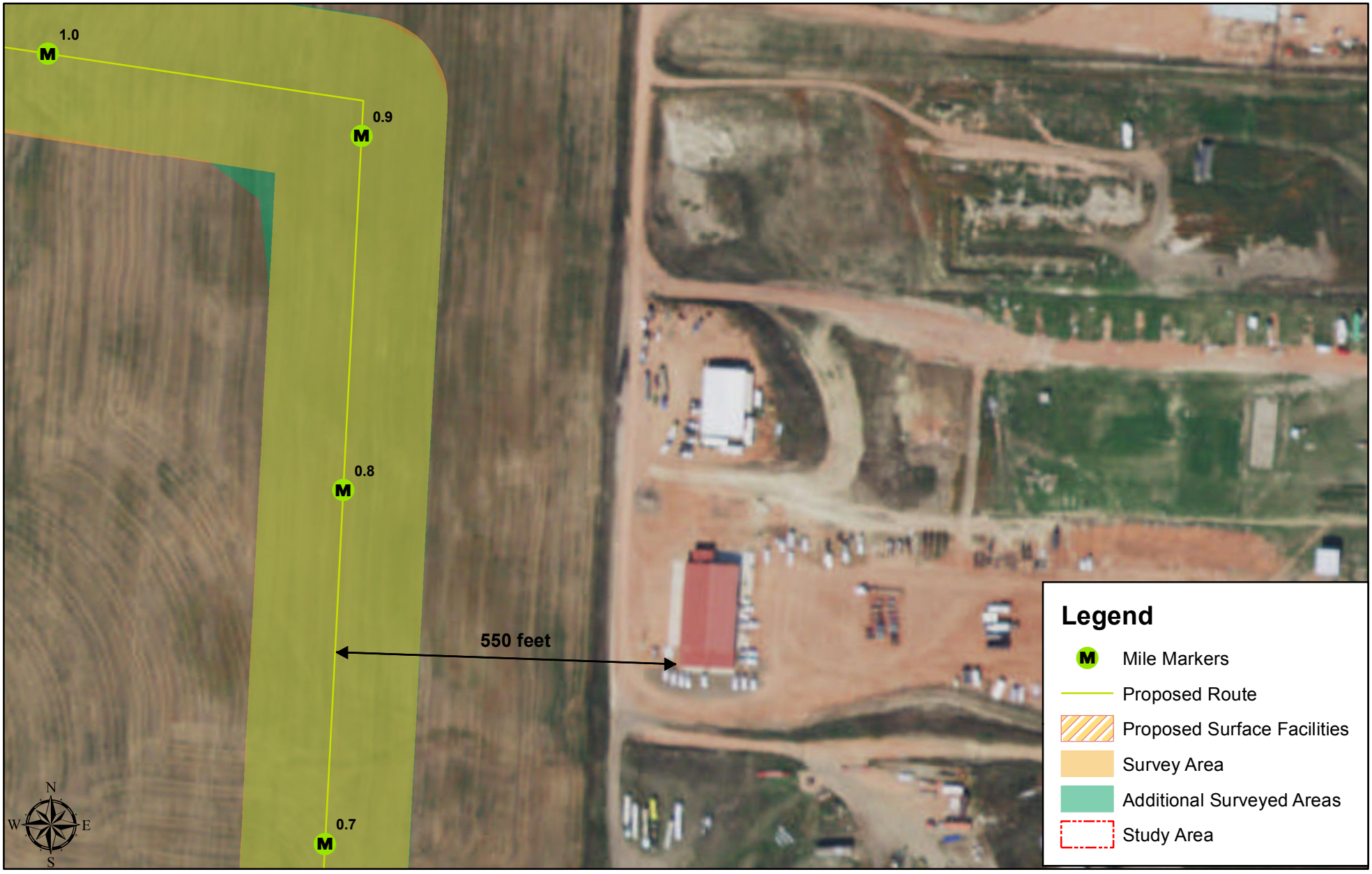


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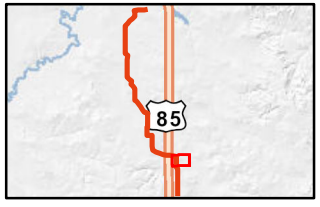
CALIBER BEAR DEN INTERCONNECT, LLC
PROPOSED BEAR DEN INTERCONNECT
FIGURE 10: AVOIDANCE AREAS (4 OF 5)

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Section 24, T149N, R99W
McKenzie County, ND



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CALIBER BEAR DEN INTERCONNECT, LLC
PROPOSED BEAR DEN INTERCONNECT
FIGURE 10: AVOIDANCE AREAS (5 OF 5)
Section 19, T149N, R98W
McKenzie County, ND

APPENDIX A
NATURAL RESOURCES AND WETLAND DETERMINATION REPORT



Cardno
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Appendix A Natural Resources and Wetland Determination Report

A.1 Introduction

Caliber proposes the 5.3 mile-long Bear Den Interconnect Pipeline to transport crude oil from Enable Midstream's Devore Terminal (SWSW Section 29, T 149N, R 98W) to the Dakota Access Pipeline (DAPL)'s Watford City Terminal (NWNE Section 1, T 149N, R 99W). The proposed route follows US Hwy 85 in McKenzie County, beginning about 7.6 miles south of Watford City, and terminating about 2.9 miles south of Watford City near the junction of US Hwy 85 and the US Hwy 85 bypass. The line will consist of a newly constructed 12.75" OD crude oil pipeline constructed of externally-coated steel.

In addition to the proposed transmission line, three surface facilities are also proposed. A truck off-load station is proposed for the northern end of the line, to be located in the NWNWNW of Section 12, T 149N, R 99W. This proposed truck off-load station will tie into the proposed transmission line. A 5-acre pipe laydown yard is proposed in the NENE of Section 14, T 149N, R 99W. A 7-acre truck off-load station is also proposed for the southern end of the line, to be located in the NWSW of Section 30, T 149N, R 98W.

Cardno was contracted by Caliber to complete a Natural Resources and Wetland Determination Report for the proposed transmission line. The scope of work involved with the construction and operation of the proposed transmission line was first evaluated, regulatory requirements were reviewed, survey methodologies were developed, and the survey results were analyzed to demonstrate regulatory compliance. This Natural Resources and Wetland Determination Report details these results.

A.2 Scope of Work

Caliber's proposed action would involve the construction and operation of a 5.3-mile oil and gas transmission line. During construction, a 75-foot construction ROW will be utilized, with a 25-foot permanent ROW for future routine operation and maintenance of the line. One above-ground pipe laydown yard will be temporarily utilized during construction, and two 7-acre truck offload stations will remain during operation of the line.

Work would begin with finalizing land surveys and staking. The proposed route, pipe laydown yard, truck offload facilities, and all other associated surface facilities will be marked as surveyed prior to construction. The outer limits of the construction ROW and all approved workspace areas will be marked with distinctive flags prior to construction.

Typically, the initial phase of ROW construction involves the clearing of brush, trees, and other woody vegetation from the ROW. The proposed Bear Den Route does not transect areas of trees, and all areas of brush and woody vegetation will be avoided. Therefore, extensive clearing of woody vegetation is not anticipated at this time. Any necessary clearing of vegetation will be conducted in accordance with the standards as outlined in Appendix I. Cleared vegetation will be disposed of at an approved landfill off-site, and no burning will occur within the ROW.

Following the clearing, grading of the ROW is conducted to ensure a safe and even working surface is present for construction equipment and vehicles. As most of the proposed Bear Den route traverses relatively flat terrain, extensive grading is not presumed to be necessary. All areas of disturbance will be re-contoured to match original site conditions upon the completion of construction activities.

The graded ROW will be prepared for excavation by stripping topsoil to a maximum depth of one foot, unless otherwise requested by the landowner, and segregated from subsoil. No foreign materials will be mixed into excavated materials. When possible, a minimum of one foot of separation between topsoil and subsoil piles will be maintained to prevent mixing. Physical barriers will be used to prevent mixing of topsoil and subsoil in areas

where separation cannot be maintained or guaranteed. Temporary erosion control measures will be implemented to prevent the spread of excavated and disturbed soils.

Trenching will be accomplished by backhoe excavators or rotary wheel ditching machines. Caliber will coordinate trenching activities with landowners to minimize disruptions to existing land use. Where needed, temporary access routes will be constructed across the ROW to allow for the movement of livestock, wildlife, and landowner equipment. Trenches will also be regularly sloped to allow for the escape of any trapped livestock or wildlife.

All stream, wetland, and road crossings will involve a directionally drilled bore by placing a drill unit on one side of the crossing. A small pilot hole will first be drilled and enlarged with barrel reams. Drilling mud will be prepared from a slurry with freshwater. Drilling mud and drill cuttings will be disposed of at an approved facility, and will not be discharged to surface water bodies.

Prior to installing pipe, trenches will be inspected for proper depth, debris, rocks, and other obstructions. Pipe will be wrapped with protective shielding if needed prior to lowering into the trench. Pipe will be installed in bore holes using a “push/pull” method.

Backfilling will occur following the installation of pipe. If needed, the trench will be dewatered prior to backfilling. Subsoil will first be replaced, and topsoil will be spread uniformly over disturbed areas to match original contours. Erosion control best management practices will be implemented in accordance with the SWPPP to protect disturbed soils until a successful stand of vegetation is reestablished.

Areas of disturbed soils will be re-seeded with certified weed-free native seed mixtures developed in conjunction with the landowner(s). The seedbed will be prepared by contour-cultivating four to six inches deep ensuring no depressions exist that would trap or pool water. The area will be seeded via broadcast seeder or drill seeder. Straw mulch will be used to ensure soil stabilization until vegetation is successfully reestablished. Mulch will only be obtained from certified weed-free sources. Seeded areas will continue to be monitored and maintained until a successful stand of vegetation is established.

A.3 Regulatory Requirements

Intrastate transmission lines are usually regulated by state agencies. However, compliance with federal environmental regulations is also required. Federal regulations are typically adopted by reference in state regulations, and in some cases state agencies are charged by the federal government with enforcing federal regulations. Cardno was contracted by Caliber to conduct desktop and field studies of the proposed route to demonstrate compliance with all applicable state and federal environmental regulations.

A.3.1 Clean Water Act, Section 404

Section 404 of the Clean Water Act (CWA) charged the U.S. Army Corps of Engineers (USACE) with regulating dredge and fill activities in Waters of the United States (WOTUS). USACE requires a Section 404 permit whenever a navigable water, primary tributary of a navigable water, or a wetland is crossed. The Clean Water Act defines a navigable water as “waters of the United States, including the territorial seas.”

The USACE defines a wetland as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions”. Cardno conducted field surveys of the entire length of the proposed route to identify and survey all waters of the United States and wetlands located within the survey area.

A.3.2 USACE Nationwide Permit 12

The USACE Nationwide Permit 12 authorizes the construction of utility lines and associated facilities in WOTUS, provided the activity does not result in the permanent loss of greater than 0.5 acres of WOTUS, including wetlands.

Nationwide Permit 12 requires a permittee to submit a pre-construction notification prior to commencing construction if any of the following criteria are met:

- The activity involves mechanized land clearing in a forested wetland;
- A Section 10 permit is required to cross a navigable waterbody (as defined in 33 CFR Section 329);
- The utility line exceeds 500 feet in length through any single crossing of a water of the U.S.;
- The utility line is placed within a jurisdictional area (i.e., WOTUS) and it runs parallel to a stream bed that is within that jurisdictional area;
- Discharges result in the permanent loss of greater than 0.1 acres of WOTUS;
- Permanent access roads are constructed above grade in WOTUS for a distance of more than 500 feet;
- Permanent access roads are constructed in WOTUS with impervious materials.

A.3.3 USACE Regional Conditions

The USACE has published several regional conditions that may affect the issuance of a Nationwide Permit 12, including:

- Revocation of use of Nationwide Permits in wetlands classified as peatlands;
- Requirement of Pre-Construction Notification for activities located within 100 feet of a natural spring;
- Requirement of Pre-Construction Notification for activities in the Missouri River, Lake Sakakawea, or Lake Oahe;
- Borrow site identification ensuring that the USACE has the ability to review the site for potential impacts;
- Counter-sinking of culverts and associated riprap to be installed within WOTUS.

The project is not expected to require any other Nationwide Permits.

A.3.4 U.S. Fish and Wildlife Service

The Endangered Species Act of 1973 prohibits impacts to a federally listed or proposed Threatened or Endangered Species. In addition, the Bald and Golden Eagle Protection Act of 1940 and the Migratory Bird Treaty Act of 1918 also prohibit damage to those species included in the acts. In North Dakota, six endangered, five threatened, and two proposed threatened species are listed.

A.4 Methodology

Studies conducted include both a desktop analysis utilizing available literature and geospatial resources, as well as a field survey conducted by qualified environmental scientists. A one-mile buffer around the proposed route was used as the study area, which is composed of approximately 9,401.7 acres. A 250-foot buffer around the proposed route was used as the survey area, which is composed of approximately 193.7 acres.

A.4.1 Wetland Surveys

National Wetland Inventory (NWI) remote mapping for the region indicated the potential presence of several wetlands (USFWS, 2016) located primarily along meandering stream channels. Cardno staff conducted wetland delineations within the survey area using the methodology as outlinedin the 1987 USACE Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory, 1987, Technical Report Y-87-1, USACE Waterways Experiment Station, Vicksburg, MS), and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains (Version 2.0) (ERDC/EL TR-10-1, U.S. Army Engineer Research and Development Center, Vicksburg, MS, 2010) (cumulatively referred to as the “Manual”). The methodology outlined in the Manual requires the three wetland criteria to be met in order for a wetland to be present; that is, the area being evaluated must have a dominance of hydrophytic vegetation, hydric soils, and sufficient hydrology to be identified as a wetland. Any identified wetlands within the survey area were mapped and are included on site layout maps.

A.4.2 Hydrophytic Vegetation

Cardno staff recorded all plants in the vicinity of sampling plots based on their respective strata. Strata are defined as:

- Trees: Woody-stemmed plants with trunk diameter at breast height (DBH) of equal to or greater than three inches – and are identified within 30 feet of the sampling plot;
- Sapling/Shrub: Woody-stemmed plants with trunk DBH of less than three inches – and are identified within 15 feet of the sampling plot;
- Herbaceous: Any non-woody-stemmed plants – and are identified within;
- Woody Vines: Woody-stemmed vines.

Trees were identified in a 30 foot radius of the sampling plot, while sapling/shrubs were identified in a 15 foot radius. Dominant vegetation was assessed for hydrophytic preference. The hydrophytic vegetation criterion is met when more than 50 percent of the dominant plant community is hydrophytic, as determined by species dominance and the assigned species-specific indicator status of the identified species. Table 8-1 shows the indicator status categories for plants.

Table 8-1 Plant Indicator Categories

Indicator Category	Indicator Symbol	Definition
Obligate Wetland Plants	OBL	Plants that occur almost always (estimated probability > 99 percent) in wetlands under natural conditions, but which may also occur rarely (estimated probability <1 percent) in non-wetlands.
Facultative Wetland Plants	FACW	Plants that occur usually (estimated probability >67 percent to 99 percent) in wetlands, but also occur (Estimated probability 1 percent to 33 percent) in non-wetlands.
Facultative Plants	FAC	Plants with a similar likelihood (estimated probability 33 percent to 67 percent) of occurring in both wetlands and non-wetlands.
Facultative Upland Plants	FACU	Plants that occur sometimes (estimated probability 1 percent to <33 percent) in wetlands, but occur more often (estimated probability >67 percent to 99 percent) in non-wetlands.
Obligate Upland Plants	UPL	Plants that occur rarely (estimated probability <1 percent) in wetlands, but occur almost always (estimated probability >99 percent) in non-wetlands under natural conditions.

A.4.3 Wetland Soils

The hydric soils criterion is met when the soils identified in a test pit are officially listed as hydric soils or the soils demonstrate characteristics representative of soils in reducing (hydric) conditions. The latter is determined in the field when the soils fall within the hydric ranges on the Munsell Color Chart, examining soil profiles for other evidence of reducing conditions, and/or observing other indicators of anaerobic activity per the Manual (such as mottling).

A.4.4 Wetland Hydrology

The hydrology criterion is met when sufficient hydrologic indicators are present. The indicators must be representative of sufficient saturation or inundation occurring over the growing season sufficient to support a hydrophytic plant-dominated vegetative community. Such indicators may include evidence of standing water, saturated soils, geomorphic position within the landscape, drainage patterns, water-stained leaves, morphologic adaptation of vegetation, etc.

Indicators may be categorized as either primary (which means one such indicator satisfies the requirement) or as secondary (which requires two such indicators). Indicators are defined by the USACE Manual. Common

hydrologic indicators include the presence of standing surface water, observation of high water table or soil saturation in test pits, water marks on vegetation, or salt crusts on soil surface.

A.4.5 Waterbody Surveys

Waterbodies (including ponds, creeks, or rivers) were identified by the presence of an Ordinary High Water Mark (OHWM). Potential evidence for an OHWM includes open water, natural lines on the banks of a channel, changes in bank soil or vegetation condition, or the presence of debris on vegetation. Linear waterbodies less than 10 feet wide (such as ditches and streams), were surveyed by locating the centerline path of the feature and documenting widths (OHWM to OHWM) at each point. Linear bodies with widths greater than 10 feet had survey points collected on both sides of the channel. Atypical waterbodies, such as ponds, were surveyed using the OHWM around the waterbody.

Flow regime for each mapped waterbody was identified as either perennial, intermittent, or ephemeral based off of field observation by field staff. Perennial streams will typically have water flowing year-round due to the water table being located above the stream bed. Intermittent streams may have flow only during portions of the year due to dry periods forcing the water-table to withdraw below the stream bed. Ephemeral streams do not receive input from the water table, and are only fed by surface runoff.

A.4.6 Noxious Weed Surveys

Noxious weeds are classified as plants of "…foreign origin, is new to, or is not widely prevalent in the United States, and can directly or indirectly injure crops or other useful plants, livestock or the fish and wildlife resources of the United States, or public health" (Federal Noxious Weed Act 1974). Prior to conducting field surveys, Cardno identified the following noxious weeds which may be present within the study area: absinth wormwood (*Artemisia absinthium*), Canada thistle (*Cirsium arvense*), diffuse knapweed (*Centaurea diffusa*), spotted knapweed (*Centaurea maculosa*), Russian knapweed (*Centaurea repens*), field bindweed (*Convolvus arvensis*), leafy spurge (*Euphorbia esula*), purple loosestrife (*Lythrum salicaria*), yellow starthistle (*Centaurea solstitialis*), perennial sowthistle (*Sonchus arvensis*), black henbane (*Hyoscyamus niger*), dalmation toadflax (*Linaria dalmatica*), yellow toadflax (*Linaria vulgaris*), hoary cress (*Cardaria draba*), St. Johnswort (*Hypericum perforatum*), saltcedar (*Tamarix ramosissima*), bull thistle (*Circium vulgare*), musk thistle (*Carduss nutane*), plumeless thistle (*Carduus acanthoides*), Houndstongue (*Cynoglossum officinale*), hemp (*Cannabis sativa*), buckthorn (*Rhamnus cathartica*), common burdock (*Arctium minus*), halogeton (*halogeton glomeratus*), and baby's breath (*Gypsophila paniculata*). Noxious weed populations within the survey area were located with the GPS device and identified to species.

A.4.7 Tree, Sapling, and Shrub Surveys

Cardno biologists determined the number of trees, shrubs, or saplings using several different techniques depending on conditions within the survey area. Clusters of woody vegetation with a DBH ≥ 1inch were mapped with the GPS. Individual species in the cluster were identified and assigned a percentage of composition of the stand. If singular specimens of woody vegetation with DBH ≥ 1 inch were encountered, the individual specimen was located with GPS equipment and identified to species.

A.4.8 Wildlife Surveys

Cardno reviewed USFWS-listed threatened and endangered species for the area prior to beginning field surveys. In addition to identifying potential sightings, Cardno biologists also evaluated habitat for suitability to the listed species. The USFWS has identified the following species as Endangered: black-footed ferret (*Mustela nigripes*), gray wolf (*Canis lupus*), interior least tern (*Sterna antillarum athalassos*), pallid sturgeon (*Scaphirhynchus albus*), Poweshiek skipperling (*Oarisma poweshiek*), and the whooping crane (*Grus americana*). The USFWS also identified the following species as Threatened: Dakota skipper (*Hesperia dacotae*), Northern long-eared bat (*Myotis septentrionalis*), piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*), Sprague's pipit (*Anthus spragueii*), and the western prairie fringed orchid (*Platanthera praeclara*).

Wildlife surveys were completed by field teams during environmental survey efforts. Lack of recorded sightings does not necessarily suggest the presence or absence of a species.

A.4.9 Mapping

Mapping and georeferencing was completed using sub-meter accurate Trimble Geo 7x GPS units. GPS devices were used to record the edges of wetland and woody vegetation stands and the approximate OHWM of waterbodies along both their banks. Wetland data points were also recorded with GPS. Field collected GPS data was collected and mapped in the NAD 1983 State Plane, North Dakota North 3301. ArcMap 10.3 was used to post-process the collected data.

A.5 Survey Results

A.5.1 Vegetation

During the field surveys Cardno biologists identified the typical vegetated habitats along the survey area and recorded the general conditions and major species present in the area. Communities identified included: upland herbaceous, active agricultural crop land, grazing land, and palustrine emergent (PEM) wetlands. The PEM wetlands, though limited in the survey area, were characterized by the dominance of hydrophytic vegetation as discussed above. Representative photos of the different vegetative communities are found in Attachment A.

Active Agricultural Cropland

Active cropland occupied the majority of the survey area, and was dominated by wheat production. Limited inclusion of weedy species or non-agricultural species was also noted. These areas are highly regulated and regularly disturbed by farming activities.

Grazing Land

Grazing areas were typified by cattle grounds with a mix of grasses including: green needle grass (*Nassella viridula*), western wheatgrass (*Pascopyrum smithii*), sideoats grama *(Bouteloua curtipendula*), prairie junegrass (*Koeleria macrantha*) and buffalograss (*Buchloe dactyloides*). The presence of grazing limited the development of shrubs/saplings, as did the trampling of saplings by cattle movement.

Upland Herbaceous

In addition to the grasses found on the grazing lands, additional species identified in the upland regions of the survey area were the prairie rose (*Rosa arkansana*), American plum (*Prunus americana*), western snowberry (*Symphoricarpos occidentalis*), Saskatoon service-berry (*Amelanchier alnifolia*), Russian olive (*Elaeagnus angustifolia*), and bluestem grass (*Andropogon gerardii*).

Palustrine Emergent Wetlands

The PEM wetland vegetative communities were limited to the two identified wetland features in the survey area. Wetland vegetation was primarily common rush (*Juncus effusus*), with additional limited inclusions of water knotweed (*Persicaria amphibia*), sedge species (*Carex spp.),* and cottonwoods (*Populus deltoids*).

A.5.2 Hydrology

Prior to the field survey, the survey area had not received any measurable precipitation for the week prior, but had received over 1.5 inches of precipitation within 10 days of the survey. Stream features in the survey area did however exhibit flowing water. The wetlands identified in the survey area displayed at least one primary indicator as defined by the USACE Manual, including surface water, saturation, and salt crust.

A.5.3 Wetlands

Two wetlands were identified in the survey area by Cardno biologists, accounting for a total of approximately 0.53 acres. Currently, the route is proposed to cross wetland WMK-001 by using an open cut. WMK-002 occurs along a country road which will be crossed using Horizontal Directional Drilling (HDD) during installation of the pipeline. The area to be drilled will be expanded to include the wetland. Wetland WMK-001 is likely considered jurisdictional by the USACE due to its proximity to a stream, while WMK-002 would be considered isolated.

Table 8-2 Delineated Wetlands

Wetland ID	Type of Wetland	Acreage in Survey Area	Acreage in ROW	Length of Crossing (feet)	Crossing Method
WMK-001	PEM	0.23	0.05	50.1	Open Cut
WMK-002	PEM/PFO	0.30	0.08	82.9	HDD
Totals		**0.53**	**0.13**	**133.0**	

WMK-001 is a linear 0.23 acre emergent wetland that crosses the entire survey area near mile marker 1.3. It occurs inside a depression along a perennial stream. Vegetation noted in the area was primarily common rush which is identified as Obligate, according to USDA Plant list for the Great Plains Region. Soils were identified as darkly colored silts and saturated below six inches depth. The surrounding upland was typical for the upland herbaceous communities and lacked the hydrology and soils to be classified as a wetland. No significant wildlife sightings were recorded during the delineation of this feature.

WMK-002 is a linear road-side wetland that runs along the south side of 22nd Street NW. The wetland is primarily open standing water up to six inches deep. Vegetation was again dominated by common rush, but there was additional coverage from limited number of cottonwoods (rated as Facultative) and water knotweed (rated as Obligate). The immediate upland area was an active cropland. No significant wildlife sightings were recorded during the delineation of this feature.

A.5.4 Waterbodies

Cardno identified two waterbodies in the survey area, both were identified as perennial streams. Both stream features were likely to be considered jurisdictional by the USACE due to the perennial flow and presence of an OHWM.

Table 8-3 Delineated Waterbodies

Waterbody ID	Type	Acreage in Survey Area	Acreage in ROW	Length of Crossing (feet)	Width (OHWM to OHWM) (feet)	Crossing Method
SMK-001	Perennial	0.42	0.06	19.8	15	HDD
SMK-002	Perennial	0.49	0.08	77.6	20	N/A
Totals		**0.91**	**0.14**	**97.4**		

SMK-001 is a portion of Spring Creek that meanders through active cattle grazing land on the north side of 23rd Street NW. The water channel was deeply cut and approximately six feet below the surrounding landscape with the banks consisting primarily of exposed soils. The top of bank area was covered in thickets of prairie rose and upland grasses. The flowing portion of the stream was estimated to be 10 feet wide, with varying depths up to 10 inches in some of the oxbow areas. No significant wildlife sightings were recorded during the delineation of this feature.

SMK-002 is another portion of Spring Creek located north of 19th Street NW. The surrounding landscape is recently developed oil and gas infrastructure and upland herbaceous grassland. The feature meandered through the survey area and is crossed three times by the proposed pipeline route. Water flows along a 10 foot wide channel, but did not appear to vary much beyond 6 to 8 inches in depth. The banks of the stream were steeply

cut, with western snowberry and prairie rose occurring along the top of bank. No significant wildlife sightings were recorded during the delineation of this feature. This feature was recorded as part of an alternate tie-in location to the Enable Bear Den Terminal. This alternative is no longer an option, and therefore SMK-002 will not be associated with the Project at this time.

A.5.5 Trees, Sapling, and Shrub Count

The majority of the survey area and ROW are devoid of woody vegetation due to the dominance of cropland and grazing. Limited amounts of mature trees (primarily cottonwoods and American elm (Ulmus americana)) were found within the survey area, as part of either shelterbelts or along stream banks. The shrub stands identified in the field were primarily restricted to the upland buffers around crop lands, on sloped areas that were unfit for crop production. The riparian buffers (features WV-4, WV-5, and WV-6) were found along the banks of SMK-002.

Table 8-4 Woody Vegetation

Feature	Type	Species	Survey Area		ROW	
			Number*	Acreage**	Number*	Acreage**
WV-1	Shelterbelt	Cottonwood	1	-	1	-
WV-2	Shelterbelt	Cottonwood	1	-	0	-
WV-3	Shrub Stand	Saskatoon serviceberry	65%	0.003	N/A	N/A
		American plum	30%		N/A	
WV-4	Riparian Shrub	Western snowberry	75%	0.020	N/A	N/A
		Russian olive	5%		N/A	
WV-5	Riparian Tree	American Elm	1	-	0	-
WV-6	Riparian Tree	American Elm	1	-	0	-
Total			**2**	**0.023**	**0**	**0.000**

* - For shrub stands, percentages are estimated in lieu of numbers.
** - For single trees, acreage was not calculated since it was negligible. For shrub stands, acreage reflects the entire stand.
N/A – Indicates no woody vegetation from the feature occurs in the ROW.

Due to the locations of the delineated woody vegetation stands with respect to the latest proposed pipeline route, none of the woody vegetation will be affected by construction activities. The only feature that occurs within the construction ROW is WV-1, which is a cottonwood near WMK-002 and 22nd Street NW which is expected to be crossed via HDD, which will result in no impact to surface features.

A.5.6 Noxious Weeds

Cardno biologists identified three instances of noxious weeds within the survey area, all of which were identified as Canada thistle. The largest area measured approximately 200 sq-ft. The stands of Canada thistle were densely packed and located in active agricultural areas among crops. To address potential impacts from noxious weeds during pipeline construction, Caliber has developed an Environmental Construction Standards Manual, which is included in Appendix I. Caliber will advise its construction contractor of the specified requirements while conduction active construction to prevent the spread of noxious weeds.

A.5.7 Wildlife

Cardno biologists conducted visual surveys for readily apparent signs of wildlife (both listed and non-listed) while conducting work within the survey area. In addition to looking for individuals of a species, the field teams reviewed the habitat within the area for suitability for wildlife. A lack of sightings does not necessarily suggest that a species is not present, only that it was not observed during the surveys.

Due to the high percentage of the survey area used for agricultural purposes, the sightings of wildlife were limited and restricted to common species. Common species observed are reported in Table 8-5:

Table 8-5 Wildlife Inventory

Type	Common Name	Scientific Name
Bird	Ring-necked Pheasant	*Phasianus colchicus*
Bird	Killdeer	*Charadrius vociferus*
Bird	Turkey vulture	*Cathartes aura*
Bird	Red-winged blackbird	*Agelaius phoeniceus*
Bird	American crow	*Corvus brachyrhunchos*
Bird	American robin	*Tudus migratorius*
Bird	Vesper sparrow	*Pooecetes gramineus*
Mammal	Black-tailed prairie dog	*Cynomys ludovicianus*
Mammal	Mule deer	*Odocoileus hemionus*
Mammal	Coyote	*Canis latrans*

A.5.8 Threatened and Endangered Species

No listed species were observed during the field surveys; however lack of sighting does not necessarily suggest that a species is not present. The species listed below are identified as having historic range within the survey area or in nearby areas with potentially similar habitat.

Black-footed Ferret

No populations of black-footed ferret are found within North Dakota, although the species was introduced into South Dakota and Montana. The primary source of food for the black-footed ferret is prairie dogs, which necessitates large colonies to provide food. The single prairie dog colony located during surveys was not considered large enough to support a ferret population. Based on these findings, impacts to this species are not expected.

Gray Wolf

Due to the prevalence of agricultural activities and human activity in the survey area, gray wolves are not expected to occur in the area. Based on these findings, impacts to this species are not expected.

Interior Least Tern

No suitable habitat was found within the survey area; the closest identified habitat is located along the Missouri River and Lake Sakakawea. Based on these findings, impacts to this species are not expected.

Pallid Sturgeon

No suitable habitat was found within the survey area; the closest identified habitat is located along the Missouri River and Lake Sakakawea. Based on these findings, impacts to this species are not expected.

Poweshiek Skipperling

The poweshiek skipperling is suspected of being extirpated in the state of North Dakota, with isolated sightings in Michigan, Wisconsin, and Manitoba. No suitable habitat was found within the survey area, and no impacts to this species are expected.

Whooping Crane

No whooping cranes were sighted during surveys, and the available cropland and wetlands are not expected to be of sufficient quality to attract whooping cranes. No impacts to this species are expected.

Dakota Skipper

Although critical habitat (consisting of moist bluestem prairie or dry upland prairie species) is located in McKenzie County, it is found over 16 miles to the north of the survey area. The high prevalence of agricultural activity also restricts the use of any marginal habitat which may be present in the survey area. No impacts to this species are expected.

Northern Long-eared Bat

Although northern long-eared bats may occur in the survey area during summer, the habitat found within the survey area was considered of such low quality as to not attract the species. The trees found within the survey area lacked the crevasses, flaking bark, and size criteria which often attract the bats. No impacts to this species are expected.

Piping Plover

Suitable habitat was not observed within the Survey Area; the closest identified habitat is located along the Missouri River and Lake Sakakawea, which are located approximately 17 miles and 40 mile from the Project location, respectively. Based on these findings, impacts to this species are not expected.

Rufa Red Knot

No suitable habitat was found within the survey area; the closest identified habitat is located along the Missouri River and Lake Sakakawea. Based on these findings, impacts to this species are not expected.

Sprague's Pipit

Although potentially marginal habitat was present in the survey area, the agricultural activity and disturbance prevent the Sprague's pipit from using the areas as their breeding grounds. Based on these findings, impacts to this species are not expected.

Bald and Golden Eagle

The bald eagle and golden eagle require tall cliffs or trees for nesting, however no such habitat was identified in the survey area or in the immediate vicinity. Based on these findings, impacts to this species are not expected.

Raptor Species

Evaluations for the presence of raptor species within the survey area were conducted based on the presence of nests and/or suitable nesting habitat. As breeding season for most raptors in North Dakota occurs in the late spring and early fall, raptor nests in the area could have been occupied by breeding pairs at the time of the field survey. No raptor species, nests, or suitable nesting habitat were identified during the field surveys.

A.6 Cumulative Effects

The landscape of the Great Plains has undergone continuous transformation within the last century due to human migration and settlement, cultivation, livestock grazing, fire suppression, heavy hunting, introduction of invasive species, and the development of natural resources, all of which have contributed to habitat loss and environmental degradation.

The survey area is located between two areas of significant industrial development, and is primarily composed of cropland and grazing land. Most of the survey area has been previously disturbed, and no critical habitat was noted during the field survey. The two wetlands and two perennial streams identified during the field survey are

proposed to be crossed by HDD, which would minimize adverse impacts. Woody vegetation was rare within the survey area, and limited to shelterbelts and waterbody banks.

Potential impacts include the spread of noxious weeds, erosion of disturbed sediments, construction related noise, and accidental releases of contaminates. The implementation of best practices and strict adherence to Caliber's Environmental Construction Standards can significantly reduce the risk of environmental impacts, however. Measures developed to mitigate the risks of impacts are included in Section 5 of the Application for Route Permit.

Natural Resources and Wetland
Determination Report
Bear Den Interconnect Pipeline

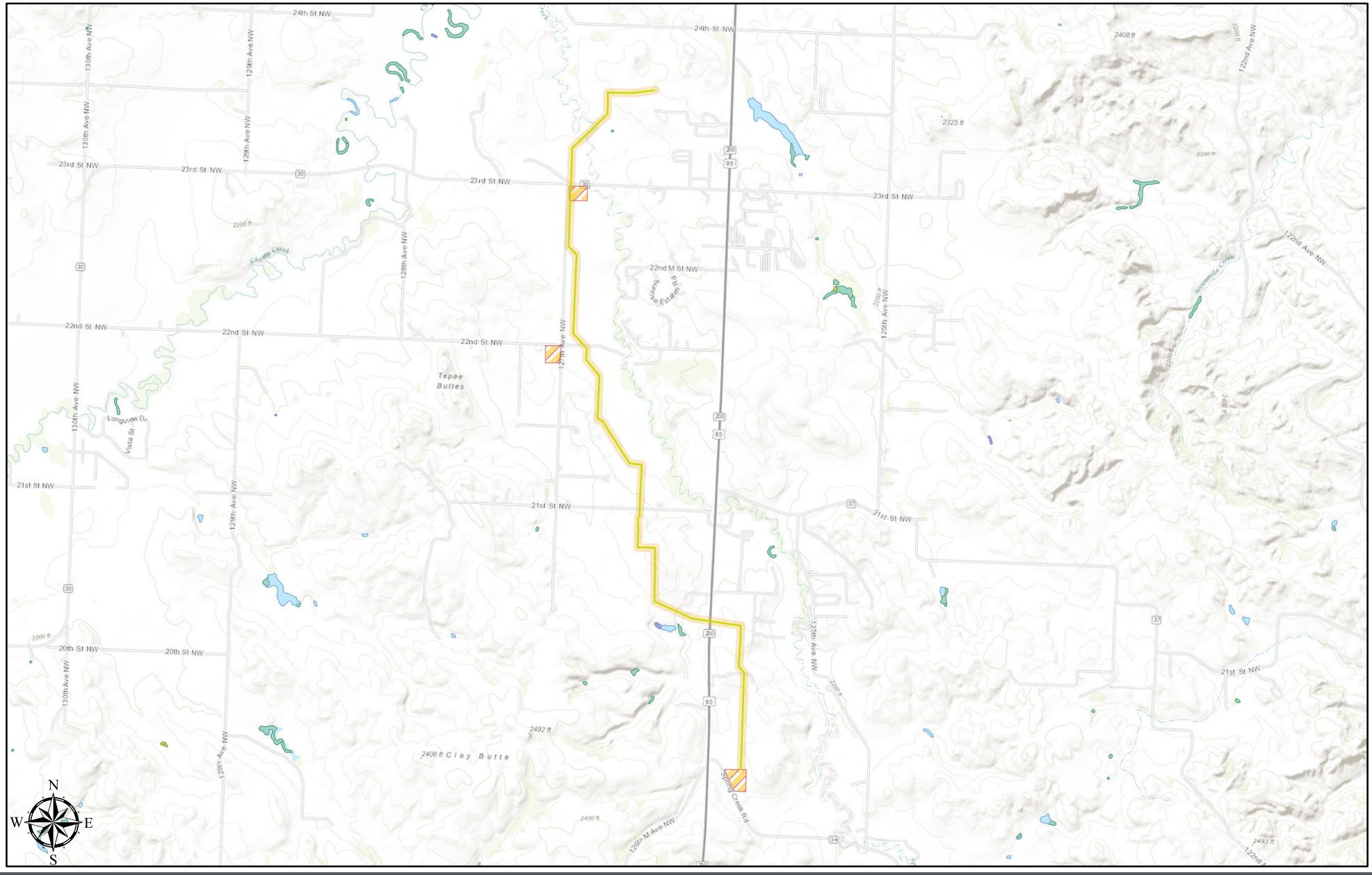
APPENDIX

A-1

FIGURES

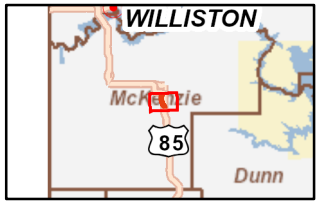
Figure 1

Project Location Map



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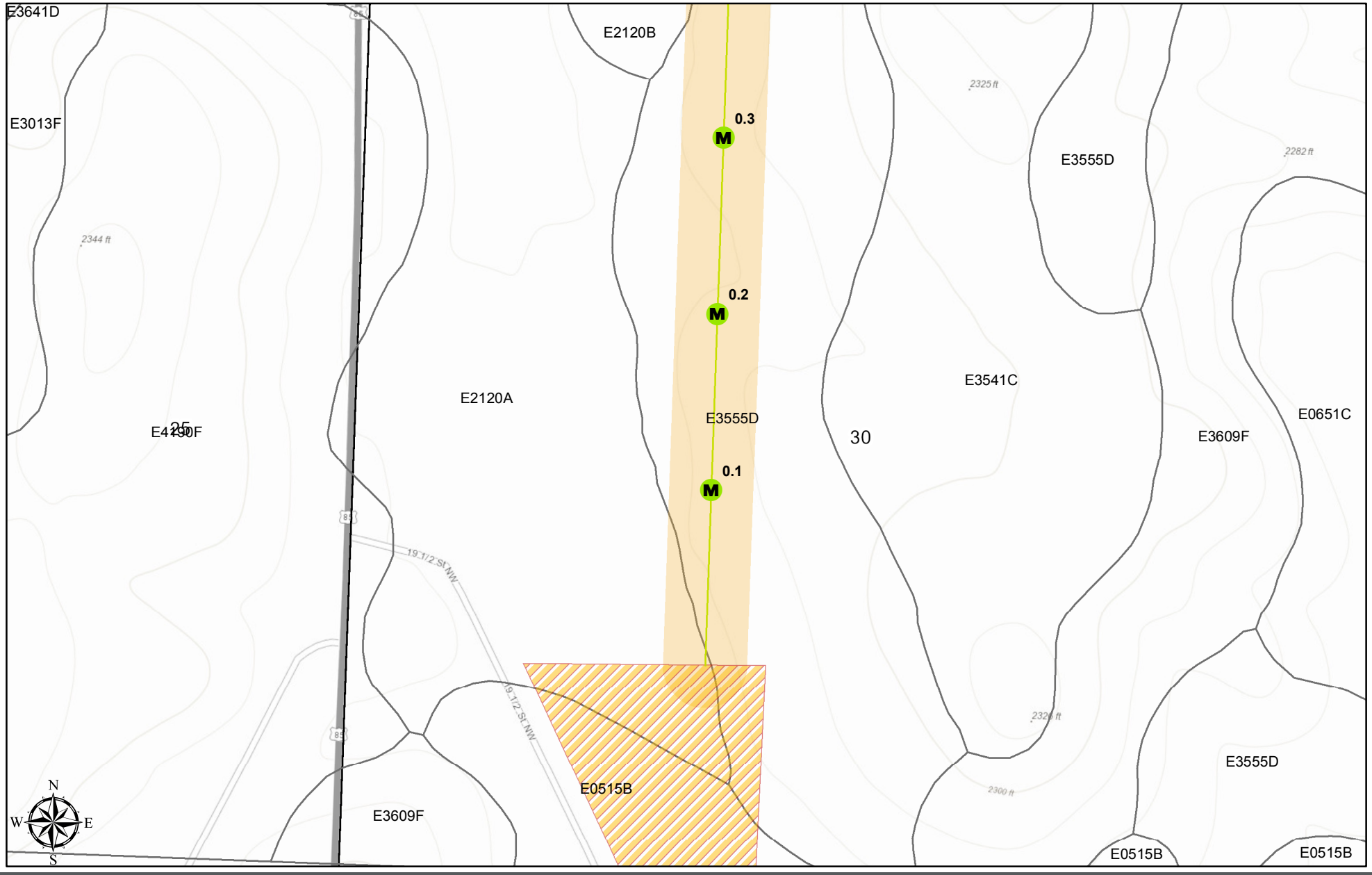
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APPENDIX A MAP 1: PROJECT LOCATION MAP

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T149N, R99W
McKenzie County, ND

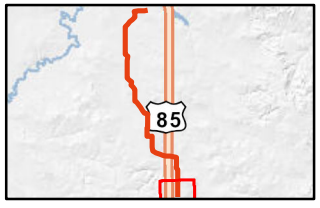
Figure 2

Environmental Resource Maps



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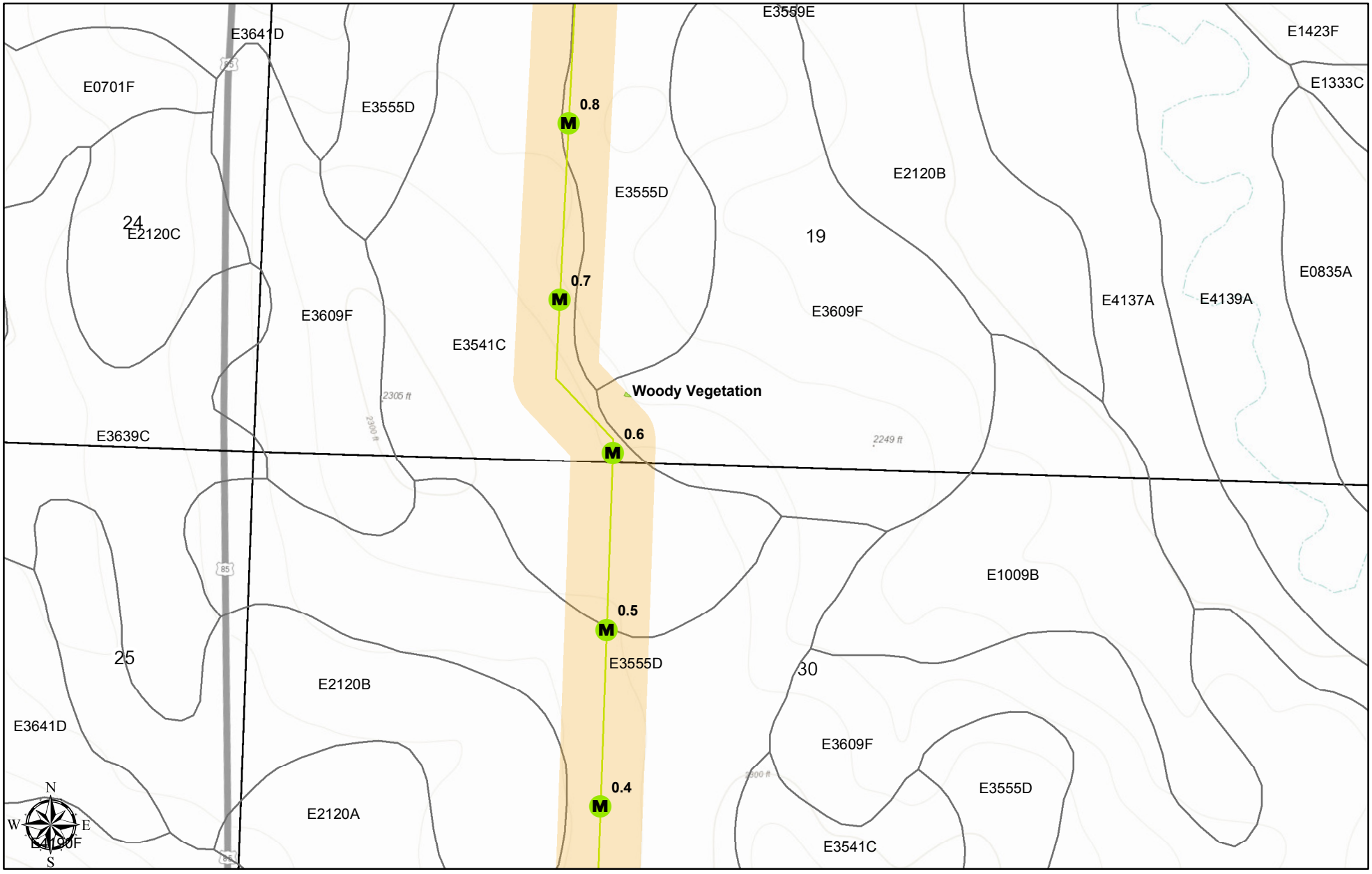


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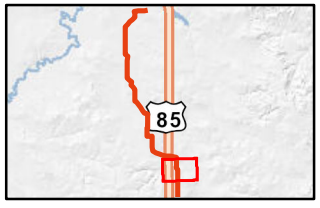
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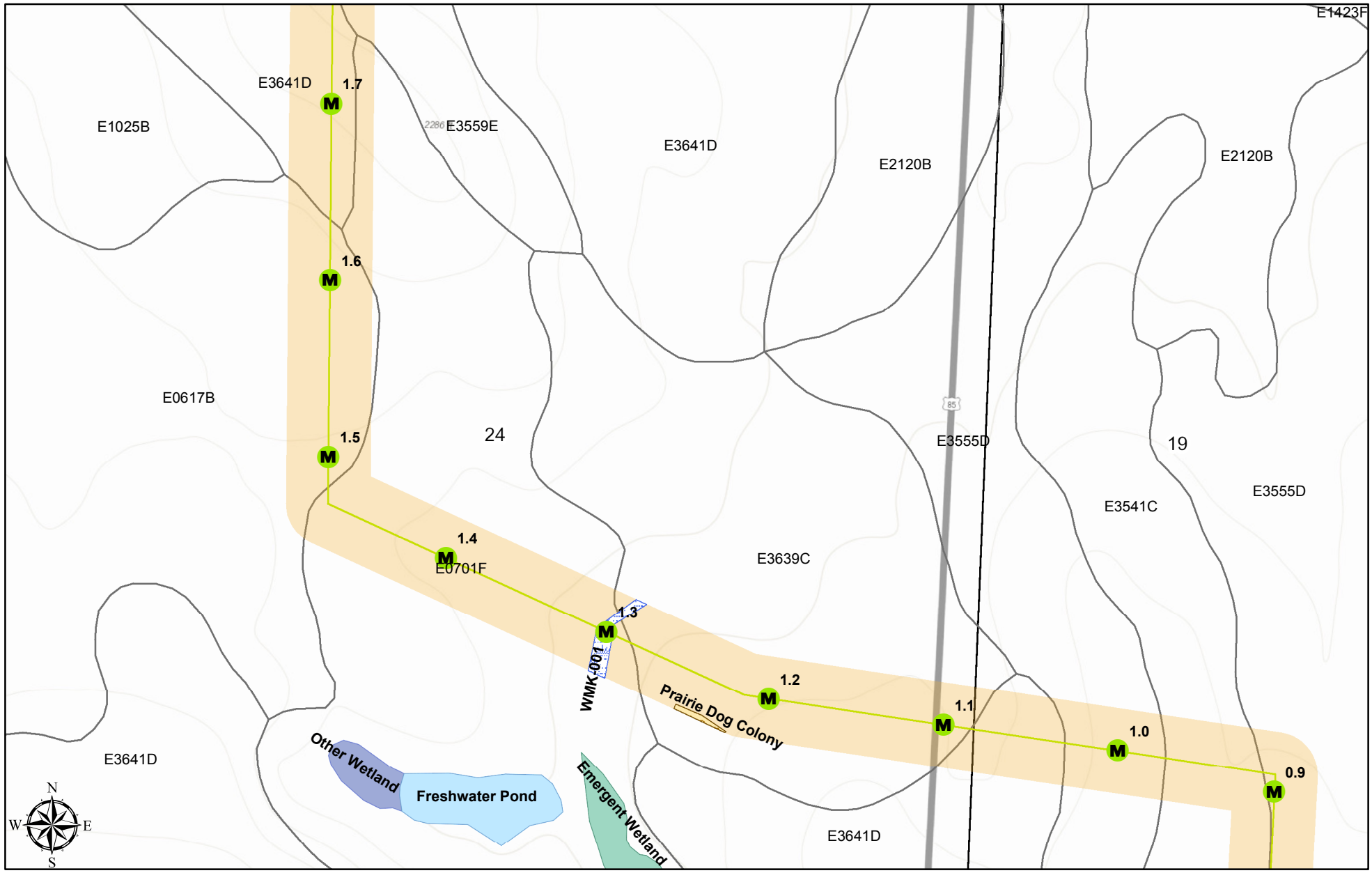


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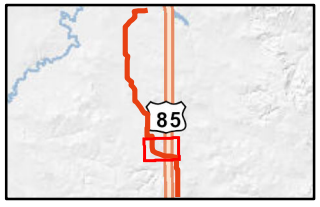
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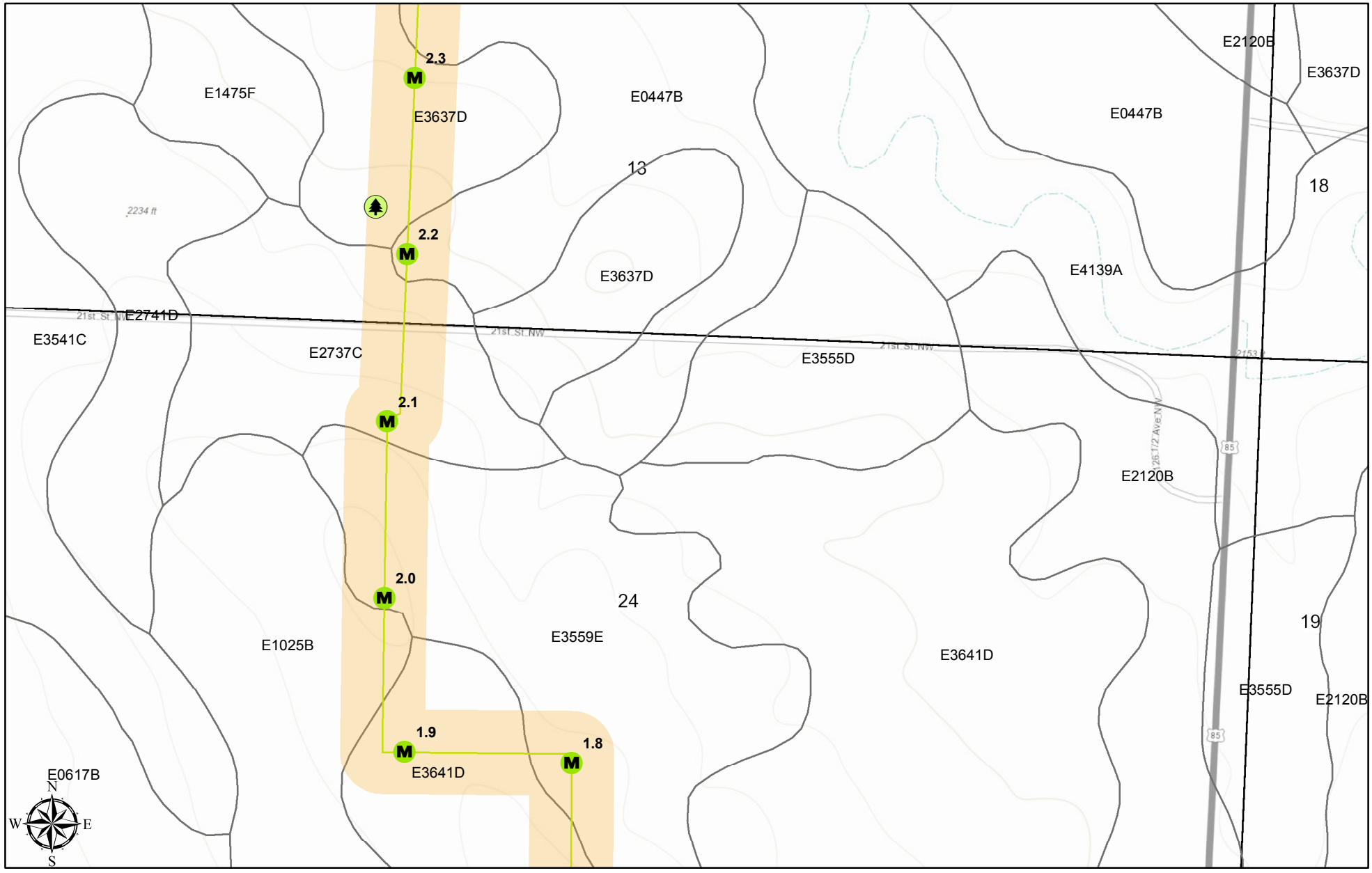


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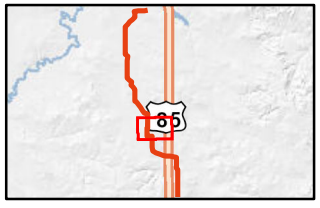
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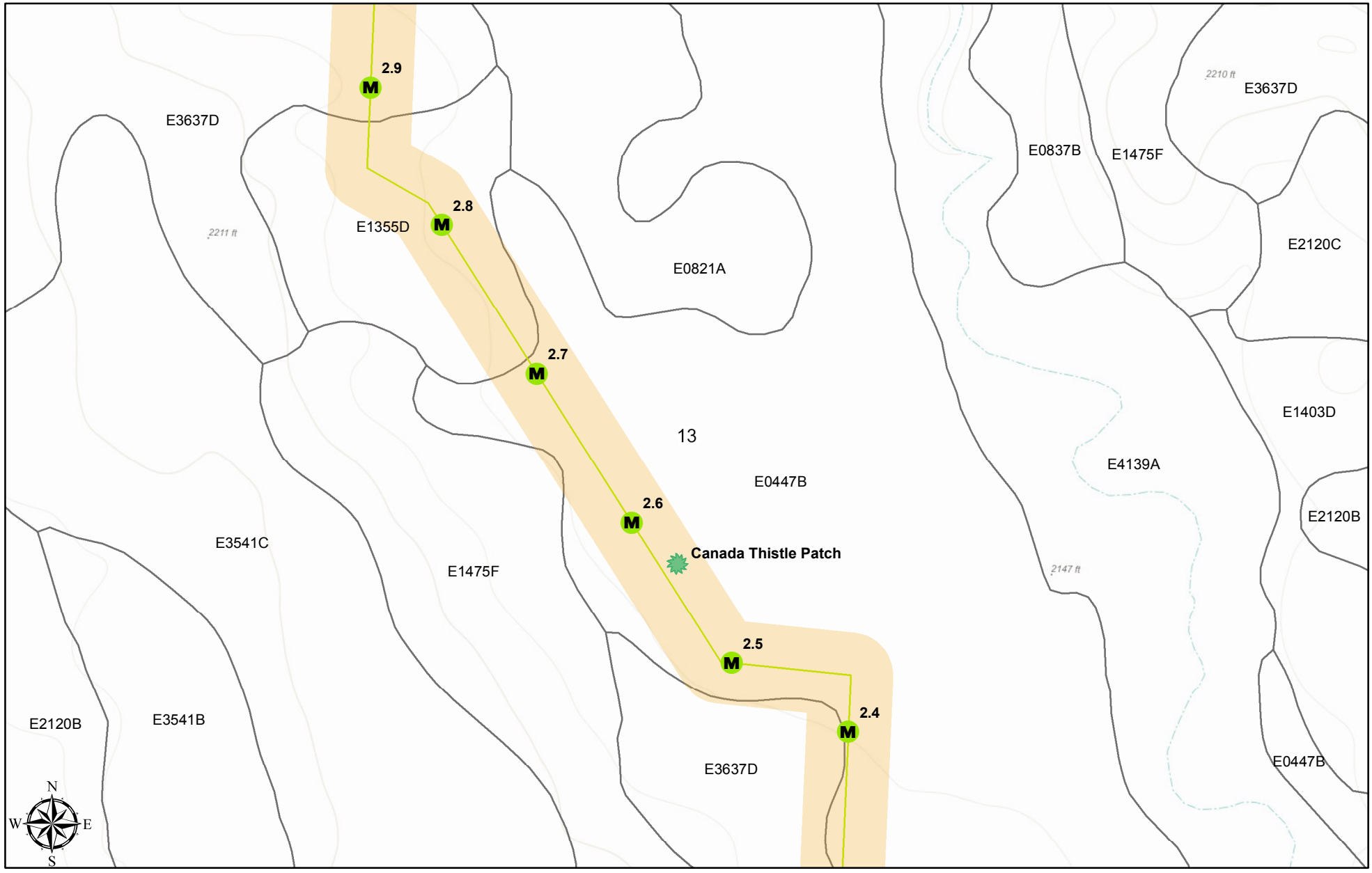
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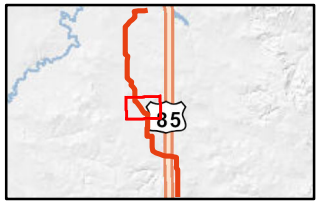
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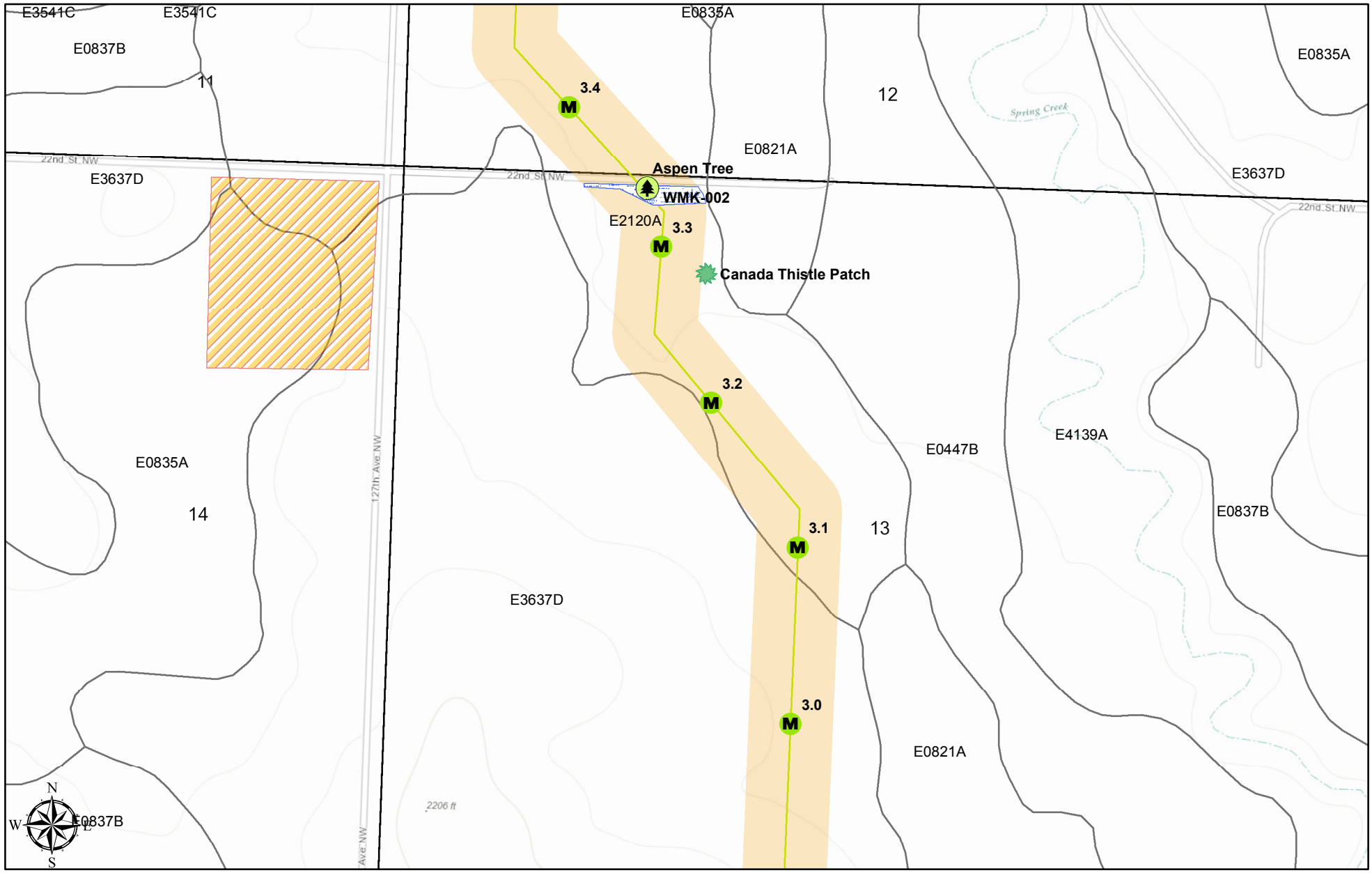


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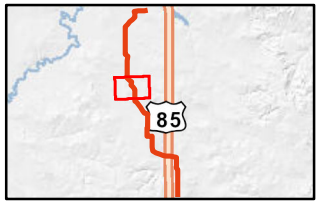
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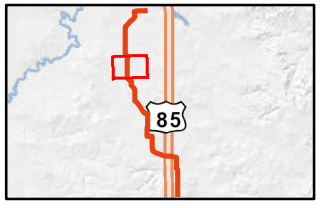
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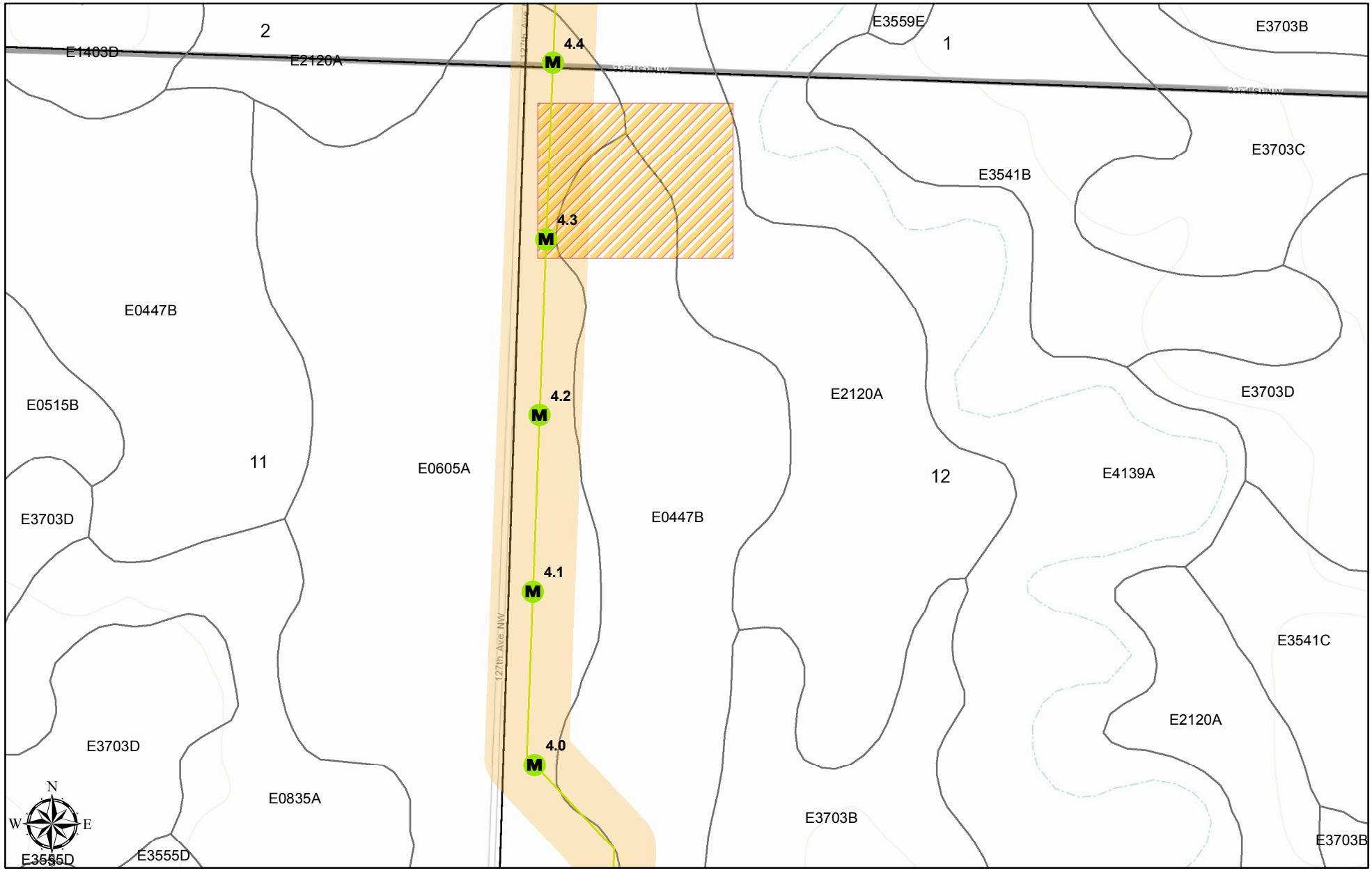


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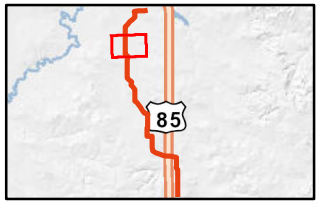
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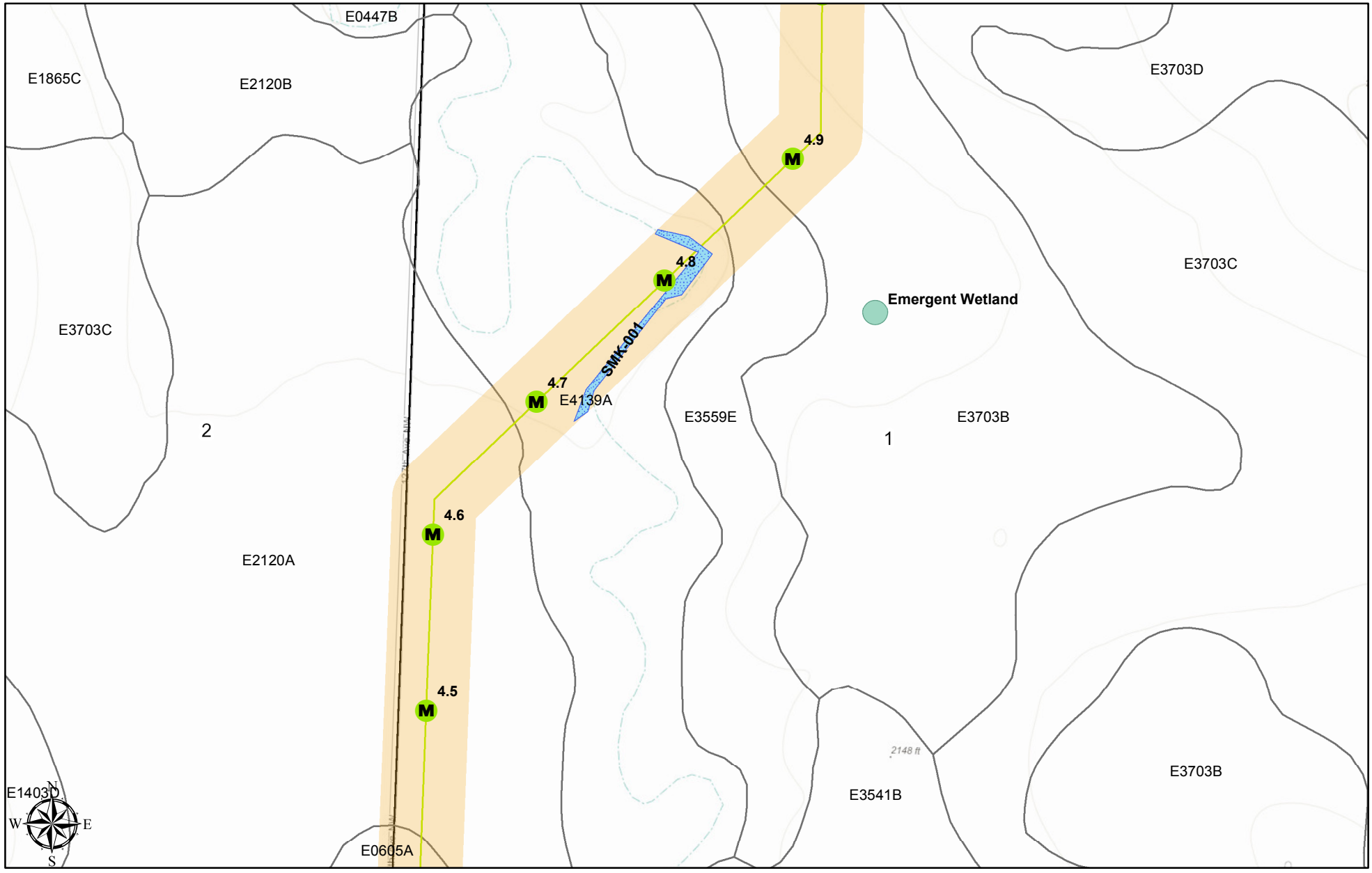


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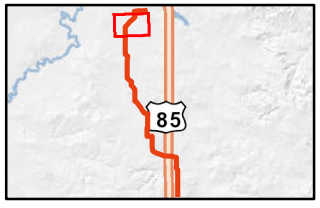
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Williston, ND 58801
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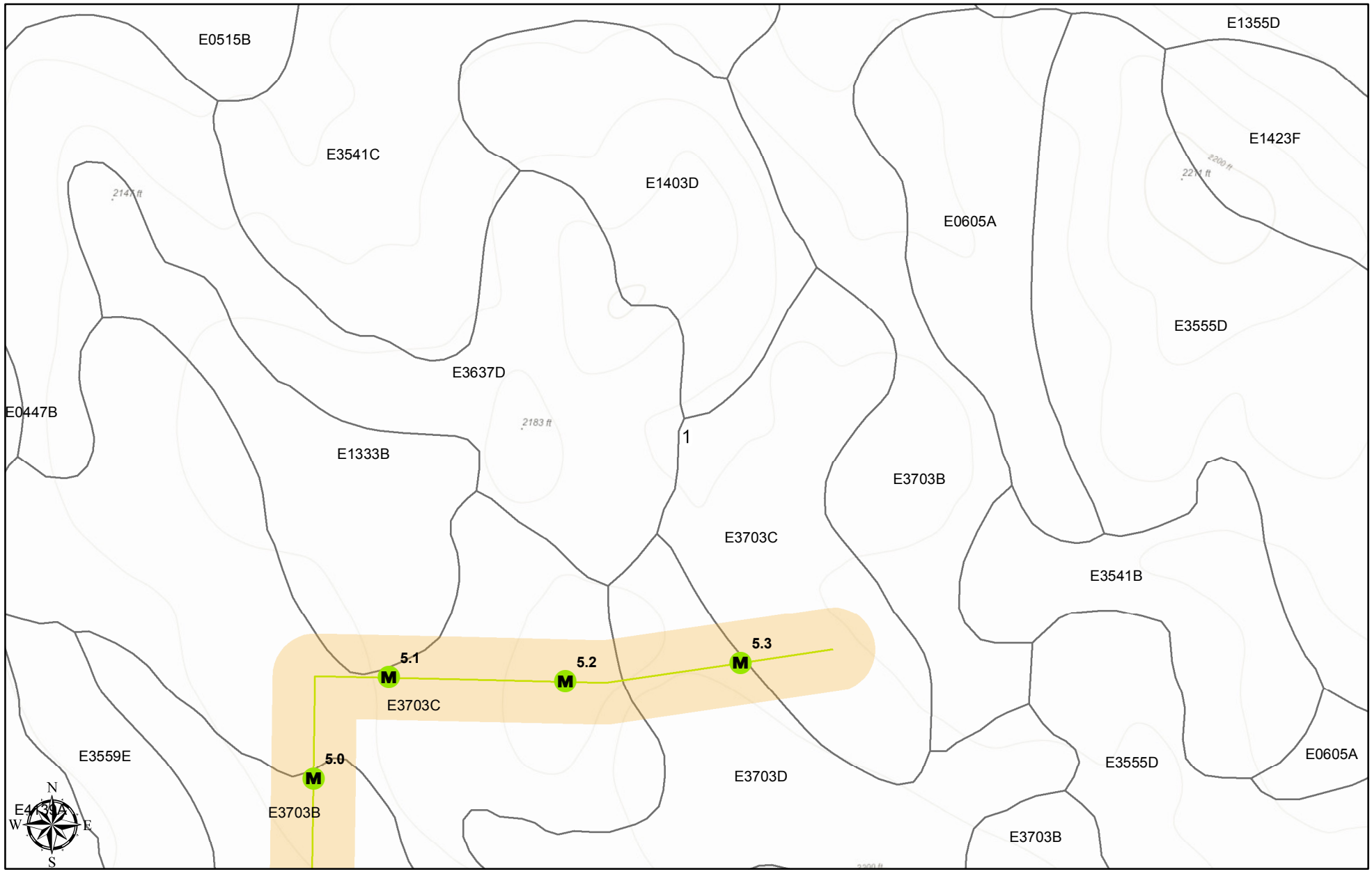


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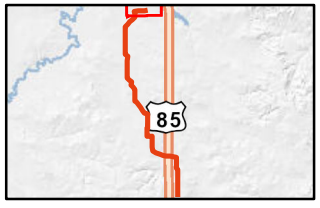
CALIBER BEAR DEN INTERCONNECT, LLC
PROPOSED BEAR DEN INTERCONNECT
APPENDIX A MAP 10

Date 6/29/2016
Scale 1:4,800
Section 1
T149N, R99W
McKenzie County, ND



DATE PLOTTED:6/30/2016 6:14:33 PM BY: REICE.HAASE
FILE: C:\Users\reice.haase\Documents\ArcGIS\BearDenRouteIII.mxd

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CALIBER BEAR DEN INTERCONNECT, LLC
PROPOSED BEAR DEN INTERCONNECT
APPENDIX A MAP 11

Date 6/29/2016
Scale 1:4,800
Section 1
T149N, R99W
McKenzie County, ND

Natural Resources and Wetland
Determination Report
Bear Den Pipeline

APPENDIX

A-2

PHOTOLOG

Bear Den Pipeline, McKenzie County North Dakota
Natural Resource and Wetland Determination Surveys
Photolog
June 2016

Photo: 3984 **Date: 06/07/2016** **Description: Typical photo of active cropland in the Study Area.**	
Photo: 4005 **Date: 06/08/2016** **Description: Typical photo of land used for grazing, with a mix of grasses and lack of significant shrub development.**	

Bear Den Pipeline, McKenzie County North Dakota
Natural Resource and Wetland Determination Surveys
Photolog
June 2016

Photo: 3990 **Date: 06/07/2016** **Description: Typical photo of upland herbaceous grassland with pocket of American plum shrubs.**	
Photo: 4017 **Date: 06/08/2016** **Description: Typical photo of gently sloping terrain with mixed grass vegetation.**	

Bear Den Pipeline, McKenzie County North Dakota
Natural Resource and Wetland Determination Surveys
Photolog
June 2016

Photo: 3995

Date: 06/07/2016

Description: Overview of wetland WMK-001. The white are in the photo was a surficial salt crust. The vegetation was primarily made of rush species (*Juncus* spp.).



Photo: 4017

Date: 06/07/2016

Description: Overview photo of wetland WMK-002 located in a roadside ditch. The mature tree cottonwoods had likely been placed as a shelterbelt that had since flooded.



Bear Den Pipeline, McKenzie County North Dakota
Natural Resource and Wetland Determination Surveys
Photolog
June 2016

Photo: 4013 **Date: 06/08/2016** **Description: Overview stream SMK-001 at the proposed crossing.**	
Photo: 4026 **Date: 06/08/2016** **Description: Overview photo of stream SMK-002 at proposed crossing location.**	

Bear Den Pipeline, McKenzie County North Dakota
Natural Resource and Wetland Determination Surveys
Photolog
June 2016

Photo: 3994 **Date: 06/07/2016** **Description: Prairie dog burrows near the Study Area, immediately west of HWY 85 crossing.**	
Photo: 4000 **Date: 06/07/2016** **Description: Typical scale of Canada thistle population as found in an active crop area.**	

Natural Resources and Wetland
Determination Report
Bear Den Interconnect Pipeline

APPENDIX

A-3

WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Bear Den Pipeline City/County: McKenzie County Sampling Date: 06/07/16

Applicant/Owner: Caliber Midstream State: ND Sampling Point: WMK-001-WET

Investigator(s): Brian Smith and Seth Ryan Section, Township, Range:

Landform (hillslope, terrace, etc.): Old stream bed Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR): LRR F Lat: 47.70856 Long: -103.28766 Datum:

Soil Map Unit Name: Dogtooth-Janesburg-Cabba Complex NWI classification: PEM1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____ Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____ Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?** **Yes X No**
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks: Wetland occurred along an old stream feature that had limited standing water in the Study Area. Flow historically came from a pond/seep located to the southwest that has been dammed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 10' radius)			
1. Juncus effusus	90	Yes	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: 15' radius)			
1.			
2.			
% Bare Ground in Herb Stratum 10	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 90	x 1 = 90
FACW species 0	x 2 = 0
FAC species 0	x 3 = 0
FACU species 0	x 4 = 0
UPL species 0	x 5 = 0
Column Totals: 1 (A)	1 (B)

Prevalence Index = B/A = 1

Hydrophytic Vegetation Indicators:

X 1 – Rapid test for Hydrophytic Vegetation

X 2 – Dominance Test is >50%

X 3 – Prevalence Index is ≤3.0[1]

___ 4 – Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WMK-001-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	100					Silt	Gravel mixed into soil
6-18	10YR 4/2	80	10YR 4/6	20	C	M	Sandy Silt	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRRI, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRRH outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- X Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): 2

Water Table Present? Yes X No ____ Depth (inches): 12

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 6

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Bear Den Pipeline City/County: McKenzie County Sampling Date: 06/07/16

Applicant/Owner: Caliber Midstream State: ND Sampling Point: WMK-001-UPL

Investigator(s): Brian Smith and Seth Ryan Section, Township, Range:

Landform (hillslope, terrace, etc.): Open field Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR): LRR F Lat: 47.70849 Long: -103.28728 Datum:

Soil Map Unit Name: Dogtooth-Janesburg-Cabba Complex NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____ Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____ Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	**Is the Sampled Area within a Wetland?** **Yes ____ No X**
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks: Wetland occurred along an old stream feature that had limited standing water in the Study Area. Flow historically came from a pond/seep located to the southwest that has been dammed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 10' radius)			
1. Andropogon gerardii	70	Yes	FACU
2. Buchloe dactyloides	20	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: 15' radius)			
1.			
2.			
% Bare Ground in Herb Stratum 10	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 – Rapid test for Hydrophytic Vegetation

___ 2 – Dominance Test is >50%

___ 3 – Prevalence Index is ≤3.0[1]

___ 4 – Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ____ No X**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WMK-001-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-18	2.5Y 4/3	100					Silty Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRRI, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRRH outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): 0

Water Table Present? Yes _____ No X Depth (inches): N/A

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): N/A

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Bear Den Pipeline City/County: McKenzie County Sampling Date: 06/07/16

Applicant/Owner: Caliber Midstream State: ND Sampling Point: WMK-002-WET

Investigator(s): Brian Smith and Seth Ryan Section, Township, Range:

Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR): LRR F Lat: 47.73233 Long: -103.30095 Datum:

Soil Map Unit Name: Farnuf Loam NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____ Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____ Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?** **Yes X No**
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks: Wetland occurs in roadside ditch that seems to retain water.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus deltoides	5	Yes	FAC
2.			
3.			
4.			
5.			
	5 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 10' radius)			
1. Juncus effusus	95	Yes	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: 15' radius)			
1.			
2.			
% Bare Ground in Herb Stratum 5	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 95	x 1 = 95
FACW species 0	x 2 = 0
FAC species 5	x 3 = 15
FACU species 0	x 4 = 0
UPL species 0	x 5 = 0
Column Totals: 100 (A)	110 (B)

Prevalence Index = B/A = 1.1

Hydrophytic Vegetation Indicators:

X 1 – Rapid test for Hydrophytic Vegetation

X 2 – Dominance Test is >50%

X 3 – Prevalence Index is ≤3.0[1]

___ 4 – Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WMK-002-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3		100					Muck	
3-12	10YR 4/1	100					Silty clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- X 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRRI, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRRH outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): 2

Water Table Present? Yes X No ____ Depth (inches): 12

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 6

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Bear Den Pipeline City/County: McKenzie County Sampling Date: 06/07/16

Applicant/Owner: Caliber Midstream State: ND Sampling Point: WMK-002-UPL

Investigator(s): Brian Smith and Seth Ryan Section, Township, Range:

Landform (hillslope, terrace, etc.): Open field Local relief (concave, convex, none): Convex Slope (%): 1

Subregion (LRR): LRR F Lat: 47.73247 Long: -103.30098 Datum:

Soil Map Unit Name: Farnuf Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____ Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____ Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area within a Wetland?** **Yes** **No X**
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	

Remarks: Upland data point taken across road from wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 10' radius)			
1. Andropogon gerardii	60	Yes	FACU
2. Buchloe dactyloides	5	No	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	65 = Total Cover		
Woody Vine Stratum (Plot size: 15' radius)			
1.			
2.			
% Bare Ground in Herb Stratum 35	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 – Rapid test for Hydrophytic Vegetation

___ 2 – Dominance Test is >50%

___ 3 – Prevalence Index is ≤3.0[1]

___ 4 – Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** **No X**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WMK-002-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-18	2.5Y 4/3	100					Silty Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRRI, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRRH outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): 0

Water Table Present? Yes _____ No X Depth (inches): N/A

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): N/A

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIX B
CULTURAL RESOURCES REPORT



Privileged and Confidential:

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APPENDIX C
AGENCY NOTIFICATIONS AND CONSULTATION



Cardno
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McKENZIE COUNTY UTILITY APPLICATION

Revised October 6th, 2015

Permit # CB070116JS

Permit Type: Temporary
(Please circle one) Permanent

Caliber Bear Den Interconnect, LLC
Utility Company Name

of

1200 17th Street, Suite 2100 Denver, CO 80202
Address, City, State & Zip

Route*	Section # From	Section # To	Township (N) From	Township (N) To	Range (W) From	Range (W) To	*For Official Use Only* Type of Crossing	Fee
CR 30	1	12	T-149-N	T-149-N	R-99-W	R-99-W	Bore	1,000.00
22nd St	12	13	T-149-N	T-149-N	R-99-W	R-99-W	Bore	1,000.00
21st St	13	24	T-149-N	T-149-N	R-99-W	R-99-W	Bore	1,000.00
State 85	24	19	T-149-N	T-149-N	R-99-W	R-98-W	—	—
Section	19	30	T-149-N	T-149-N	R-98-W	R-98-W	Section	25.00
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	---	---	-----	-----	-----	-----		
							Total Fee:	3,025.00

*Enter the County Route # or Street Name. If it is simply a section line crossing, enter "Section Line"

Attach Maps and Construction Plans
At a minimum, acceptable plans will include method of crossing existing roads or section lines and size and material used for the buried facility.

Email Address JSKAARE@CALIBERMIDSTREAM.com

Signature of Authorized Agent of Utility Company — Date 6/28/16

Jeffrey L. Skaare — 701 590 3995
Printed Name of Authorized Agent of Utility Company — Telephone Number

WHERE SHOULD THE APPROVED PERMIT BE SENT TO:

Caliber Bear Den Interconnect, LLC
Company Name or Agent Name — Telephone Number

PO Box 710
Address

Address

Alexander, ND 58831
City, State & Zip Code

PERMIT APPROVED

JUL 01 2016

If you require additional pages for your request, idicate your total number of pages.

Page of Total # Pages

of

Approval Stamp

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06/16/2016

7012 3460 0000 6403 2620

Robert Fode
Project Development Director
North Dakota Department of Transportation
608 East Boulevard Avenue
Bismarck, ND 58505-0700



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- [illegible]

1.

Robert Fode
Project Development Director
North Dakota Department of Transportation
608 East Boulevard Avenue
Bismarck, ND 58505-0700

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X
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☐ Addressee

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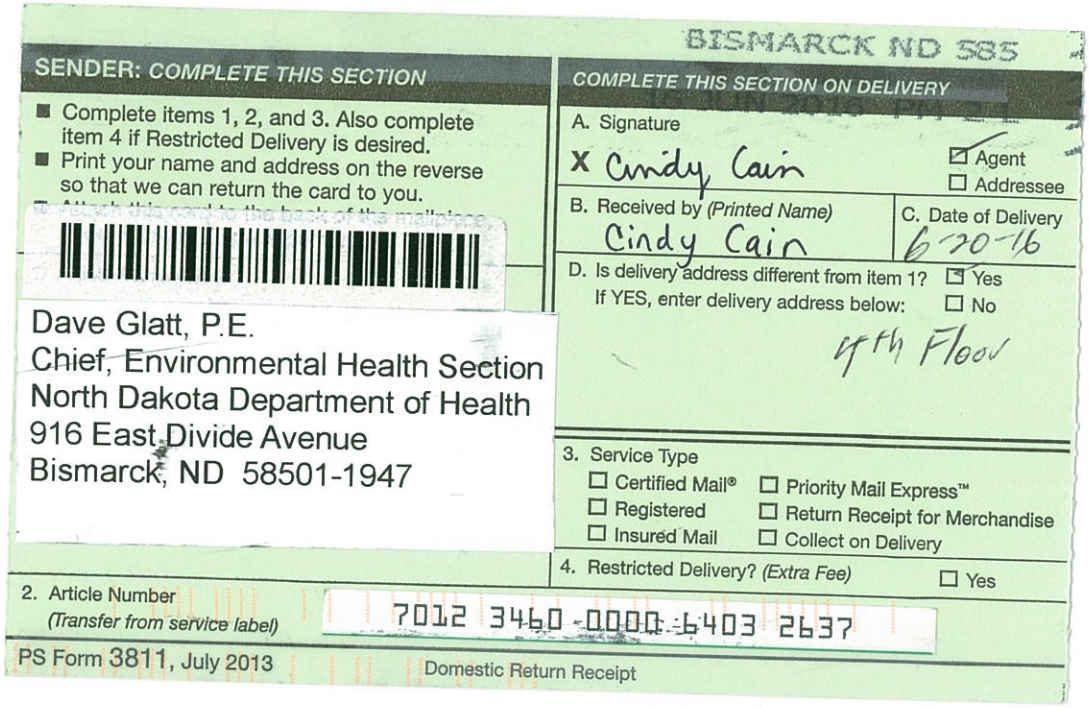
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06/16/2016

7012 3460 0000 6403 2637

Sent To: Dave Glatt, P.E.
Street, Apt. No. or PO Box No.: Chief, Environmental Health Section
City, State, ZIP: North Dakota Department of Health
916 East Divide Avenue
Bismarck, ND 58501-1947

PS Form 3800



BISMARCK ND 585

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Dave Glatt, P.E.
Chief, Environmental Health Section
North Dakota Department of Health
916 East Divide Avenue
Bismarck, ND 58501-1947

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Cindy Cain ☑ Agent ☐ Addressee

B. Received by (Printed Name): Cindy Cain
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4th Floor

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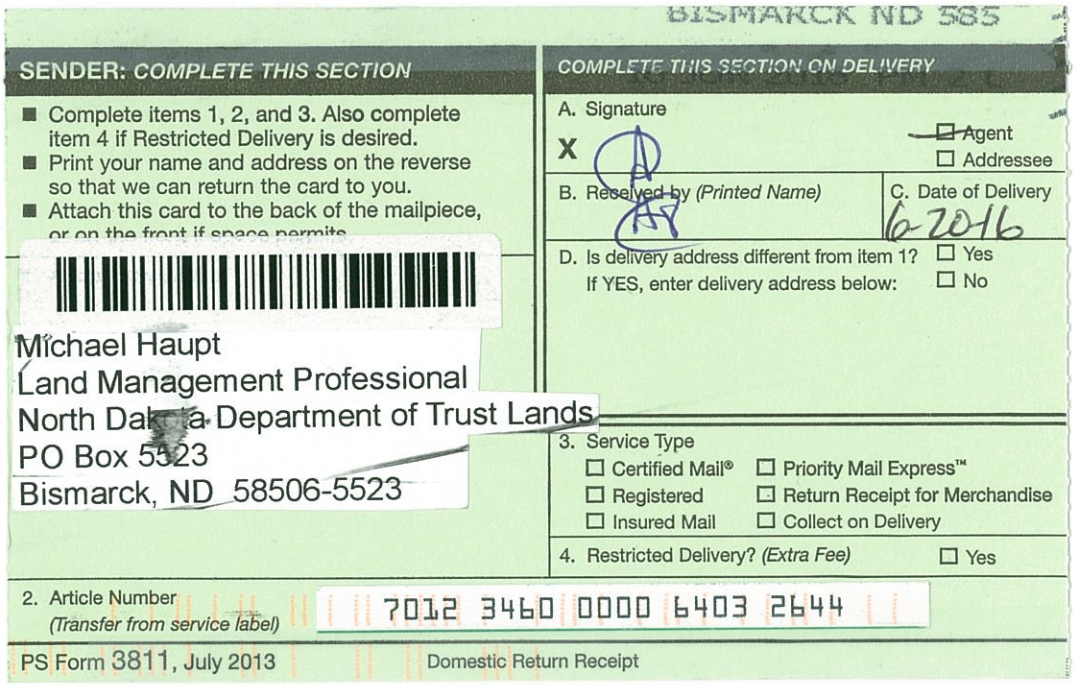
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06/16/2016

Sent
Michael Haupt
Land Management Professional
Stree
or P
North Dakota Department of Trust Lands
City,
PO Box 5523
PS F
Bismarck, ND 58506-5523

7012 3460 0000 6403 2644



BISMARCK ND 585

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Michael Haupt
Land Management Professional
North Dakota Department of Trust Lands
PO Box 5523
Bismarck, ND 58506-5523

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☐ Agent
☐ Addressee

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C. Date of Delivery
6-2016

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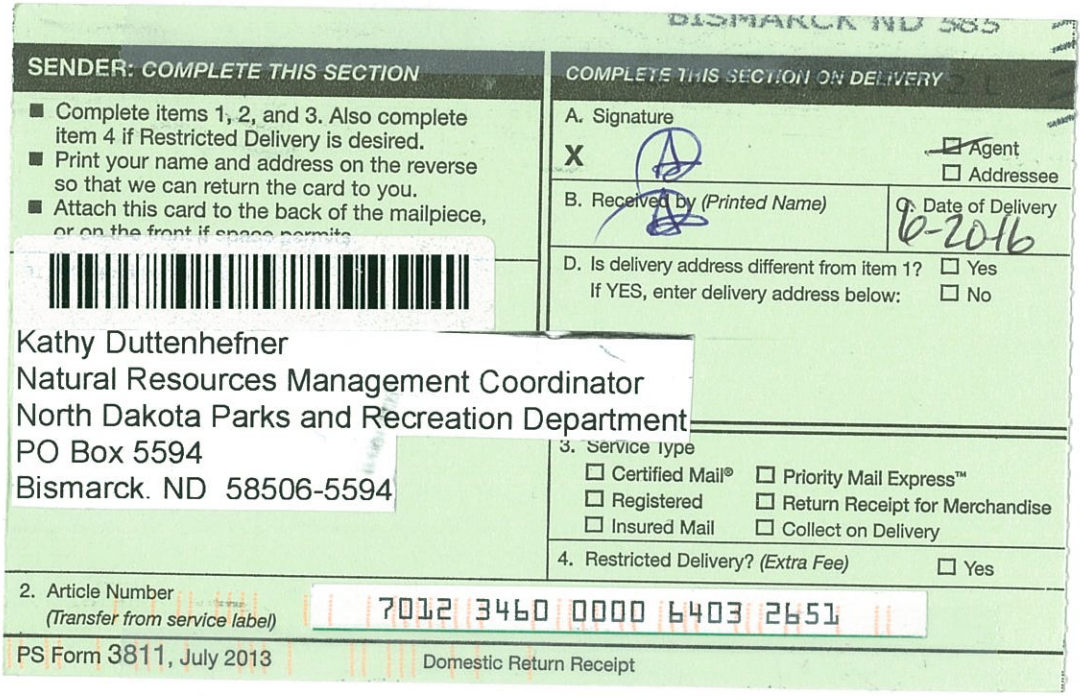
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7012 3460 0000 6403 2651

Kathy Duttenhefner
Natural Resources Management Coordinator
North Dakota Parks and Recreation Departmen
PO Box 5594
Bismarck. ND 58506-5594



BISMARCK ND 585

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Kathy Duttenhefner
Natural Resources Management Coordinator
North Dakota Parks and Recreation Department
PO Box 5594
Bismarck. ND 58506-5594

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X ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* C. Date of Delivery 6-2016

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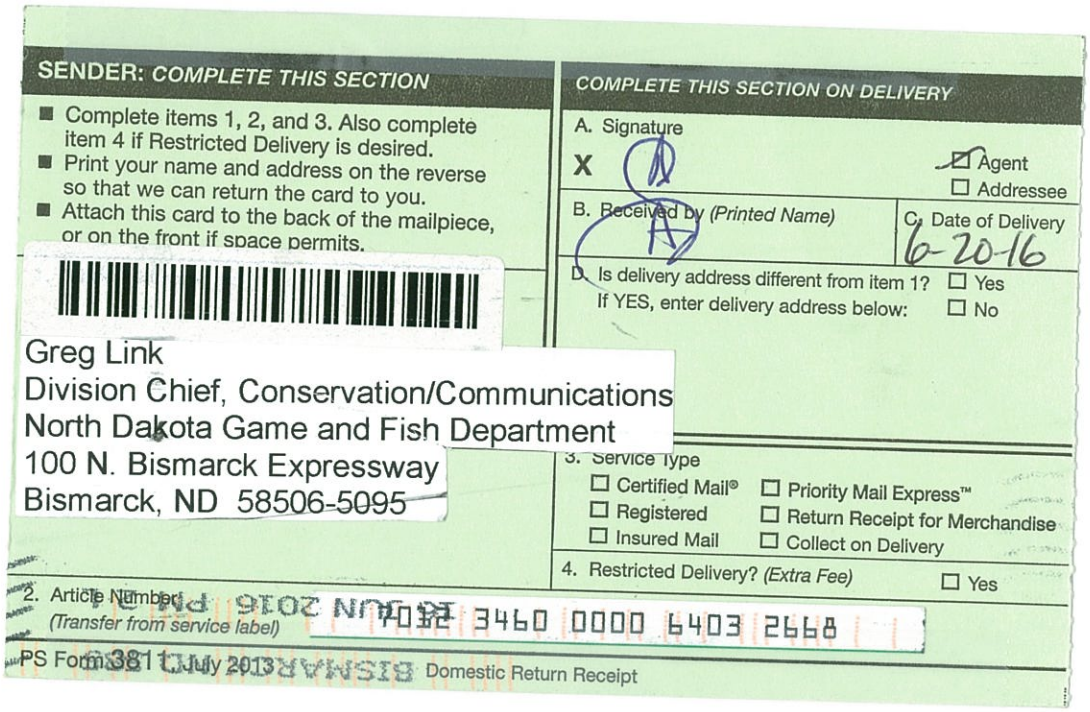
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Greg Link
Division Chief, Conservation/Communications
North Dakota Game and Fish Department
100 N. Bismarck Expressway
Bismarck, ND 58506-5095



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Greg Link
Division Chief, Conservation/Communications
North Dakota Game and Fish Department
100 N. Bismarck Expressway
Bismarck, ND 58506-5095

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☐ Addressee

B. Received by (Printed Name)

C. Date of Delivery
6-20-16

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or PC
City,
PS Fo

Linda Weispfenning
Water Resource Planner
North Dakota State Water Commission
900 East Boulevard Avenue, Dept 770
Bismarck. ND 58505-0850

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Linda Weispfenning
Water Resource Planner
North Dakota State Water Commission
900 East Boulevard Avenue, Dept 770
Bismarck. ND 58505-0850

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Karen Heinert ☑ Agent ☐ Addressee

B. Received by *(Printed Name)* Karen Heinert C. Date of Delivery 6-17-16

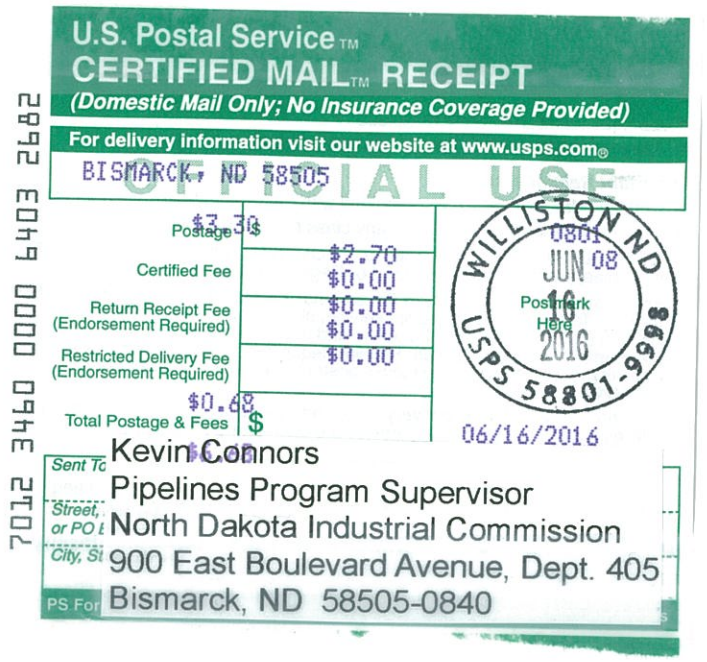
D. Is delivery address different from item 1? ☐ Yes
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Total Postage & Fees	$0.88

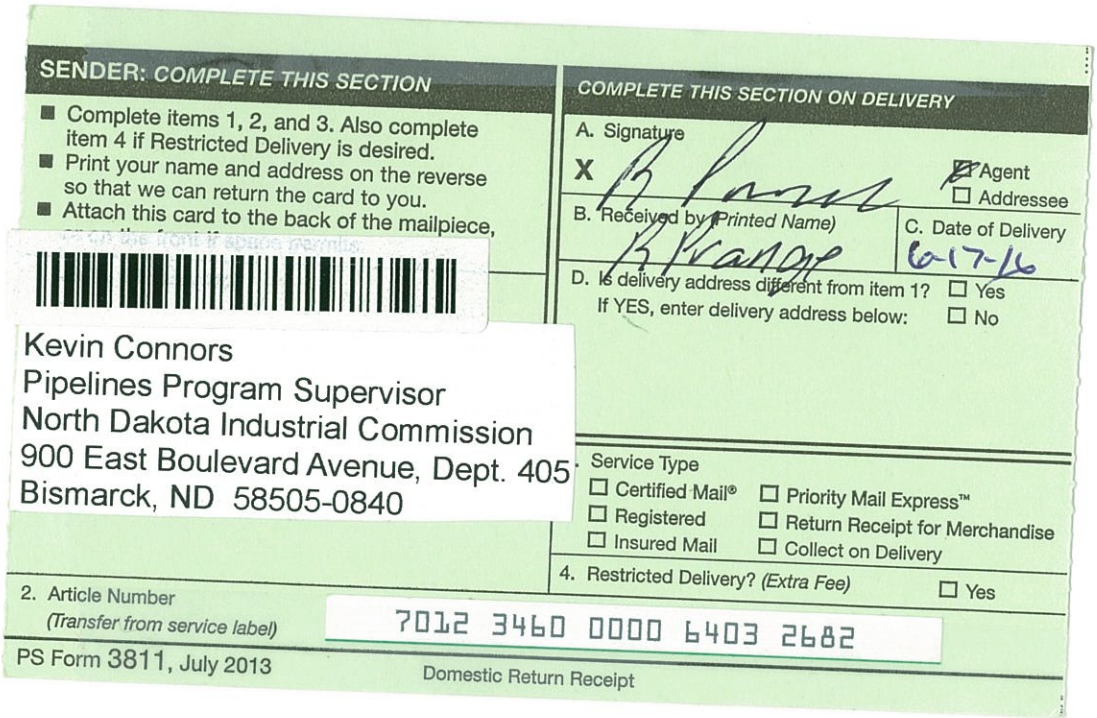
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06/16/2016

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Sent To Kevin Connors
Street, or PO Box Pipelines Program Supervisor
City, State North Dakota Industrial Commission
900 East Boulevard Avenue, Dept. 405
Bismarck, ND 58505-0840



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Kevin Connors
Pipelines Program Supervisor
North Dakota Industrial Commission
900 East Boulevard Avenue, Dept. 405
Bismarck, ND 58505-0840

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☑ Agent ☐ Addressee

B. Received by (Printed Name) [signature] C. Date of Delivery 6-17-16

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

Service Type
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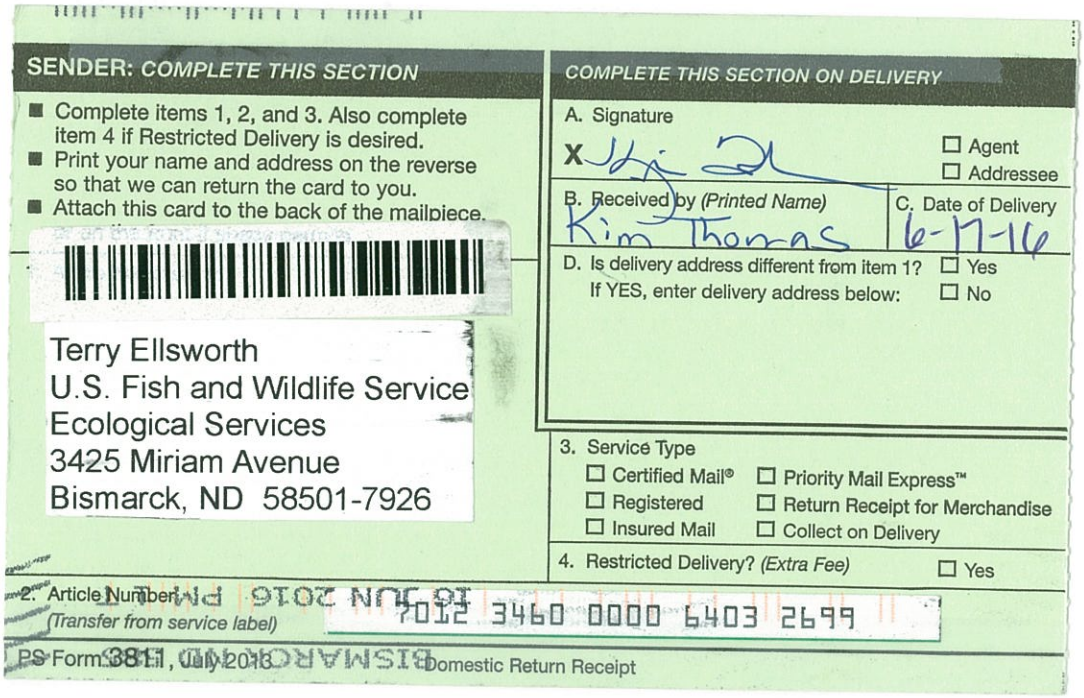
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Return Receipt Fee (Endorsement Required) $0.00
Restricted Delivery Fee (Endorsement Required) $0.00
Total Postage & Fees $0.47
Postmark Here
WILLISTON ND 0801 JUN 08 16 2016
USPS 58801-9998
06/16/2016
Sent To
Terry Ellsworth
U.S. Fish and Wildlife Service
Ecological Services
3425 Miriam Avenue
Bismarck, ND 58501-7926
Street, Apt. or PO Box
City, State,
PS Form 38 ... Instructions
7012 3460 0000 6403 2699



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Terry Ellsworth
U.S. Fish and Wildlife Service
Ecological Services
3425 Miriam Avenue
Bismarck, ND 58501-7926

COMPLETE THIS SECTION ON DELIVERY
A. Signature
X
☐ Agent
☐ Addressee
B. Received by (Printed Name) Kim Thomas
C. Date of Delivery 6-17-16
D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
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☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ Collect on Delivery
4. Restricted Delivery? (Extra Fee) ☐ Yes
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McKenzie County Weed Control Board

Sir/Madame,
After review of your noxious weed containment plan, I have found that it meets all North Dakota and McKenzie County Weed Law requirements.

PLEASE PRINT AND ATTACH THIS EMAIL TO YOUR C.U.P. TO SHOW YOU HAVE COMPLIED WITH STATE AND COUNTY WEED LAW FOR ERADICATION AND CONTAINMENT OF McKenzie COUNTY NOXIOUS WEEDS.

Also, remember that your property will be periodically and randomly inspected for compliance with your proposed form of weed control – so please be diligent in your efforts to help us with this problem.

Thank you for helping in our continuing efforts to keep McKenzie County noxious weed free.

Sincerely,

Amber Higgins

McKenzie County Weed Officer
Office 701-842-4131
Fax 701-842-4731

McKenzie County Office of Emergency Management

Skip Vest

From: Sandee Griffin
Sent: Wednesday, June 22, 2016 10:46 AM
To: Skip Vest
Subject: Emergency Response Manager - Response

From: Karolin Jappe <kjappe@co.mckenzie.nd.us>
Date: June 7, 2016 at 3:17:31 PM CDT
To: Jeffrey Skaare <jskaare@calibermidstream.com>
Subject: Request for Comment

Jeff:

I have met with Skip and we are good to go.

Karolin Jappe
McKenzie County
Emergency Manager
Watford City, North Dakota
701.444.3616, ext 1045
Cell: 701.580.6936
www.facebook.com/McKenzieCountyDES

From: Karolin Jappe
Sent: Monday, June 06, 2016 4:11 PM
To: 'Jeffrey Skaare'
Subject: RE: Request for Comment

Jeff:

I would prefer to visit with you about your Emergency Operations Plan as I have a hard time keeping up on numerous EOP's in our County and also plan to do some sort of an exercise with Caliber Midstream within the next year. It does not have to be a full blown out exercise, but one that shows me that we are both prepared if anything were to occur.

Karolin Jappe
McKenzie County
Emergency Manager
Watford City, North Dakota
701.444.3616, ext 1045
Cell: 701.580.6936
www.facebook.com/McKenzieCountyDES

From: Jeffrey Skaare [mailto:jskaare@calibermidstream.com]
Sent: Friday, May 27, 2016 2:13 PM
To: Karolin Jappe
Cc: Sandee Griffin
Subject: Request for Comment

Greetings Karolin:

Please see the attached letter.

Sincerely,

Jeffrey L. Skaare, J.D., R.P.L.
Operations Manager
Caliber Midstream
jskaare@calibermidstream.com
(701) 590-3995 cell

McKenzie County Rural Fire Department

CALIBER MIDSTREAM

1200 17TH STREET • SUITE 2100
DENVER, CO 80202
PHONE: 303-628-1410 • FAX: 303-628-1420
WWW.CALIBERMIDSTREAM.COM

REQUEST FOR COMMENTS

May 27, 2016

SENT VIA EMAIL TO: wcfire@ruggedwest.com

McKenzie County Rural Fire Department
Fire Chief
PO Box 746
Watford City, ND 58854

RE: Caliber Midstream - Conditional Use Permit (Oil Pipeline)

Greetings Fire Chief:

Caliber Midstream is planning construction on a 10"-12" Steel Oil Pipeline roughly 6.5 mile in length connecting to the Dakota Access Tank facility located south of Watford City as depicted on the attached map. This line qualifies as a North Dakota Public Service Commission (PSC) regulated line, thus requiring a Conditional Use Permit (CUP) from McKenzie County. We are seeking project acknowledgement and any input from you in your capacity as the McKenzie County Rural Fire Chief. If you would please email me your acknowledgement and any input you have on this project, I would greatly appreciate it.

We intend to construct this pipeline in the Fall of 2016. Caliber's application for a CUP will be submitted on or before Friday June 3rd, 2016. Please feel free to contact me with any questions or concerns you may have. My contact information is below.

Sincerely,

Jeffrey L. Skaare, J.D., R.P.L.
Operations Manager
Caliber Midstream
jskaare@calibermidstream.com
(701) 590-3995 cell

Sandee Griffin

From: CITY FIRE DEPT CITY FIRE DEPT <wcfire@restel.com>
Sent: Friday, May 27, 2016 3:35 PM
To: Jeffrey Skaare; wcfire@ruggedwest.com
Cc: Sandee Griffin; Skip Vest
Subject: Re: Request for comment

The WCVFD has no issue with this request.

Philip Riely

WCVFD Chief

----- Original Message -----
From:
"Jeffrey Skaare" <jskaare@calibermidstream.com>

To:
"wcfire@ruggedwest.com" <wcfire@ruggedwest.com>
Cc:
"Sandee Griffin" <sgriffin@calibermidstream.com>, "Skip Vest" <svest@calibermidstream.com>
Sent:
Fri, 27 May 2016 19:16:41 +0000
Subject:
Request for comment

Greetings Sir:

Please take a look at the attached letter and let me know if you have any questions or concerns.

Sincerely,

Jeffrey L. Skaare, J.D., R.P.L.

Operations Manager

Caliber Midstream

jskaare@calibermidstream.com

(701) 590-3995 cell

McKenzie County Sheriff's Office

CALIBER MIDSTREAM

1200 17TH STREET • SUITE 2100
DENVER, CO 80202
PHONE: 303-628-1410 • FAX: 303-628-1420
WWW.CALIBERMIDSTREAM.COM

REQUEST FOR COMMENTS

May 27, 2016

SENT VIA EMAIL TO: lclock@co.mckenzie.nd.us
gschwartzenberger@co.mckenzie.nd.us

McKenzie County Sheriff's Office
Gary Schwartzenberger
P.O. Box 591
Watford City, ND 58854

RE: Caliber Midstream - Conditional Use Permit (Oil Pipeline)

Greetings Sheriff Schwartzenberger:

Caliber Midstream is planning construction on a 10"-12" Steel Oil Pipeline roughly 6.5 mile in length connecting to the Dakota Access Tank facility located south of Watford City as depicted on the attached map. This line qualifies as a North Dakota Public Service Commission (PSC) regulated line, thus requiring a Conditional Use Permit (CUP) from McKenzie County. We are seeking project acknowledgement and any input from you in your capacity as the McKenzie County Sheriff. If you would please email me your acknowledgement and any input you have on this project, I would greatly appreciate it.

We intend to construct this pipeline in the Fall of 2016. Caliber's application for a CUP will be submitted on or before Friday June 3rd, 2016. Please feel free to contact me with any questions or concerns you may have. My contact information is below.

Sincerely,

/s/

Jeffrey L. Skaare, J.D., R.P.L.
Operations Manager
Caliber Midstream
jskaare@calibermidstream.com
(701) 590-3995 cell

Sandee Griffin

From: Jeffrey Skaare
Sent: Tuesday, May 31, 2016 6:01 PM
To: Sandee Griffin
Subject: FW: Request for comments

Please print and add this to our list of return comments.

From: Lloyd Clock [mailto:lclock@co.mckenzie.nd.us]
Sent: Tuesday, May 31, 2016 8:34 AM
To: Jeffrey Skaare <jskaare@calibermidstream.com>
Cc: Jim Talbert <jtalbert@co.mckenzie.nd.us>
Subject: RE: Request for comments

I see no issues with this project as far as Law Enforcement or Dispatch is concerned

Lloyd

Lloyd Clock
Captain 911 Coordinator
McKenzie County Sheriff's Office
201 5th St NW
Watford City, ND 58854
Off: (701) 444-3654
Fax: (701)444-2105
lclock@co.mckenzie.nd.us

This message is subject to the Electronic Communications Privacy Act (18 USC 2510-2521) and contains information that is confidential, privileged and intended only for the use of the intended recipient. If you receive this message but are not the intended recipient, please delete this message and notify the sender. Any dissemination, distribution, or copying of this message or any attachments thereto by any person other than the intended recipient is strictly prohibited.

From: Jeffrey Skaare [mailto:jskaare@calibermidstream.com]
Sent: Friday, May 27, 2016 2:23 PM
To: Lloyd Clock; Gary Schwartzenberger
Cc: Sandee Griffin; Skip Vest
Subject: Request for comments

Greetings Sheriff:

Please take a look at the attached letter and map and let me know if you have any questions or concerns.

Sincerely,

Jeffrey L. Skaare, J.D., R.P.L.
Operations Manager
Caliber Midstream

North Dakota Department of Transportation

Response Pending

June 16, 2016

Cardno, Inc.

1007 24th Street West,
Suite 2
Williston, ND 58801
USA

Tel. 701.572.1455
www.cardno.com

Robert Fode
Project Development Director
North Dakota Department of Transportation
608 East Boulevard Avenue
Bismarck, ND 58505-0700

REF: Caliber Midstream, LLC – Application for Certificate of Corridor Compatibility and Route Permit

Dear Mr. Fode,

Cardno, Inc. (Cardno) has been retained by Caliber Bear Den Interconnect, LLC (Caliber) to advise and manage regulatory matters pertaining to its operations in North Dakota. Caliber is requesting a Certificate of Corridor Compatibility and Route Permit from the North Dakota Public Service Commission for its proposed Bear Den Transmission Line. The project will involve the construction and installation of a 6.2-mile crude oil pipeline, originating about 7.6 miles south of Watford City, and terminating about 2.9 miles south of Watford City near the junction of US Hwy 85 and the US Hwy 85 bypass.

Per NDCC 49-22-09 (11), Caliber is required to notify and address any problems raised by federal, state, and local regulatory agencies. Therefore, Caliber respectfully requests your comments and concerns on relevant issues related to this proposed project. Maps of the proposed project area are included for your review.

Your assistance in this matter is greatly appreciated. Should you have any questions or concerns, I can be reached at (701) 572-1455 or at reice.haase@cardno.com.

Sincerely,



Reice Haase
Staff Scientist
Natural Resources & Health Sciences Division
Cardno, Inc.













North Dakota Department of Health

Response Pending

North Dakota State Historic Preservation Office

Response Pending

North Dakota Department of Trust Lands

Response Pending

North Dakota Parks and Recreation Department

Response Pending

North Dakota Game and Fish Department

Response Pending

North Dakota State Water Commission

June 16, 2016

Cardno, Inc.

1007 24th Street West,
Suite 2
Williston, ND 58801
USA

Tel. 701.572.1455
www.cardno.com

Linda Weispfenning
Water Resource Planner
North Dakota State Water Commission
900 East Boulevard Avenue, Dept. 770
Bismarck, ND 58505-0850

REF: Caliber Midstream, LLC – Application for Certificate of Corridor Compatibility and Route Permit

Dear Ms. Weispfenning,

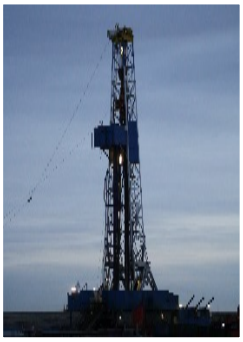
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Per NDCC 49-22-09 (11), Caliber is required to address any problems raised by federal, state, and local regulatory agencies. Therefore, Caliber respectfully requests your comments and concerns on relevant issues related to this proposed project. Maps of the proposed project area are included for your review.

Your assistance in this matter is greatly appreciated. Should you have any questions or concerns, I can be reached at (701) 572-1455 or at reice.haase@cardno.com.

Sincerely,

Reice Haase
Staff Scientist
Natural Resources & Health Sciences Division
Cardno, Inc.



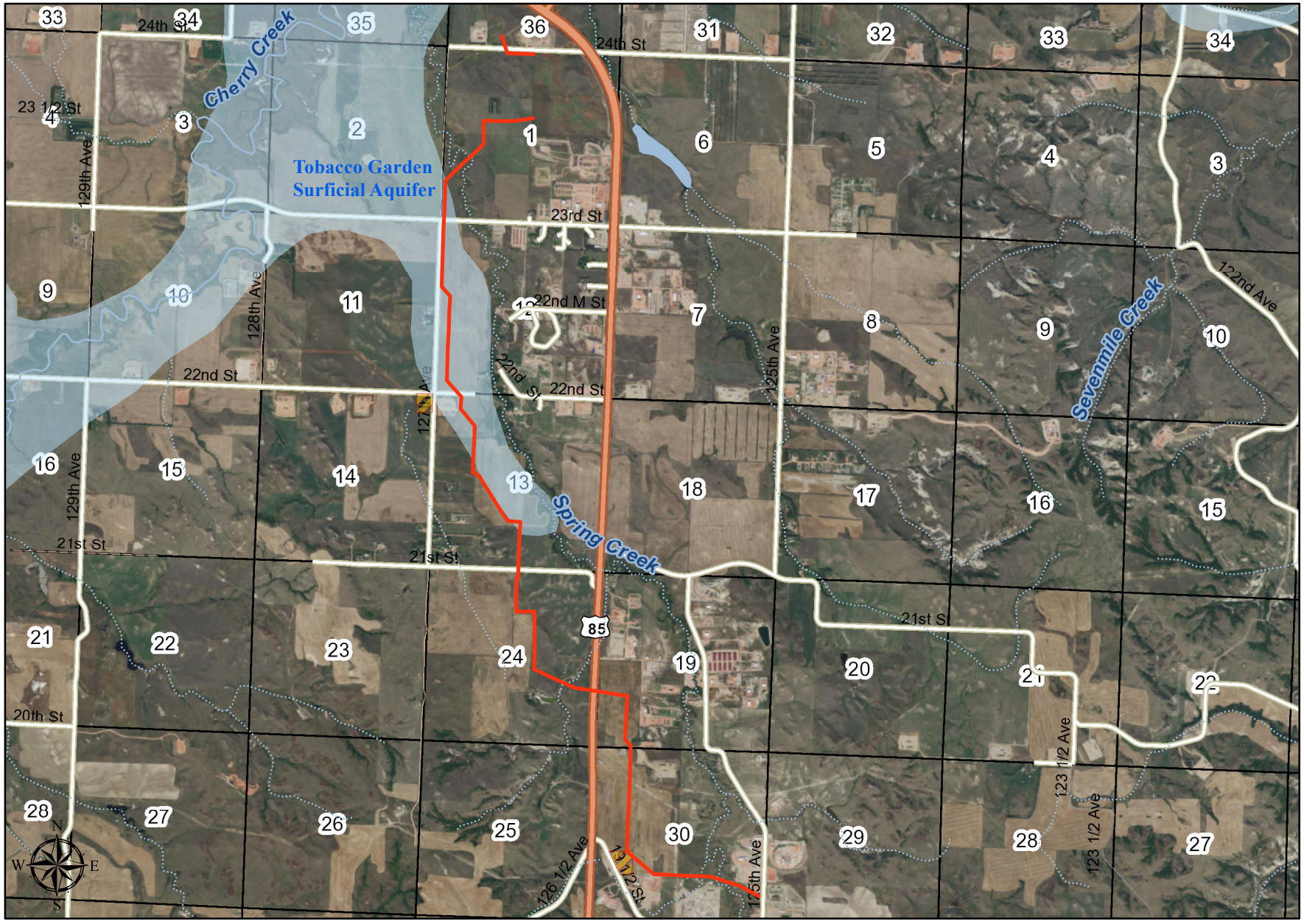












DATE PLOTTED:6/16/2016 1:36:42 PM BY: REICE.HAASE
FILE: G:\Caliber\BearDen\Route\l.mxd

Cardno
Shaping the Future
1007 24th St West, Suite 2
Williston, ND 58801
(701) 572-1455



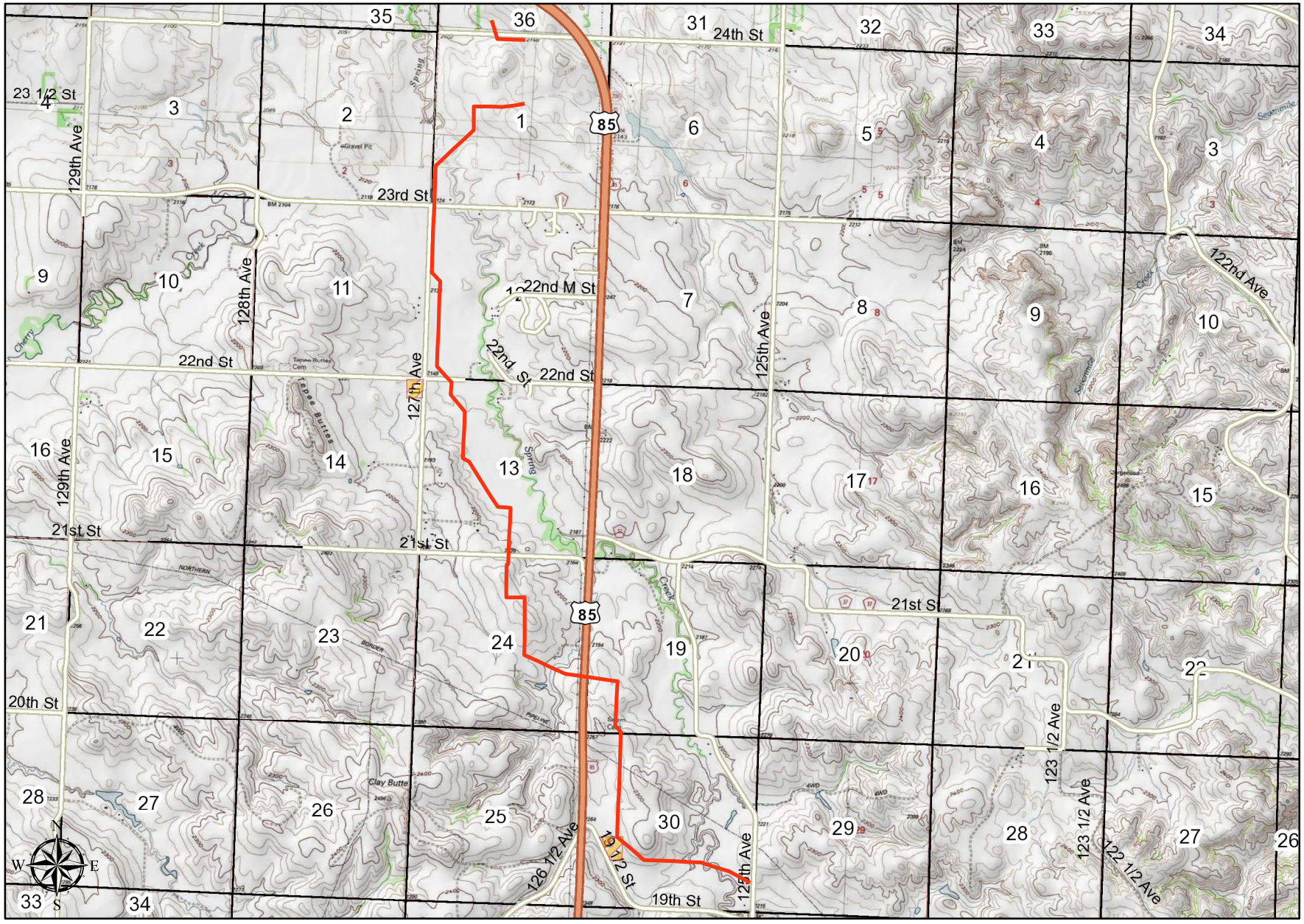
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CALIBER BEAR DEN INTERCONNECT, LLC
PROPOSED BEAR DEN PIPELINE
MAP 1: PROJECT OVERVIEW

Date 6/24/2016
Scale 1:51,633

Township 149N, Range 98W
Township 149N, Range 99W
McKenzie County, ND



DATE PLOTTED:6/16/2016 11:38:44 AM BY: REICE.HAASE
FILE: G:\Caliber\BearDen\Route\l.mxd

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1007 24th St West, Suite 2
Williston, ND 58801
(701) 572-1455



0 0.5 1 2 3 4 Miles

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CALIBER BEAR DEN INTERCONNECT, LLC
PROPOSED BEAR DEN PIPELINE
MAP 2: PROJECT TOPOGRAPHY

Date 6/24/2016
Scale 1:51,633

Township 149N, Range 98W
Township 149N, Range 99W
McKenzie County, ND

North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850
(701) 328-2750 • TTY 1-800-366-6888 or 711 • FAX (701) 328-3696 • http://swc.nd.gov

June 24, 2016

Reice Haase
Cardno
1007 24th Street West, STE 2
Williston, ND 58801

Dear Mr. Haase:

This is in response to your request for review of environmental impacts associated with the Certificate of Corridor Compatibility and Route Permit Application for the Bear Den Transmission Line project located in Watford City, ND.

The proposed project has been reviewed by State Water Commission staff and the following comments are provided:

- There are no floodplains identified and/or mapped where this proposed project is to take place. The project is located in Zone X. It is also believed that the project will not affect an identified floodplain as identified by the National Flood Insurance Program (NFIP). The NFIP map used to make this determination is: McKenzie County, Panel #38053C1225D and 38053C0918D, Date: 9/2/15.

- The ND State Water Commission (Commission) maintains a network of observation/monitor water wells and the location of gaging stations throughout the state, and many are located close to public right-of-ways. The location information can be obtained from the Commission's website at: http://swc.nd.gov.; then click on "Information and Education"; then click on "Maps/GIS and Data," then click on "Map Services;" then click on the "Ground and Surface Water Information" map. Please inform the Water Appropriations Division of the Commission at 701-328-2754, if gaging stations or water wells may be affected by the project or accidently damaged. A copy of the map is enclosed.

- In accordance North Dakota Century Code § 61-32-03 and North Dakota Administrative Code § 89-02-01-03, placement of fill material within a pond, slough, or lake with a contributing watershed area comprising of eighty acres or more will require an Application for Surface Drain to be filed with the Office of the State Engineer. Based on the provided pipeline alignment, it is possible that a permit will be required from our office. Questions regarding the permit requirements may be directed to Graham Hart, at 701-328-3095.

- It is the responsibility of the project sponsor to ensure that local, state and federal agencies are contacted for any required approvals, permits, and easements.

- All waste material associated with the project must be disposed of properly and not placed in identified floodway areas.

Thank you for the opportunity to provide review comments. If you have any questions, please call me at 701-328-4967.

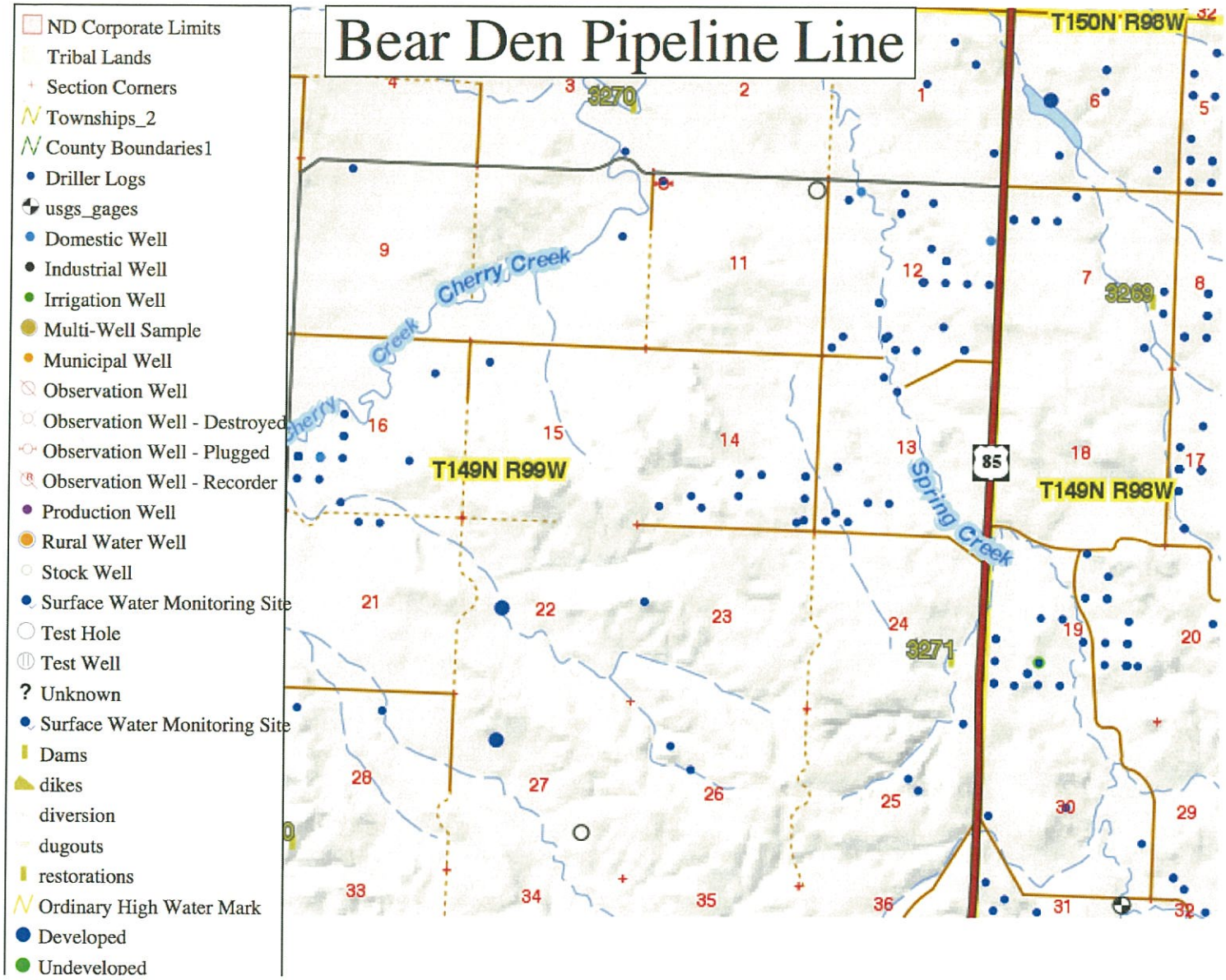
Sincerely,

Linda Weispfenning
Water Resource Planner

LW:dm/1570
Encl.

JACK DALRYMPLE, GOVERNOR
CHAIRMAN

GARLAND ERBELE, P.E.
CHIEF ENGINEER-SECRETARY


Bear Den Pipeline Line
ND Corporate Limits
Tribal Lands
Section Corners
Townships_2
County Boundaries1
Driller Logs
usgs_gages
Domestic Well
Industrial Well
Irrigation Well
Multi-Well Sample
Municipal Well
Observation Well
Observation Well - Destroyed
Observation Well - Plugged
Observation Well - Recorder
Production Well
Rural Water Well
Stock Well
Surface Water Monitoring Site
Test Hole
Test Well
Unknown
Surface Water Monitoring Site
Dams
dikes
diversion
dugouts
restorations
Ordinary High Water Mark
Developed
Undeveloped
T150N R98W
T149N R99W
T149N R98W
Cherry Creek
Spring Creek
85
3270
3269
3271

North Dakota Industrial Commission

Response Pending

United States Army Corps of Engineers

Response Pending

United States Fish and Wildlife Service

Response Pending

APPENDIX D
WAIVERS AND EASEMENTS



Cardno®
Shaping the Future

CALIBER MIDSTREAM

1200 17th Street • Suite 2100
Denver, CO 80202
Phone: 303-628-1410 • Fax: 303-628-1420
www.calibermidstream.com

June 30, 2016

Carla Schaible
2051 Highway 85 N
Watford City, ND 58854-9634

RE: CARLA SCHAIBLE HOMESTEAD TRUST

Dear Carla Schaible:

Pursuant to the above described easement, Caliber Midstream (Caliber) is planning on constructing a crude oil pipeline on your property in the Fall of 2016. As a result, this crude oil pipeline will be subject to certain North Dakota laws and regulations including North Dakota Century Code §49-22-05.1 and North Dakota Administrative Code §69-06-08-02, which provide for certain areas located within the vicinity of this pipeline being designated as "avoidance areas." One such geographical avoidance area is the area within 500 feet of an occupied residence.

The pipeline route on your property is not greater than 500 feet from an occupied residence, it is currently 425 feet and is thus seeking an acknowledgement and permission to construct on the land defined as:

State of North Dakota, County of McKenzie
Township 149 North, Range 99 West
Section 24: NESE, E2NWSE, E2SWNE

Caliber is requesting that you, as owner of such residence, acknowledge that you do not object to the placement of this pipeline within 425 feet of such residence. Further, Caliber requests that you confirm this permission by signing in the space provided below.

Sincerely,

Jeff Skaare
Operations and ROW Manager
Caliber Midstream

Accepted and Agreed to this 30 day of June, 2016

Carla Schaible

Return Recorded Documents to:
Border Resources, LLC
3309 Fiechtner Dr., Ste. C
Fargo, ND 58103

THE STATE OF NORTH DAKOTA)
) PIPELINE RIGHT OF WAY GRANT
COUNTY OF McKENZIE) AND RELEASE OF DAMAGES

KNOW ALL MEN BY THESE PRESENTS:

THAT THE UNDERSIGNED, whether one or more, designated herein **Konrad P. Norstog,** whose address is Box 643, Watford City, ND 58854, as GRANTOR, for and in consideration of the sum of Ten and More Dollars ($10.00) in hand paid the receipt and sufficiency of which is hereby acknowledged, and additional consideration paid pursuant to that certain Payment Agreement for Pipeline Right of Way Grant and Release of Damages executed concurrently herewith, does hereby grant, sell and convey to **Caliber North Dakota, LLC, d/b/a/ Caliber Midstream North Dakota LLC**, whose address is 1200 17th St., Ste. 2100, Denver, Colorado 80202, its successors or assigns (designated herein as "GRANTEE"), a non-exclusive right of way and easement and privilege to lay, construct, maintain, operate, repair, replace, inspect and remove a single pipeline (together with fittings, tie-overs, cathodic protection equipment and all appliances appurtenant thereto) to transport and convey water (collectively the "Facilities") in, to, on, under, over and across the following described tract of land situated in McKenzie County, North Dakota, to-wit:

Township 149 North, Range 99 West of the 5th P.M.
Section 1: S2NW4, W2SW4

said right of way to be 25 feet in width, together with the rights of ingress and egress to and from said Facilities for the purposes aforesaid. The right of way herein granted shall be expanded temporarily during any period of construction to a width of 75 feet, except that such expansion shall be to a width of 100 feet at all road, ditch and waterway crossings and any areas of severely uneven ground.

IT IS AGREED AND UNDERSTOOD that there shall be no above-ground fixture, other than line markers required by the Department of Transportation, placed on GRANTOR'S property without an additional Surface Use Agreement negotiated fairly between GRANTOR and GRANTEE.

GRANTEE shall bury the top of its pipe at least forty-eight inches below the surface of the ground. The undersigned GRANTOR, its successors, heirs or assigns, reserves, subject to the other provisions hereof, all oil, gas and minerals on and under said lands and the right to farm, graze and otherwise fully use and enjoy said lands, provided, however, that GRANTEE shall have the right hereafter to cut and keep clear all trees, brush and other obstructions that may injure, endanger or interfere with the construction and use of said Facilities. GRANTEE shall have all privileges

(copy)

necessary or convenient for the full use of the rights herein granted, together with ingress and egress along said Facilities and over and across said lands and GRANTOR shall not hinder, conflict or interfere with GRANTEE's rights hereunder or disturb its Facilities. The consideration paid herein by GRANTEE includes payment for actual damages to crops, pasture, fences and timber, which arise from laying and/or constructing said Facilities.

GRANTEE shall, insofar as is reasonably possible, restore the surface of the land to substantially its original condition, such restoration to include the repair of any cut fences, leveling of the ground, and cleaning up all debris, and removing all rocks unearthed as a result of its Facilities installation. GRANTEE further agrees to reseed, at GRANTEE'S expense, the area in which the grass and foliage were destroyed with the same kind of grass and foliage destroyed as available, to mulch (if necessary) or cover the ground until the ground is adequately covered with sufficient grass and foliage to prevent erosion. GRANTOR shall have the right for a period of not to exceed (2) year from date of completion of each pipeline to make a reasonable determination that the ground and foliage has been restored. GRANTOR agrees not to build, create or construct or allow to be built, created or constructed, any obstructions, including without limitation impounded water, buildings, barns, workshops, improvements, engineering works, or other structures within the right of way nor shall GRANTOR change, or permit the change of, the grade of the surface of the ground within the right of way. If after the construction, full installation and operation of the Facilities GRANTEE requires additional lands to satisfy the purposes herein, then damages will be paid equal to what has been paid for damages as a result of granting the initial easement.

~~GRANTOR hereby warrants and agrees to defend the title to the above described premises.~~ GRANTOR shall have the use of such right of way and easement except for any use, which conflicts with the purposes for which this right of way and easement is granted.

TO HAVE AND TO HOLD said right of way and easement unto said GRANTEE, its successors and assigns, until such Facilities are constructed and so long thereafter as any of the Facilities are maintained thereon, and the undersigned hereby bind themselves, their heirs, executors, administrators, successors and assigns, against every person whomsoever lawfully claiming or to claim the same, or any part thereof. The undersigned hereby covenant and agree to account to any other persons legally due any portion of the monies hereto paid for damages.

IN WITNESS WHEREOF, GRANTOR has caused these premises to be signed, executed and delivered this 3rd day of June, 2016.

GRANTOR(S)

Donald Mowry by
Jon Ely - Mowry in Fact

Donald P. Mowry

Copy

Exhibit "B" to Pipeline Right-of-Way Grant

This Exhibit "B" is attached to and incorporated by reference and made a part of the Pipeline Right-of-Way Grant dated June 3, 2016, by and between **Konrad P. Norstog,** whose address is Box 643, Watford City, ND 58854, as GRANTOR, for and in consideration of the sum of Ten and More Dollars ($10.00) in hand paid the receipt and sufficiency of which is hereby acknowledged, and additional consideration paid pursuant to that certain Payment Agreement for Pipeline Right of Way Grant and Release of Damages executed concurrently herewith, does hereby grant, sell and convey to **Caliber North Dakota, LLC, d/b/a/ Caliber Midstream North Dakota LLC**, whose address is 1200 17th St., Ste. 2100, Denver, Colorado 80202, it's successors and assigns (designated as "GRANTEE") a temporary right of way of seventy-five (75') feet in width expanded to one hundred (100') feet at all road, ditch and waterway crossings and any areas of severely uneven ground and a permanent right of way of twenty-five (25') feet in width, for the purpose to lay, install, maintain, operate, replace, protect, repair, inspect and remove a single pipeline for the transportation of **Oil**, upon and along a route selected by GRANTEE with approval by the GRANTOR on, under and across lands of GRANTOR, situated in the County of **McKenzie**, State of **North Dakota,** described as follows:

Township 149 North, Range 99 West of the 5th P.M.
Section 1: NW4, W2SW4

Notwithstanding anything to the contrary in the Pipeline-Right-of-Way Grant to which Exhibit "B" is attached and made a part thereof; in the event of conflict between the provisions of the Right-of-Way Grant and Exhibit "B", the provisions of Exhibit "B" shall supersede and prevail.

1) **Term**

a) This Pipeline Right-of-Way Grant shall have a term of thirty (30) years from the date hereof ("INITIAL TERM") and shall thereafter automatically be renewed, and cannot be unreasonably upheld, for an additional thirty (30) years at an amount specified in the "receipt and release" agreement of the same date or the current market rate not less than the initial payment.

2) **Line Replacement**

a) Wherever this agreement allows for the replacement of the line in conjunction with repairs, the line replaced shall not be of a greater diameter than the originally installed line. If the line size is increased, a new easement would be required.

3) **Other Provisions - GRANTEE Agrees:**

a) That GRANTOR will be compensated by GRANTEE for any damages occurring during future maintenance or repairs within the easement area.

(cont)

b) To not utilize this easement, without specific separate consent, for any other pipeline(s), utilities, or other facilities.

c) To only install one (1) pipeline in said easement; said easement granted is for one (1) pipeline only with diameters not to exceed twelve inches (12").

d) To have no above ground monitoring or related facilities on said easement except for pipeline markers required by law, regulation or industry standard safety practices as indicated on map provided to Grantor prior to construction.

e) That for itself, its agents, successors and assigns to defend, hold harmless and indemnify the GRANTOR, their heirs, successors and assigns, from any and all liability, costs, damages and attorney's fees the GRANTOR may suffer as a result of any claims, demands, costs, or judgments against GRANTOR arising out of any environmental damage caused by the GRANTEE on this lease of GRANTEE'S noncompliance with any environmental law, order, administrative law or rule, adopted or promulgated by the State of North Dakota or the United States of America, or any board, agency or commission of either.

f) This easement shall be a covenant running with the land and shall be binding on the heirs, successors, and assigns of the parties hereto.

This agreement may be executed in part or counterpart.

COPY

Return Recorded Documents to:
Border Resources, LLC
3309 Fiechtner Dr., Ste. C
Fargo, ND 58103

THE STATE OF NORTH DAKOTA)
) PIPELINE RIGHT OF WAY GRANT
COUNTY OF McKENZIE) AND RELEASE OF DAMAGES

KNOW ALL MEN BY THESE PRESENTS:

THAT THE UNDERSIGNED, whether one or more, designated herein **Curtis M. Sorenson and Jennifer J. Sorenson, Individually and as Husband and Wife,** whose address is 12652 22nd St. NW, Watford City, ND 58854, as GRANTOR, for and in consideration of the sum of Ten and More Dollars ($10.00) in hand paid the receipt and sufficiency of which is hereby acknowledged, and additional consideration paid pursuant to that certain Payment Agreement for Pipeline Right of Way Grant and Release of Damages executed concurrently herewith, does hereby grant, sell and convey to **Caliber North Dakota, LLC, d/b/a/ Caliber Midstream North Dakota LLC,** whose address is 1200 17th St., Ste. 2100, Denver, Colorado 80202, its successors or assigns (designated herein as "GRANTEE"), a non-exclusive right of way and easement and privilege to lay, construct, maintain, operate, repair, ~~replace,~~ inspect and remove a single pipeline (together with fittings, tie-overs, cathodic protection equipment and all appliances appurtenant thereto) to transport and convey oil (collectively the "Facilities") in, to, on, under, over and across the following described tract of land situated in McKenzie County, North Dakota, to-wit:

Township 149 North, Range 99 West of the 5th P.M.
Section 13: NW¼SE¼, NE¼SW¼, SW¼NW¼

said right of way to be 25 feet in width, together with the rights of ingress and egress to and from said Facilities for the purposes aforesaid. The right of way herein granted shall be expanded temporarily during any period of construction to a width of 75 feet, except that such expansion shall be to a width of 100 feet at all road, ditch and waterway crossings and any areas of severely uneven ground.

IT IS AGREED AND UNDERSTOOD that there shall be no above-ground fixture, other than line markers required by the Department of Transportation, placed on GRANTOR'S property without an additional Surface Use Agreement negotiated fairly between GRANTOR and GRANTEE.

GRANTEE shall bury the top of its pipe at least forty-eight inches below the surface of the ground. The undersigned GRANTOR, its successors, heirs or assigns, reserves, subject to the other provisions hereof, all oil, gas and minerals on and under said lands and the right to farm, graze and otherwise fully use and enjoy said lands, provided, however, that GRANTEE shall have the right hereafter to cut and keep clear all trees, brush and other obstructions that may injure, endanger or interfere with the construction and use of said Facilities. GRANTEE shall have all privileges necessary or convenient for the full use of the rights herein granted, together with ingress and egress along said Facilities and over and across said lands and GRANTOR shall not hinder, conflict or interfere with GRANTEE's rights hereunder or disturb its Facilities. The consideration paid herein by GRANTEE includes payment for actual damages to crops, pasture, fences and timber, which arise from laying and/or constructing said Facilities.

GRANTEE shall, insofar as is reasonably possible, restore the surface of the land to substantially its original condition, such restoration to include the repair of any cut fences, leveling of the ground, and cleaning up all debris, and removing all rocks unearthed as a result of its Facilities installation. GRANTEE further agrees to reseed, at GRANTEE'S expense, the area in which the grass and foliage were destroyed with the same kind of grass and foliage destroyed as available, to mulch (if necessary) or cover the ground until the ground is adequately covered with sufficient grass and foliage to prevent erosion. GRANTOR shall have the right for a period of not to exceed (1) year from date of completion of each pipeline to make a reasonable determination that the ground and foliage has been restored. GRANTOR agrees not to build, create or construct or allow to be built,

COPY

created or constructed, any obstructions, including without limitation impounded water, buildings, barns, workshops, improvements, engineering works, or other structures within the right of way nor shall GRANTOR change, or permit the change of, the grade of the surface of the ground within the right of way. If after the construction, full installation and operation of the Facilities GRANTEE requires additional lands to satisfy the purposes herein, then damages will be paid equal to what has been paid for damages as a result of granting the initial easement.

GRANTOR hereby warrants and agrees to defend the title to the above-described premises. GRANTOR shall have the use of such right of way and easement except for any use, which conflicts with the purposes for which this right of way and easement is granted.

TO HAVE AND TO HOLD said right of way and easement unto said GRANTEE, its successors and assigns, until such Facilities are constructed and so long thereafter as any of the Facilities are maintained thereon, and the undersigned hereby bind themselves, their heirs, executors, administrators, successors and assigns, against every person whomsoever lawfully claiming or to claim the same, or any part thereof. The undersigned hereby covenant and agree to account to any other persons legally due any portion of the monies hereto paid for damages.

IN WITNESS WHEREOF, GRANTOR has caused these premises to be signed, executed and delivered this 25th day of May, 2016.

GRANTOR(S)

Curtis M. Sorenson

Curtis M. Sorenson

Jennifer J. Sorenson

Jennifer J. Sorenson

ACKNOWLEDGEMENT

STATE OF North Dakota)
) **ss.**
COUNTY OF McKenzie)

On this 25 day of May, 2016, before me, a Notary Public, personally appeared Curtis M. Sorenson and Jennifer J. Sorenson, known to me to be the person described in and who executed the within instrument, and acknowledged to me that they executed the same as their free and voluntary act and deed for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed by Notarial seal the day and year first above written.

My Commission Expires: _____

(SEAL)

Notary Public

TRAVIS SAUBER
Notary Public
State of North Dakota
My Commission Expires September 15, 2017

TRAVIS SAUBER
Notary Public
State of North Dakota
My Commission Expires September 15, 2017

COPY

Return Recorded Documents to:
Border Resources, LLC
3309 Fiechtner Dr., Ste. C
Fargo, ND 58103

THE STATE OF NORTH DAKOTA)
)
COUNTY OF McKENZIE)

PIPELINE RIGHT OF WAY GRANT
AND RELEASE OF DAMAGES

KNOW ALL MEN BY THESE PRESENTS:

THAT THE UNDERSIGNED, whether one or more, designated herein **Carla Schaible, a widow,** whose address is 2051 Hwy 85, Watford City, ND 58854, as GRANTOR, for and in consideration of the sum of Ten and More Dollars ($10.00) in hand paid the receipt and sufficiency of which is hereby acknowledged, and additional consideration paid pursuant to that certain Payment Agreement for Pipeline Right of Way Grant and Release of Damages executed concurrently herewith, does hereby grant, sell and convey to **Caliber North Dakota, LLC, d/b/a/ Caliber Midstream North Dakota LLC**, whose address is 1200 17th St., Ste. 2100, Denver, Colorado 80202, its successors or assigns (designated herein as "GRANTEE"), a non-exclusive right of way and easement and privilege to lay, construct, maintain, operate, repair, ~~replace~~, inspect and remove a single pipeline (together with fittings, tie-overs, cathodic protection equipment and all appliances appurtenant thereto) to transport and convey oil (collectively the "Facilities") in, to, on, under, over and across the following described tract of land situated in McKenzie County, North Dakota, to-wit:

Township 149 North, Range 99 West of the 5th P.M.
Section 24: NE¼SE¼, E½NW¼SE¼, E½SW¼NE¼

said right of way to be 25 feet in width, together with the rights of ingress and egress to and from said Facilities for the purposes aforesaid. The right of way herein granted shall be expanded temporarily during any period of construction to a width of 75 feet, except that such expansion shall be to a width of 100 feet at all road, ditch and waterway crossings and any areas of severely uneven ground.

IT IS AGREED AND UNDERSTOOD that there shall be no above-ground fixture, other than line markers required by the Department of Transportation, placed on GRANTOR'S property without an additional Surface Use Agreement negotiated fairly between GRANTOR and GRANTEE.

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Copy

barns, workshops, improvements, engineering works, or other structures within the right of way nor shall GRANTOR change, or permit the change of, the grade of the surface of the ground within the right of way. If after the construction, full installation and operation of the Facilities GRANTEE requires additional lands to satisfy the purposes herein, then damages will be paid equal to what has been paid for damages as a result of granting the initial easement.

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IN WITNESS WHEREOF, GRANTOR has caused these premises to be signed, executed and delivered this 26th day of May, 2016.

GRANTOR(S)

Carla Schaible

Carla Schaible

ACKNOWLEDGEMENT

STATE OF North Dakota)
) **ss.**
COUNTY OF McKenzie)

On this 26 day of May, 2016, before me, a Notary Public, personally appeared Carla Schaible, known to me to be the person described in and who executed the within instrument, and acknowledged to me that she executed the same as her free and voluntary act and deed for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed by Notarial seal the day and year first above written.

My Commission Expires: _____

Notary Public

(S E A L)

TRAVIS SAUBER
Notary Public
State of North Dakota
My Commission Expires September 15, 2017

Copy

Return Recorded Documents to:
Border Resources, LLC
3309 Fiechtner Dr., Ste. C
Fargo, ND 58103

THE STATE OF NORTH DAKOTA)
) PIPELINE RIGHT OF WAY GRANT
COUNTY OF McKENZIE) AND RELEASE OF DAMAGES

KNOW ALL MEN BY THESE PRESENTS:

THAT THE UNDERSIGNED, whether one or more, designated herein **Carla Schaible, a widow,** whose address is 2051 Hwy 85, Watford City, ND 58854, as GRANTOR, for and in consideration of the sum of Ten and More Dollars ($10.00) in hand paid the receipt and sufficiency of which is hereby acknowledged, and additional consideration paid pursuant to that certain Payment Agreement for Pipeline Right of Way Grant and Release of Damages executed concurrently herewith, does hereby grant, sell and convey to **Caliber North Dakota, LLC, d/b/a/ Caliber Midstream North Dakota LLC**, whose address is 1200 17th St., Ste. 2100, Denver, Colorado 80202, its successors or assigns (designated herein as "GRANTEE"), a non-exclusive right of way and easement and privilege to lay, construct, maintain, operate, repair, ~~replace~~, inspect and remove a single pipeline (together with fittings, tie-overs, cathodic protection equipment and all appliances appurtenant thereto) to transport and convey oil (collectively the "Facilities") in, to, on, under, over and across the following described tract of land situated in McKenzie County, North Dakota, to-wit:

Township 149 North, Range 99 West of the 5th P.M.
Section 24: NE¼SE¼, E½NW¼SE¼, E½SW¼NE¼

said right of way to be 25 feet in width, together with the rights of ingress and egress to and from said Facilities for the purposes aforesaid. The right of way herein granted shall be expanded temporarily during any period of construction to a width of 75 feet, except that such expansion shall be to a width of 100 feet at all road, ditch and waterway crossings and any areas of severely uneven ground.

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GRANTEE shall bury the top of its pipe at least forty-eight inches below the surface of the ground. The undersigned GRANTOR, its successors, heirs or assigns, reserves, subject to the other provisions hereof, all oil, gas and minerals on and under said lands and the right to farm, graze and otherwise fully use and enjoy said lands, provided, however, that GRANTEE shall have the right hereafter to cut and keep clear all trees, brush and other obstructions that may injure, endanger or interfere with the construction and use of said Facilities. GRANTEE shall have all privileges necessary or convenient for the full use of the rights herein granted, together with ingress and egress along said Facilities and over and across said lands and GRANTOR shall not hinder, conflict or interfere with GRANTEE's rights hereunder or disturb its Facilities. The consideration paid herein by GRANTEE includes payment for actual damages to crops, pasture, fences and timber, which arise from laying and/or constructing said Facilities.

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Copy

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GRANTOR hereby warrants and agrees to defend the title to the above-described premises. GRANTOR shall have the use of such right of way and easement except for any use, which conflicts with the purposes for which this right of way and easement is granted.

TO HAVE AND TO HOLD said right of way and easement unto said GRANTEE, its successors and assigns, until such Facilities are constructed and so long thereafter as any of the Facilities are maintained thereon, and the undersigned hereby bind themselves, their heirs, executors, administrators, successors and assigns, against every person whomsoever lawfully claiming or to claim the same, or any part thereof. The undersigned hereby covenant and agree to account to any other persons legally due any portion of the monies hereto paid for damages.

IN WITNESS WHEREOF, GRANTOR has caused these premises to be signed, executed and delivered this 26th day of May, 2016.

GRANTOR(S)

Carla Schaible

ACKNOWLEDGEMENT

STATE OF North Dakota)
) ss.
COUNTY OF McKenzie)

On this 26 day of May, 2016, before me, a Notary Public, personally appeared Carla Schaible, known to me to be the person described in and who executed the within instrument, and acknowledged to me that she executed the same as her free and voluntary act and deed for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed by Notarial seal the day and year first above written.

My Commission Expires: _____

Notary Public

(S E A L)

TRAVIS SAUBER
Notary Public
State of North Dakota
My Commission Expires September 15, 2017

Exhibit "B" to Pipeline Right-of-Way Grant

This Exhibit "B" is attached to and incorporated by reference and made a part of the Pipeline Right-of-Way Grant dated _____, 2016, by and between **Carla Schaible, a widow,** whose address is 2051 Hwy 85, Watford City, ND 58854, as GRANTOR, for and in consideration of the sum of Ten and More Dollars ($10.00) in hand paid the receipt and sufficiency of which is hereby acknowledged, and additional consideration paid pursuant to that certain Payment Agreement for Pipeline Right of Way Grant and Release of Damages executed concurrently herewith, does hereby grant, sell and convey to **Caliber North Dakota, LLC, d/b/a/ Caliber Midstream North Dakota LLC**, whose address is 1200 17th St., Ste. 2100, Denver, Colorado 80202,, it's successors and assigns (designated as "GRANTEE") a temporary right of way of seventy-five (75') feet in width expanded to one hundred (100') feet at all road, ditch and waterway crossings and any areas of severely uneven ground and a permanent right of way of twenty-five (25') feet in width, for the purpose to lay, install, maintain, operate, replace, protect, repair, inspect and remove a single pipeline for the transportation of **Oil,** upon and along a route selected by GRANTEE with approval by the GRANTOR on, under and across lands of GRANTOR, situated in the County of **McKenzie**, State of **North Dakota,** described as follows:

Township 149 North, Range 99 West of the 5th P.M.
Section 24: NE¼SE¼, E½NW¼SE¼, E½SW¼NE¼

Notwithstanding anything to the contrary in the Pipeline-Right-of-Way Grant to which Exhibit "B" is attached and made a part thereof; in the event of conflict between the provisions of the Right-of-Way Grant and Exhibit "B", the provisions of Exhibit "B" shall supersede and prevail.

1) **Term**

a) This Pipeline Right-of-Way Grant shall have a term of thirty (30)years from the date hereof ("INITIAL TERM") and shall thereafter automatically be renewed, and cannot be unreasonably upheld, for an additional thirty (30) years at an amount specified in the "receipt and release" agreement of the same date.

2) **Reclamation**

a) GRANTEE shall, prior to construction, maintenance or removal, reserve all topsoil and not co-mingle with other subsoil within the easement Right-of-Way. The reserved soil must be stockpiled to minimize wind and water erosion. Upon completion of construction, and maintenance or removal, GRANTEE shall promptly reclaim the disturbed area. It must be re-contoured to conform to the adjacent natural topography, rocks greater than 4" in width exposed by excavation must be hauled off or reburied on the property to a depth of thirty-six inches (36"), the reserved soil must be evenly re-spread over the disturbed area, and the entire disturbed area must be re-vegetated with a mixture of native perennial grasses as determined by GRANTOR.

b) GRANTEE shall remove all survey stakes, foreign line marker flags, not currently in use and all trash from Right-of-Way.

c) If, after the installation of the pipeline, the settling or compaction of the backfilled trench causes depressions in the GRANTOR'S fields or grazing lands, upon notification of the GRANTOR, the GRANTEE shall fill such depressions with topsoil and reseed areas not covered with native grass vegetation.

3) **Use of Easement Area**

a) GRANTOR, its successor and assigns, reserves the right to use the easement area for any uses in accordance with this Agreement easement area for purposes compatible with GRANTEE'S use. If someone other than GRANTOR uses the easement area in a manner inconsistent with GRANTEE'S use, GRANTOR is not liable or responsible.

b) GRANTOR shall have the use of the Right-of-Way and easement area except for any use, which conflicts with the purpose for which this Right-of-Way and easement are granted.

4) **Hold Harmless and Indemnification:**

a) Caliber North Dakota, LLC, d/b/a Caliber Midstream ND, LLC agrees to indemnify, hold harmless and defend GRANTOR, his family, his agents and employees, both past and present, from and against liability for any and all claims, liens, suits, demands and actions for and expenses (including court costs, attorneys' fees and other reasonable costs of litigation) arising out of or resulting from or in any way involving the pipelines (including but not limited to the installation, maintenance, use, location or piercing, breaking or leaking of the pipeline) or any substance carried in the pipeline that might escape; this shall also include any and all claims made for or on account of claims of environmental damages. GRANTOR, his family, his agents and employees, both past and present, shall not be responsible for any damages to the pipeline regardless of what the cause of the damage is attributed to.

5) **Other Provisions - GRANTEE Agrees:**

a) That GRANTOR will be compensated by GRANTEE for any damages occurring during future maintenance or repairs within the easement area.

b) To not utilize this easement, without specific separate consent, for any other pipeline(s), utilities, or other facilities.

c) To pay GRANTOR for injury or loss to livestock due to operations of GRANTEE or its contractors.

d) To pay for all damages suffered by GRANTOR due to GRANTEE'S, or its agents' or contractors', activities upon said lands outside of the usual, expected and ordinary damages resulting from GRANTEE's use of the easement as permitted in this agreement or due to GRANTEE's negligent, reckless or intentional activities.

e) To repair or replace any fence temporarily taken down and/or removed to construct, utilize or maintain said easement, as agreed upon by GRANTOR and GRANTEE.

f) To only install one (1) pipeline in said easement; said easement granted is for one (1) pipeline only with diameters not to exceed twelve inches (12").

g) To have no above ground monitoring or related facilities on said easement except for pipeline markers required by law, regulation or industry standard safety practices as indicated on map provided to Grantor prior to construction.

h) To maintain the easement in a safe and reasonable manner during the lifetime of the easement, including but not limited to, filling in and reseeding any sink holes, settling or settled areas on said easement.

i) GRANTEE shall bury the top of its Oil pipeline at or below five feet (60 inches) in depth at any fence crossing. GRANTEE shall restore the land as soon as practicable after the pipeline is completed. Restoration shall be made as near practicable to the condition when GRANTEE first entered onto the land.

j) That for itself, its agents, successors and assigns to defend, hold harmless and indemnify the GRANTOR, their heirs, successors and assigns, from any and all liability, costs, damages and attorney's fees the GRANTOR may suffer as a result of any claims, demands, costs, or judgments against GRANTOR arising out of any environmental damage caused by the GRANTEE on this lease of GRANTEE'S noncompliance with any environmental law, order, administrative law or rule, adopted or promulgated by the State of North Dakota or the United States of America, or any board, agency or commission of either.

k) This easement shall be a covenant running with the land and shall be binding on the heirs, successors, and assigns of the parties hereto.

This agreement may be executed in part or counterpart.

Return Recorded Documents to:
Border Resources, LLC
3309 Fiechtner Dr., Ste. C
Fargo, ND 58103

THE STATE OF NORTH DAKOTA)
) PIPELINE RIGHT OF WAY GRANT
COUNTY OF McKENZIE) AND RELEASE OF DAMAGES

KNOW ALL MEN BY THESE PRESENTS:

THAT THE UNDERSIGNED, whether one or more, designated herein **Norman E. Sondrol and Marlene J. Sondrol, Individually and as Husband and Wife,** whose address is 2781 Promontory Drive, Bismarck, ND 58503, as GRANTOR, for and in consideration of the sum of Ten and More Dollars ($10.00) in hand paid the receipt and sufficiency of which is hereby acknowledged, and additional consideration paid pursuant to that certain Payment Agreement for Pipeline Right of Way Grant and Release of Damages executed concurrently herewith, does hereby grant, sell and convey to **Caliber North Dakota, LLC, d/b/a/ Caliber Midstream North Dakota LLC**, whose address is 1200 17th St., Ste. 2100, Denver, Colorado 80202, its successors or assigns (designated herein as "GRANTEE"), a non-exclusive right of way and easement and privilege to lay, construct, maintain, operate, repair, replace, inspect and remove a single pipeline (together with fittings, tie-overs, cathodic protection equipment and all appliances appurtenant thereto) to transport and convey oil (collectively the "Facilities") in, to, on, under, over and across the following described tract of land situated in McKenzie County, North Dakota, to-wit:

Township 149 North, Range 98 West of the 5th P.M.
Section 19: W½SW¼
Section 30: Lots 1-4, NE¼SW¼, less Right-of-Way, ALSO less I.T. Nos. 2626, 2892, 2902

said right of way to be 25 feet in width, together with the rights of ingress and egress to and from said Facilities for the purposes aforesaid. The right of way herein granted shall be expanded temporarily during any period of construction to a width of 75 feet, except that such expansion shall be to a width of 100 feet at all road, ditch and waterway crossings and any areas of severely uneven ground.

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GRANTEE shall bury the top of its pipe at least forty-eight inches below the surface of the ground. The undersigned GRANTOR, its successors, heirs or assigns, reserves, subject to the other provisions hereof, all oil, gas and minerals on and under said lands and the right to farm, graze and otherwise fully use and enjoy said lands, provided, however, that GRANTEE shall have the right hereafter to cut and keep clear all trees, brush and other obstructions that may injure, endanger or interfere with the construction and use of said Facilities. GRANTEE shall have all privileges necessary or convenient for the full use of the rights herein granted, together with ingress and egress along said Facilities and over and across said lands and GRANTOR shall not hinder, conflict or interfere with GRANTEE's rights hereunder or disturb its Facilities. The consideration paid herein by GRANTEE includes payment for actual damages to crops, pasture, fences and timber, which arise from laying and/or constructing said Facilities.

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GRANTOR hereby warrants and agrees to defend the title to the above-described premises. GRANTOR shall have the use of such right of way and easement except for any use, which conflicts with the purposes for which this right of way and easement is granted.

TO HAVE AND TO HOLD said right of way and easement unto said GRANTEE, its successors and assigns, until such Facilities are constructed and so long thereafter as any of the Facilities are maintained thereon, and the undersigned hereby bind themselves, their heirs, executors, administrators, successors and assigns, against every person whomsoever lawfully claiming or to claim the same, or any part thereof. The undersigned hereby covenant and agree to account to any other persons legally due any portion of the monies hereto paid for damages.

IN WITNESS WHEREOF, GRANTOR has caused these premises to be signed, executed and delivered this 11th day of May, 2016.

GRANTOR(S)

Norman E. Sondrol

Norman E. Sondrol

Marlene J. Sondrol

Marlene J. Sondrol

By Norman E. Sondrol P.O.A.

ACKNOWLEDGEMENT

STATE OF North Dakota)
) **ss.**
COUNTY OF Burleigh)

On this 11th day of May, 2016, before me, a Notary Public, personally appeared Norman E. Sondrol and Marlene J. Sondrol, known to me to be the person described in and who executed the within instrument, and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed by Notarial seal the day and year first above written.

My Commission Expires: _____

Notary Public

(SEAL)

TRAVIS SAUBER
Notary Public
State of North Dakota
My Commission Expires September 15, 2017

CALIBER MIDSTREAM

1200 17TH STREET • SUITE 2100
DENVER, CO 80202
PHONE: 303-628-1410 • FAX: 303-628-1420
WWW.CALIBERMIDSTREAM.COM

June 24, 2016

Norman E. Sondrol
2781 Promontory Drive
Bismarck, ND 58503

RE: Letter of intent - Land Acquisition

Dear Mr. Sondrol:

As per our telephone conversation last week, we would like to enter into an agreement for the purchase of the following lands:

Township 149 North, Range 98 West, 5th P.M.
Section 30: An 8 acre parcel within the NW4SW4

As discussed we have not had a survey of this tract completed. We would purchase this contingent upon receiving a conditional use permit allowing us to use it for the intended purpose of a truck load out. As discussed we would be willing to pay acre for land that would meet this criteria. With your permission we will seek a conditional use permit for those lands. To the extent necessary you agree to sign documentation that would assist us to that end, including but not limited to the application for the permit. If you agree to this intent letter please indicate by signing below and we will begin the process.

Please let me know if you have any additional comments or concerns.

Sincerely,

Jeffrey L. Skaare, J.D., R.P.L.
Surface Land Manager
Caliber Midstream

x Norman E. Sondrol
Norman E. Sondrol

APPENDIX E
EMERGENCY RESPONSE PLAN



Cardno®
Shaping the Future

Bear Den Interconnect Spill Response Plan

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1.0 Plan Review and Revisions

Changes to this Plan will be documented on this page. Plan review and modifications will be initiated and coordinated by the Health, Safety, & Environmental (HSE) Department in conjunction with the Manager of Operations.

Amendment/ Review	Date	Description of Change	Page
Original Document	06/15/2016	Creation of original pipeline spill response plan	All

Amendment/ Review	Date	Description of Change	Page

2.0 Regulatory Cross References

This table is prepared in accordance with 49 CFR 194 and cross-references the requirements with the appropriate section of this Oil Spill Response Plan.

Topic	Section
The name and telephone number of the qualified individual.	4.2
Notification procedures.	4.0
Spill detection and mitigation procedures.	5.0
Name, address, and telephone number of oil spill response organization.	4.2
Response activities and response resources including— • Equipment and supplies necessary to meet § 194.115, and • The trained personnel necessary to sustain operation of the equipment and to staff the oil spill removal organization and spill management team for the first 7 days of the response.	5.0
Names and telephone numbers of Federal, state and local agencies which the operator expects to assume pollution response responsibilities.	4.2
The worst case discharge volume.	3.3, 11.0
The method used to determine the worst case discharge volume, with calculations.	11.0
A map that clearly shows— • The location of the worst case discharge, and • The distance between each line section in the response zone and— • Each potentially affected public drinking water intake, lake, river, and stream within a radius of 5 miles (8 kilometers) of the line section, and • Each potentially affected environmentally sensitive area within a radius of 1 mile (1.6 kilometer) of the line section.	10.0

Topic	Section
A piping diameter and plan-profile drawing of each line section, which may be kept separate from the response plan if the location is identified.	Bear Den Interconnect Pipeline Operations & Maintenance Manual, Caliber VPN
SDS for crude oil transported by each pipeline in the response zone, emergency response data that include the name, description, physical and chemical characteristics, health and safety hazards, and initial spill- handling and firefighting methods.	12.0

3.0 Information Summary

3.1 Response Zone Information Summary

The information summary for the Bear Den Interconnect Response Zone is presented below:

3.1.1 Owner

Caliber Bear Den Interconnect LLC
1200 17th Street, Suite 2100
Denver, Colorado 80202
Phone: (303) 628-1410
Fax: (303) 628-1420

3.1.2 Product

Crude oil.

3.1.3 Description of the Response Zone

The Caliber Bear Den Interconnect Pipeline is a 12" diameter steel pipeline that transports crude oil from Enable Energy's Devore Tank Farm to the Dakota Access Pipeline's Watford City Terminal in McKenzie County, North Dakota.

The response zone is the entire Bear Den Pipeline. The response zone has the potential for significant and substantial harm and has the potential for a worst case discharge.

3.2 Determination of Significant and Substantial Harm

- The pipeline is greater than 8 5/8 inches in diameter.
- At least one section of the pipeline crosses a stream, meeting the requirement for location within one-mile of an environmentally sensitive area.
- Therefore, the potential to cause significant and substantial harm is present within the entire response zone.

3.3 Worst Case Discharge

The worst case discharge will be calculated at a future date after final pipeline engineering review.

3.4 Operator Certification

I do herby certify to the Pipeline and Hazardous Materials Safety Administration of the Department of Transportation that Caliber Midstream has obtained, through contract or other approved means, the necessary private personnel and equipment to respond, to the maximum extent practicable, to a worst case discharge or a substantial threat of such a discharge.



Skip Vest, *QHSER Director*
Caliber Midstream

4.0 Notification Procedures

4.1 Notification Overview

In the event of a leak or overflow, all valves will be closed and the system shutdown to prevent additional releases while response procedures are initiated.

Immediate notification to designated Caliber Midstream personnel is mandated and is the key to effective spill and release containment and control. Such notification also allows the company to promptly report a spill event to appropriate government agencies, in accordance with applicable regulatory requirements.

Upon discovery, all spills and releases must be immediately reported to the HSE Coordinator. In the event that the HSE Coordinator cannot be contacted, notification will be made to any of the supervisory personnel listed on the **Internal Emergency Notifications Table** in **Section 3.2**.

The Operations Department is responsible for mobilizing appropriate spill response, containment, manpower, and equipment.

4.1.1 National Response Center

In the event a spill impacts surface water, the HSE Coordinator is responsible for the initial spill report, by telephone, to the National Response Center (immediately after discovery of the spill). Spills can also be reported online to the National Response Center at the following web address: http://www.nrc.uscg.mil/nrchp.html.

4.1.2 North Dakota Department of Health

The North Dakota Department of Health requires that any spill or discharge of liquid or solid waste which may cause pollution of waters of the state must be reported immediately.

The Operations Department is responsible for notifying Caliber's HSE Department and providing all relevant information about the spill. The HSE Department will then notify the NDDH. Specific minimum quantities for mandatory reporting of spills have not been established. All spills which may potentially impact waters of the state, either surface water or ground water, must be reported.

In the event of a non-emergency release, a General Environmental Incident (and non-exempt Oilfield Related Incident) Report Form may be completed online and the following web address: http://www.ndhealth.gov/ehs/eir/NonOilField/

4.1.3 DOT/PHMSA

In addition to the reporting of accidents to the NRC, a written/electronic accident report (DOT/PHMSA F 7000-1) which can be found at http://www.phmsa.dot.gov , must be submitted as soon as practicable, but no later than 30 days after the incident for releases resulting in:

- A death or a personal injury requiring hospitalization.
- Explosion or fire not intentionally set by the operator.
- Caused estimated property damage, including cost of cleanup and recovery, value of

lost product, and damage to Caliber property or others or both, exceeding $50,000.

- Resulted in pollution of any stream, river, lake, reservoir, or other similar body of water that violated applicable water quality standards, caused a discoloration of the surface of the water or adjoining shoreline, or deposited a sludge or emulsion beneath the surface of the water or upon adjoining shorelines.
- In the judgement of the operator, the event was significant enough even though it did not meet the criteria listed above.

4.2 Caliber Midstream Emergency Contacts

The following information provides internal and external emergency contact information for the Caliber Midstream Bear Den Interconnect Pipeline located in McKenzie County, North Dakota.

QUALIFIED INDIVIDUALS

Becky Garwood – HSE Coordinator
Mobile Phone.....(307) 670-2418
Jeff Skaare – Operations Manager
Mobile Phone.....(701) 590-3995

INTERNAL EMERGENCY NOTIFICATIONS

Brian Videtich – Operations Engineer
Mobile Phone.....(720) 470-2592
Jeff Skaare – Operations Manager
Mobile Phone.....(701) 590-3995
Becky Garwood – HSE Coordinator
Mobile Phone.....(307) 670-2418
John Stonehocker – Field Technician
Mobile Phone.....(406) 480-7276

EMERGENCY RESPONSE CONTRACTORS

Secure Energy Services.....(701) 575-7006
5807 Front St. W
Williston, ND 58801

Three Forks Environmental (Jon Greiner).....(701)-240-2404
44th St W
Williston, North Dakota 58801

PUBLIC SAFETY NOTIFICATION

McKenzie County
Police/Fire/Ambulance 911
McKenzie County Sheriff .....(701) 444-2105

Hospital
McKenzie County Memorial Hospital.....(701) 842-3000
516N. Main
Watford City, North Dakota 58854

Additional Contacts

State Fire Marshall.....(701) 328-5555

State Highway Patrol.....(701) 857-6937

State Water Commission.....(701) 328-2750

GOVERNMENT AGENCY NOTIFICATIONS – VERBAL

National Response Center .....(800) 424-8802
(24 hr./day-7 days/week)

U.S. Environmental Protection Agency Region 8
Emergency Hotline.....(800) 227-8917
..... or....(303) 312-6312

DOT – PHMSA.....(202) 366-8860

North Dakota Department of Health
Ground Water Quality Division.....(701) 328-5210

North Dakota Department of Mineral Resources
Oil and Gas Division.....(701) 328-8020
Hazardous Materials Assistance and Spill Reporting Number (24 Hours) .....(800) 472-2121

Local Emergency Planning Committee (LEPC)
McKenzie County
Karolin Jappe
P.O. Box 545
Watford City ND 58854.....(701) 580-6936

GOVERNMENT AGENCY NOTIFICATIONS – WRITTEN

North Dakota Department of Health, Ground Water Quality
Division 918 East Divide Avenue 4th Floor
Bismarck ND 58501

4.3 Information Required for Notifications

The following information should be available when making initial and follow-up notifications:

- Name of pipeline:

- Time of discharge:
- Location of discharge:
- Name of all involved:
- Reason for discharge (e.g., material failure, excavation damage, corrosion):
- Estimated volume of oil discharged:
- Weather conditions on scene:
- Actions taken or planned by persons on scene:

5.0 Spill Detection and On Scene Spill Mitigation Procedures

5.1 Spill Detection

Detection of a discharge from a pipeline system may occur in a number of ways including:

- Detection by the Caliber Midstream personnel;
- Visual detection by Caliber Midstream field personnel or pipeline patrols; and
- Visual detection by the public.

5.1.1 Pipeline Patrols

Caliber is committed to performing pipeline patrols a minimum of 26 times per year, with no more than 3 weeks passing between patrols. Valve inspections will occur a minimum of 2 times per year, with no more than 7 ½ months passing between inspections.

5.2 Spill Mitigation Procedures

Each spill situation is unique and must be evaluated according to the circumstance present. In every situation, however, **personnel safety must be assessed as the first priority**. Example of spill mitigation procedures are presented below:

- Personnel safety is the first priority. Evacuate any nonessential personnel or personnel at high risk.
- Terminate transfer operations and close block valves.
- Drain product into containment areas if possible.
- Shut down source of vapor cloud ignition by shutting down all engines and motors.
- If piping is leaking and under pressure, then relieve pressure by draining into a containment area. Then repair line according to established procedures.

If there is a fire or explosion, the following procedures are appropriate:

- Personnel safety is the first priority. Evacuate nonessential personnel or personnel at risk of injury.
- Notify local fire and police departments.
- Attempt to extinguish fire if it is in early stage and **if it can be done safely**.
- Shut down transfer or pumping operation. Attempt to divert or stop flow of product to the hazardous area if it can be done safely.
- Eliminate sources of vapor cloud ignition shutting down all engines and motors.
- Control fire before taking steps to contain spill.

5.3 Response Equipment

Caliber contracts with **Secure Energy Services** and **Three Forks Environmental** to provide spill response equipment; therefore, no equipment is maintained onsite. In the event of a release, internal response team members and external response contractors, including backhoe services and vacuum truck services, will be contacted through **Secure Energy Services** and **Three Forks Environmental**.

Absorbent booms will be situated to prevent leaks from leaving the spill area. Pumps for removal of liquids are not maintained on site; external response vacuum truck services will be responsible for removal of liquids. Backhoe services will be used to construct a containment berm.

6.0 Spill Response Actions

In the event of a spill, actions will be taken to protect personnel and public safety as well as the environment.

6.1 Initial Discovery

- Take appropriate action to protect life and ensure safety of personnel.
- Immediately notify HSE Coordinator and Qualified Individuals.
- Immediately shut down operations – only if safe to do so.
- Manage the scene until the qualified individual arrives. This includes taking appropriate actions to protect personnel and public safety, managing the spill if safe to do so, and documenting the situation.

6.2 Qualified Individuals

The qualified individuals listed in this plan has the full authority to implement this OSRP.

- Notify and coordinate response resources listed in **Section 4.2** of this plan.
- Notify state and government agencies listed in **Section 4.2** of this plan as required.

The qualified individual is responsible for managing the spill response until clean-up has been completed, including coordinating oil spill response organizations, completing all necessary notifications and spill report forms identified in **Section 4.1 and Section 10.0** of this plan.

7.0 Training Procedures (49 CFR 194.117)

Oil-handling personnel must be trained at least once a year in the prevention of oil discharges, discharge procedure protocols, applicable pollution control laws, general facility operations, and the contents of this OSRP. Oil-handling personnel are trained in the following OSRP related topics:

- Spill control equipment;
- Equipment operation and maintenance;

- Piping inspection, and maintenance;
- Spill response, containment, and cleanup;
- Company policies on reporting and responding to spills; and
- The contents of this OSRP including Response Zone specific information.

The HSE Department provides OSRP compliance training to all oil-handling personnel on an annual basis. Additional tailgate sessions are held as needed before and during certain jobs to review spill potential, necessary precautions, and appropriate responses. Training and tailgate sessions must also include an overview of known discharges releases and any recently developed precautionary measures. A sample OSRP training record form is provided in **Appendix A**. Training records are maintained by the HSE Department and are located on the Caliber VPN.

Site personnel are responsible for discharge prevention at their respective facilities and are responsible for reporting operational, maintenance, and spill prevention issues to facility management.

7.1 Drill Procedures

Caliber Midstream participates in both announced and unannounced drills, which include the following:

- Manned and unmanned pipeline emergency procedures and notification of the qualified individual drills are conducted quarterly;
- Deployment of oil spill removal equipment is conducted yearly to ensure equipment is in working order and response time is under 2 hours; and
- At least once every three years a drill that exercises the entire response plan for the Bear Den Interconnect Pipeline response zone.

Following drills, Caliber personnel will assess the effectiveness of the plan and make adjustments as necessary to improve the safety of personnel and response times.

8.0 Response Plan Review and Update Procedures (49CFR194.121)

Caliber Midstream will update this OSRP to address any new or different operating conditions or information. Additionally, Caliber Midstream will review its response plan in full at least every 5 years from the date of the last submission or the last approval as follows:

- For substantial harm plans, the OSRP must be resubmitted every 5 years from the last submission date.
- For significant and substantial harm plans, the OSRP must be resubmitted every 5 years from the last approval date.

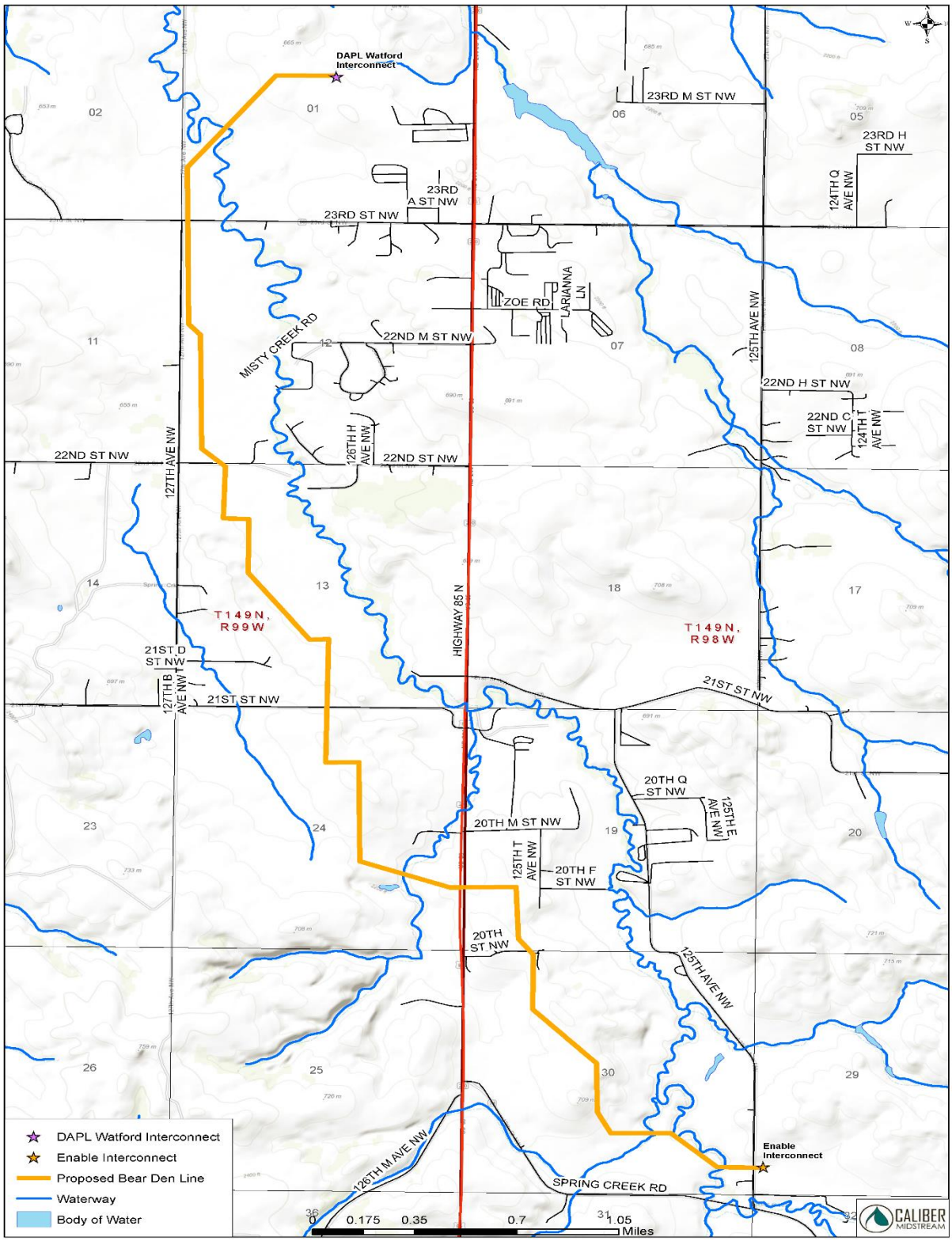
If a new or different operating condition or information would substantially affect the implementation of the OSRP, then Caliber Midstream will immediately modify its response plan to address such a change, and within 30-days of making such a change, submit the change to PHMSA. Examples of changes in operating conditions that would cause a significant change to the OSRP are:

- An extension of the existing pipeline or construction of a new pipeline in a response zone not covered by the previously approved plan;

- Relocation or replacement of the pipeline in a way that substantially affects the information included in the response plan, such as a change to the worst case discharge volume;
- The type of oil transported, if the type affects the required response resources, such as a change from crude oil to gasoline;
- The name of the oil spill removal organization;
- Emergency response procedures;
- The qualified individual;
- A change that has significant impact on the equipment appropriate for response activities; and
- Any other information relating to circumstances that may affect full implementation of this plan.

Should a worst case discharge occur, Caliber Midstream will review the incident to determine the effectiveness of the OSRP. Records of the review will be kept on the Caliber VPN and the plan will be updated if necessary.

9.0 System Map



10.0 Appendix A - Forms

Caliber Midstream Oil Spill Response Plan Training
\\CM-DCFP01\DOT Folder_Alex Facility Forms

Accident Report – PHMSA 7000-1
\\CM-DCFP01\DOT Folder_When Applicable - OPS30 Accident Report PHMSA 7000 1

Caliber Midstream Environmental Incident Report
Z:\Caliber Midstream\QHSER\Safety\Incident Forms

11.0 Appendix B – Worst Case Discharge Calculations

To be added after final engineering review.

12.0 Appendix C – SDS for Liquid Transported

To be added when received from XTO Energy.

APPENDIX F
WEED CONTROL PLAN



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Shaping the Future

1.0 Noxious Weeds- Caliber Midstream ROWs and Facilities

Noxious weeds are opportunistic and often exotic (non-indigenous) plant species that readily invade disturbed areas, often producing monocultures and preventing native plant species from establishing communities. Noxious weeds also degrade agricultural productivity, soil and water, wildlife habitat, and recreational and wilderness values.

The North Dakota Century Code (NDCC) §4.1-47-01(6) defines noxious weeds as any plant propagated by either seed or vegetative parts which is determined by the commissioner, a county weed board, or a city weed board, after consulting with the North Dakota State University Extension Service, to be injurious to public health, crops, livestock, land, or other property. Currently, there are eleven species or species groups (some include more than one species and/or cultivars) in North Dakota (North Dakota Administrative Code §7-06-01-02). Pursuant to NDCC 4.1-47 the control and the spread of noxious and invasive weeds is mandatory, and dissemination of noxious weeds must be prevented.

North Dakota's noxious weed list (see description below) includes:

- Absinth wormwood
- Canada thistle
- Diffuse knapweed
- Leafy spurge
- Musk thistle
- Purple loosestrife
- Russian knapweed
- Spotted knapweed
- Yellow toadflax
- Dalmatian toadflax
- Saltcedar

An identification guide to these and other potentially harmful weeds is included in Appendix A.

McKenzie Countie include some additional species as those warranting control.

Table 1. Additional County Listed Species

Species	McKenzie
Black henbane	x
Common burdock	x
Houndstongue	x
Halogeton	x
Baby's breath	x

2.0 Best Management Practices- Noxious Weed Control

Caliber Midstream will implement Best Management Practices (BMPs) for conducting noxious weed and vegetation control where necessary before and after construction. Generally, these include:

- Caliber Midstream will conduct awareness training to Project personnel regarding identification, prevention, and control methods. No personnel will be allowed to enter the ROW before training.
- Treat or contain weed populations that may be impacted or disturbed by construction activity.
- Use only certified weed-free straw/hay or use fiber roll logs for sediment control.
- Use only certified weed-free straw/hay for mulch.
- Clean all equipment of dirt and vegetation. The contractor shall pressure wash all construction equipment prior to mobilizing/demobilizing from the Project. This includes timber mats, cars, transporting trailers and trucks, and recreational equipment brought on-site.
- Wash, or using an air compressor, blow clean all vehicles (including tires and undercarriage) before leaving weed-infested areas.
- The Contractor shall implement pre-construction treatments such as mowing prior to seed development or herbicide application to areas of noxious weed infestation prior to other clearing, grading, trenching, or other soil disturbing work at locations identified in the construction drawings.
- Minimize ground disturbance and vegetation removal as much as possible or practical.

Further discussion of specific BMPs is included in the following sections.

2.1 Construction Methods

Prior to construction, Caliber Midstream will mark all areas of the ROW, which contain infestations of noxious, invasive species, or soil-borne pests. Such marking will clearly indicate the limits of the infestation along the ROW. During construction, the Contractor shall clean the tracks, tires, and blades of equipment by hand (track shovel) or compressed air to remove excess soil prior to movement of equipment out of weed or soil-borne pest infested areas or utilize cleaning stations to remove vegetative materials using water under high pressure.

In areas where infestations are identified in the field, the Contractor will stockpile cleared vegetation and salvaged topsoil adjacent to the area from which they were stripped. Gaps in the topsoil stockpile shall be maintained to keep stockpiled topsoil separate from topsoil where infestations are not present. The Contractor will return topsoil and vegetative material from infested sites to the areas from which they were stripped. The Contractor will not be permitted to move soil and vegetative matter outside of the identified area of infestation.

Off-ROW areas related to the Project (construction/storage yards) will be kept weed free. Inspection will be conducted on a regular basis to confirm weeds are not present. Weeds at off-ROW areas will be treated in the same manner as ROW locations.

2.2 Treatment Methods

Noxious weed control measures will be implemented in accordance with existing regulations and jurisdictional land management agencies or landowner agreements. Treatment methods will be based on species-specific and area-specific conditions (e.g., proximity to water, wetlands, riparian areas or agricultural area) and time of year. Most noxious weeds identified along the ROW may be treated by herbicide application. Mechanical methods of weed control including mowing, discing, and hand pulling of small, localized and/or isolated infestations of noxious weeds. Mechanical methods may be selected in lieu of herbicide treatment for select locations. Discing will not be applied in native habitat areas.

2.3 Reclamation Methods

Reclamation specific BMPs include:

2.3.1 Revegetate disturbed areas as soon as possible. Revegetation includes topsoil replacement, planting, seeding, fertilizing, and weed-free mulching as necessary.

2.3.2 Seeding will be conducted on disturbed areas that have reached final grade or that will remain undisturbed for 30 days.

2.3.3 Use seed and other plant materials that have been certified as weed free. Seed mixes shall conform to the managing land agency specification(s).

2.3.4 Use native materials where appropriate and feasible.

2.3.5 Treat weeds adjacent to newly seeded areas prior to planting and treat planted areas for weeds in the first growing season. Monitoring will be conducted to assess ROW stability, revegetation progress, and percentage of vegetative cover. Monitoring will assess whether applied treatment methods are effective in controlling weeds and make recommendations for further treatment.

2.4 Post-reclamation Methods

Post-reclamation specific BMPs include:

2.4.1 Re-vegetate or otherwise prevent the establishment of weeds in the project and documenting all ground-disturbing operations in noxious weed infested areas.

2.4.2 Herbicide applications to noxious weed infestation areas after grass species are established.

2.4.3 Treatment methods other than herbicide application, such as mowing and biological methods, will be considered during the post-reclamation process.

After pipeline construction, on any construction ROW over which Caliber Midstream will retain control over the surface use of the land after construction (i.e., valve sites, metering stations, pump stations, etc.), Caliber Midstream shall provide for weed control to limit the potential for

the spread of weeds onto adjacent lands. Any weed control spraying performed by Caliber Midstream shall be done by a state-licensed pesticide applicator.

3.0 Herbicide Application, Handling, Spills, and Cleanup

3.1 Herbicide Application and Handling

Herbicide treatment of selected areas along the ROW will be carried out where noxious weed species are problematic and form a significant portion of the vegetation community in comparison to adjacent areas. In areas where the occurrence of noxious weeds adjacent to the ROW makes eradication impossible, no herbicide treatment will be applied; however, other weed control methods will be employed.

Only herbicides approved for use within treated lands will be used (permitted by the relevant land management agency). The selected herbicide and application method will be adapted to target only noxious weeds and therefore preserve and retain native plants. If weeds are found near sensitive sites, proper buffers will be used to prevent the spread of herbicides to these areas. The Contractor shall not use herbicides in or within 100 feet of a wetland or water body, unless the herbicide is approved for such application. No treatments will occur without prior coordination with and approval of the landowner.

All herbicide applicators will be licensed in the State of North Dakota. Application of herbicides will be suspended during any of the following conditions:

3.1.1 Wind velocity exceeds ten miles per hour (mph) during application of liquids or 15 mph during application of granular herbicides;
3.1.2 Snow or ice covers the foliage of noxious weeds; or
3.1.3 During precipitation events or when precipitation is expected within 24 hours.

Herbicides will be applied using vehicle mounted sprayers (e.g., handgun, boom, and broadjet nozzle injector) mainly in open areas that are readily accessible by vehicle. Hand application methods (e.g. backpack sprayer) that target individual plants will be used to treat small or scattered weed populations in rough terrain. Calibration checks of equipment will be conducted at the beginning of spraying and periodically during that use to ensure that proper application rates are achieved.

Herbicides will be transported to the Project site daily with the following provisions:

3.1.4 Only the quantity needed for that day's work will be transported;
3.1.5 All herbicides will be transported in the original container, in a manner that prevents tipping or spilling, and in a compartment isolated from food, clothing, and safety equipment;
3.1.6 Mixing will be done at equipment/storage yards and at a distance greater than 200 feet from open or flowing water, wetlands, or other sensitive areas. No herbicide will be applied at these areas unless authorized by appropriate regulatory agencies; and

3.1.7 All herbicide equipment and containers will be inspected for leaks daily.

3.2 Herbicide Spills and Cleanup

All reasonable precautions will be taken to avoid herbicide spills. In the event of a spill, cleanup will be immediate. Contractors will follow the provisions in the Spill Prevention Containment and Countermeasure (SPCC) Plan developed for this Project. Contractors will keep spill kits in theirvehicles and in herbicide storage areas to allow for quick and effective response to spills. Items to keep in the spill kit(s) are:

3.2.1 Protective clothing and gloves;
3.2.2 A minimum of 20 pounds of suitable commercial adsorbent and barrier materials;
3.2.3 Plastic bags and bucket:
3.2.4 Shovel;
3.2.5 Fiber brush and screw-in handle;
3.2.6 Dust Pan;
3.2.7 Caution tape; and
3.2.8 Detergent.

Response to an herbicide spill will vary depending on the material spilled and the size and location of the spill. The order of priorities after discovering a spill are to protect the safety of personnel and the public, minimize damage to the environment, and conduct cleanup and remediation activities.

3.3 Spill Reporting

All personnel applying herbicides will have readily available copies of the appropriate material safety data sheets (MSDS) and the herbicide label(s) for the herbicides being used. All herbicide spills will be reported in accordance with applicable laws and requirements. Further information regarding spill response and reporting can be found in the SPCC Plan.

4.0 Monitoring

Monitoring of noxious weeds will be conducted as part of on-going O&M inspections. Caliber Midstream will maintain operations personnel trained in the identification of noxious weeds, who will contribute to monitoring reports by documenting noxious weeds observed during the normal course of O&M.

Monitoring will continue for a period of three (3) years after any ground disturbance takes place. Monitoring will be conducted on a biannual basis, or as needed following a report of an infestation. Known infestation sites will be monitored on an ongoing basis or until noxious weeds at the site are controlled. Caliber Midstream shall be responsible for reimbursing all reasonable costs incurred by owners of land adjacent to aboveground facilities when the landowners must control weeds on their land that can be reasonably

determined to have spread from land occupied by Caliber Midstream's aboveground facilities.

Monitoring records will:

- **4.1.1** Identify and evaluate noxious weed conditions in the first and second growing season, with particular attention given to any infestations occurring in previously unaffected areas;
- **4.1.2** Identify and evaluate locations where additional remedial action or treatment may be required and recommended treatment actions; and
- **4.1.3** Record noxious weed control treatments carried out in the reporting period.

5.0 Noxious Weed Species and Treatment Options

Species common *(and scientific)* name	Perennial	Seed viability	Reproduction/ seed production	Flowers/seed maturity	Treatment (ALWAYS refer to herbicide label for correct application)	Timing (ALWAYS refer to label for correct timing)
absinth wormwood *(Artemisia absinthium)*	long-lived perennial that grows back each year from a woody base	3-4 years	no evidence of vegetative reproduction but may regenerate from root stock; prolific seed producer; one stem can produce between 674-1468 flower heads with 35-38 seeds per head (over 51,000 seeds/plant)	July – September; seeds mature in early fall; seedlings emerge early spring to August or whenever moisture and warmth are available	easily controlled by herbicides and vigorous competition from grasses; picloram; clopyralid; dicamba; 2,4-D; glyphosate; aminopyralid; clopyralid plus triclopyr;	treat when plant is at least 12" tall and actively growing (late June to mid August); refer to individual label instructions for best timing of each herbicide
Canada thistle *(Cirsium arvense)*	creeping perennial	up to 22 years; deep burial (more than 8") promotes survival longevity	adventitious creeping root buds; root fragments as short as 0.2" if vegetative material is moved on equipment or in the soil; also reproduces by seed; up to 40,000 seeds per stem	June through August; seeds mature in as few as ten days after flowering	persistent treatment is imperative to continually stress plant and exhaust root nutrient stores; treatment must be followed through for several years to be successful; picloram; aminopyralid; clopyralid; dicamba; chlorsulfuron; glyphosate; imazapyr;	bud, rosette, and bolt stages; early spring or fall; refer to individual label instructions for best timing of each herbicide

knapweeds diffuse knapweed *(Centaurea diffusa)* spotted knapweed *(Centaurea maculosa)*	annual, biennial or perennial; individual spotted knapweed plants can live up to 9 years	5-8 years	plants regrow from buds on the root crown but reproduction is primarily by seed; seed production varies widely with site conditions; avg 680 – 25,260 seeds/plant;	flowers July through September; mature seeds usually formed by mid-August, followed by the death of the plant; dead plants break off at ground level and tumble with the wind to spread seed	although knapweeds are easily killed by herbicide application, a careful follow-up program is essential to control missed plants and seedlings; picloram; dicamba; dicamba plus 2,4-D; clopyralid plus 2,4-D; 2,4-D; triclopyr; aminopyralid	spring rosette to bloom stage or fall rosette; refer to individual label instructions for best timing of each herbicide
Russian knapweed (Centaurea repens)	creeping perennial	2-3 years; once established very difficult to control	seed and vegetative root buds; roots can grow as deep as 6' below surface after 1 years growth and 23' after 2 years; 1200 seeds per plant	June - September	2,4-D; dicamba; picloram; clopyralid; clopyralid plus 2,4-D; clopyralid plus triclopyr; metsulfuron plus 2,4-D; imazapic	generally in the fall following several hard frosts; metsulfuron plus 2,4-D can also be effective in bud to early bloom stage; refer to individual label instructions for best timing of each herbicide
leafy spurge (Euphorbia esula)	persistent, long-lived, deep rooted perennial; unknown life span	8 years or more	regenerates from very small root fragments, vegetative root buds, and by seed; average 140 seeds per plant; first year plants do not produce seeds	yellow-green bracts develop May – early June and true flowers develop a few weeks later; flowering is usually complete by mid-July; seeds mature about 30 days after pollination	picloram; dicamba; imazapic; 2,4-D; glyphosate	true flower growth stage and seed development or during fall re-growth; refer to individual label instructions for best timing of each herbicide

purple loosestrife (Lythrum salicaria)	yes; individual plants may live up to 22 years	3+ years	primarily by seed but also vegetatively by cuttings; estimated 2.7 million seeds per plant	early June – mid September	glyphosate if labeled for aquatic use; triclopyr if labeled for use in wetland sites; 2,4-D if labeled for use near water	July – early September; refer to individual label instructions for best timing of each herbicide
dalmation toadflax (Linaria dalmatica) yellow toadflax (Linaria vulgaris)	deep-rooted, short-lived perennials ; individual plants live 3 – 5 years	up to 10 years	seed reproduction, vegetative buds on creeping roots, and by root fragments; a single plant can produce over 500,000 seeds	late June through August; seed production July through October	picloram for both; imazapic or chlorsulfuron for dalmation toadflax; glyphosate; dicamba	although slow to establish, this weed is difficult to control once it takes root because many herbicides are ineffective; requires repeated treatments at high rates; apply pre-bloom to flowering or in the fall; refer to individual label instructions for best timing of each herbicide
saltcedar (Tamarix ramosissima)	yes; long-lived; in New Mexico, plants up to 100 years old show no signs of deteriorati ng from age	less than 6 months especially if subject to desiccation	vegetatively by adventitious roots or by seed production; a single mature plant can produce >500,000 seeds per season	early to mid-April through July; seeds are shed throughout the growing season	imazapyr for green leaved plants; triclopyr for cut-stump control	refer to individual label instructions for best timing of each herbicide

musk thistle (Carduus nutans) musk thistle (Cont) (Carduus nutans)	herbaceous tap rooted biennial; spring annual; occasionally a winter annual	about 10 years	by seed only; a single plant produces about 10,000 seeds	May or early June through August;	picloram; dicamba; glyphosate; clopyralid; clopyralid plus triclopyr; 2,4-D; metsulfuron; chlorsulfuron; imazapic; imazapic plus glyphosate; aminopyralid	late fall or early spring; seedling to rosette stage; refer to individual label instructions for best timing of each herbicide
houndstongue (Cynoglossum officinale)	biennial or short lived perennial	2-3 years unless buried; then only about a year	average 300-675 seeds per plant but single plants can produce over 2000 seeds	flowering May through July; seeds mature July through August	picloram; dicamba; chlorsulfuron; 2,4-D; metsulfuron; use surfactants to improve herbicide performance	1st year rosettes in spring, summer or fall; early spring before bloom for second year rosettes; when plant is actively growing; refer to individual label instructions for best timing of each herbicide
common burdock (Arctium minus)	biennial	2-10 years	by seed only; each plant produces 15,000 – 60,000 seeds	flowers July – frost; seeds mature by September and are shed continuously throughout the fall, winter, and following spring	2,4-D; picloram; dicamba; glyphosate; clopyralid; clopyralid plus triclopyr; aminopyralid; metsulfuron	herbicides are most effective when applied to first-year rosettes and before bloom stage; refer to individual label instructions for best timing of each herbicide

halogeton Halogeton glomeratus	winter annual; plants can germinate in fall, winter, or spring depending on soil moisture	black seeds have no dormancy and are viable for up to 1 year; brown seeds have a dormancy and are viable for up to 10 years	by seed only; a single large plant can produce 100,000 seeds	flowers July – August; seed maturity August - October	halogeton alters soil properties, making it difficult to establish desirable plants, so it's best not to allow this plant to establish; metsulfuron; imazapyr; chlorsulfuron; 2,4-D; imazapic; aminopyralid; sulfometuron;	apply when actively growing or very early in spring prior to flowering; refer to individual label instructions for best timing of each herbicide
baby's breath Gypsophila paniculata	herbaceous perennial;	2 years	new shoots can grow from the crown, but not the root; reproduces by seed only; a single plant can produce up to 14,000 seeds	flowers late June to late August;	hard to get good coverage with herbicides because of sparse foliage; picloram; dicamba, 2,4- D; glyphosate;	bolting to pre-flower; refer to individual label instructions for best timing of each herbicide

APPENDIX G
STORMWATER POLLUTION PREVENTION PLAN



Cardno®
Shaping the Future

STORMWATER POLLUTION PREVENTION PLAN TEMPLATE
NORTH DAKOTA DEPARTMENT OF HEALTH
DIVISION OF WATER QUALITY
SFN 19388 (12/2010)

Stormwater Pollution Prevention Plan

For:

Project Name: Caliber Bear Den Pipeline Project

Site Location/Address: Pipeline Area of Operation – McKenzie County. See attached Map.

City:

County: McKenzie County

Site Telephone Number: (if applicable) N/A

Owner(s):

Company or Organization: Caliber Bear Den Interconnect LLC

Contact Name: Skip Vest

Mailing Address: 1200 17th Street, Suite 2600

City, State, Zip Code: Denver, CO 80202

Telephone Number: (303) 628 -1410

Fax:

E-mail: svest@calibermidstream.com

SWPPP Preparation Date:

06/01/2016

NDPDES Permit Coverage Number:

_____

Foreword:

All construction projects covered by the North Dakota Pollutant Discharge Elimination System General Permit associated with stormwater discharges from construction activity, NDR10-0000, shall prepare and implement a stormwater pollution prevention (SWPP) plan as part of the permit requirements. The SWPP plan and revisions are subject to review by the North Dakota Department of Health. The objectives of the plan are to identify potential sources of stormwater pollution from construction activity and to ensure practices are implemented to minimize the contribution of pollutants to stormwater runoff. Stormwater management measures developed under other regulatory programs (e.g., Spill Prevention, Control and Countermeasure requirements) can be included in the SWPP plan or incorporated by reference.

The SWPP plan may identify more than one permittee and may specify the responsibilities of each permittee by task, area, and/or timing. Permittees may coordinate and prepare more than one SWPP plan to accomplish this. However, in the event there is a requirement under the SWPP plan for which responsibility is ambiguous or is not included in the SWPP plan, each permittee shall be responsible for implementation of that requirement. Each permittee is also responsible for ensuring that its activities do not render another permittee's controls ineffective.

The SWPP plan is an enforceable document; the purpose of the plan is not for regulators to review but for owners and operators to implement.

The SWPP plan shall include the following information:

1. Site description
2. Operational controls
3. Erosion and sediment controls
4. Stormwater management
5. Maintenance
6. Inspections
7. Records location and retention
8. Plan review and revisions
9. Final stabilization
10. Construction stormwater general permit, NDR10-0000
11. Copy of the notice of intent
12. Coverage letter from the North Dakota Department of Health
13. Guidelines, specifications or manuals for selected best management practices

1. Site Description. The plan must include a description of the construction site and potential pollutant sources.

a. Project location. Please complete one of the selections.

☐ Street Address: _____ City: _____

Subdivision (if known): _____

☐ From Township: **149N** Range: **R099W** Sections: **01,012,013,024**

☐ To Township: **149N** Range: **R098W** Sections: **019,024**

☐ Latitude: _____ Longitude: _____

☐ General Location: McKenzie County, ND

b. Describe the overall project and type of construction activity. Attach additional pages if needed and label 1-b.

The Project consists of 6.2 miles of crude oil pipeline in McKenzie County North Dakota. The pipeline will lie within a 75-foot easement and will include 2 truck loadouts.

c. Estimated total area of the project and total area expected to be disturbed by excavation, grading, grubbing or other activities. Include the estimated total area of offsite support activities that will be covered by the construction general permit. This includes concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, and borrow areas not already covered by another stormwater permit.

Total area of project: **120.73 acres**

Total area expected to be disturbed: **120.73 acres**

d. Provide a proposed timetable of soil disturbing activities for major portions of the site (for example; excavation, grading, grubbing, building, temporary stabilization, final stabilization). A construction schedule may be used if available. Attach additional pages if needed and label 1-d.

All dates are tentative and may change.

Phase	Timetable
Installation of structural stormwater controls	November 2016
Begin pipeline excavation	November 2016
Temporary stabilization of site	mid-December 2016
Final stabilization of site	December 2016

e. Describe the soil within the disturbed area(s). Attach additional pages if need and label 1-e. (Soil survey information may be found at websoilsurvey.nrcs.usda.gov/app/.)

Daglum- Belfield complex 0 to 6 percent slopes. Farnuf loam 0 to 2 percent slopes. Dooley-Zahl complex 3 to 6 percent slopes. Korchea-Fluvaquents complex, channeled, 0 to 2 percent slopes.

f. Provide the drainage path runoff takes as it leaves the site. Include the municipal, county or state-operated storm sewer or drainage ditch, as well as the first named waterbody or wetland (if known) to which the site drains. Attach additional pages if need and label 1-f.

Also include whether or not the waterbody is listed in the most recent *North Dakota Integrated Section 305(b) Water Quality Assessment Report and Section 303(d) List of Water Needing Total Maximum Daily Loads* or if a total maximum daily load (TMDL) has been developed for the waterbody.

The Integrated Report and a list of waterbodies with a TMDL may be found at: www.ndhealth.gov/WQ/SW/Z2_TMDL/default.htm.

- If the waterbody is listed in the Integrated Report in the Section 303(d) List as impaired due to sedimentation/siltation, then distance to the waterbody must be included.

- If a TMDL allocation has been developed for the waterbody or overall watershed, then a list of the particular pollutants must be included and the SWPP Plan must be developed to satisfy Part I.B.5 of NDR10-0000. The pollutants of concern often are referenced in the title of the TMDL document.

For example: The site drains to the Bismarck storm sewer and discharges into a tributary of Hay Creek. Hay Creek is listed as impaired for sediment and is 1,000 feet from the site.

Based on available USGS Topographic maps, the project site drains to nearby Spring Creek, located a varying distance south of the Project Site. Spring in McKenzie County is not on the 303(d) list.

g. Provide a site map showing the following items. Please note: Items 1 through 10 all must be shown on the site map. Label as 1-g.

1) Drainage patterns, including flow direction, dividing lines, existing grade and final grade - **Identified on Figure 1 Final grade will be identified on the figure prior to the completion of construction (By September 2016)**
2) Construction site boundaries – **Identified on Figure 2 (Same as area of soil disturbance)**
3) Areas of soil disturbance - **Identified on Figure 2**
4) Location of major structural controls identified in this plan –**Structural controls will be located on Figure 2 prior to beginning construction**
5) Location of major nonstructural controls identified in this plan – **Major non-structural controls will be located on Figure 2 prior to beginning construction**
6) Location of areas that will be stabilized – **All disturbed areas will be permanently stabilized at the end of construction activities and temporarily stabilized during any breaks in construction.**
7) Surface waters, including an aerial extent of wetland acreage - **Identified on Figure 2**
8) Locations where stormwater is discharged to surface waters – **Stormwater will not have a point discharge to Spring Creek. However, sheet flow runoff from the site may ultimately flow to various points of Spring Creek.**
9) Locations where stormwater enters municipal storm sewer systems – **Stormwater is not anticipated to enter any municipal sewer systems.**
10) If part of the project, additional site maps of:
    - Off-site concrete/asphalt batch plants – **No off-site concrete/asphalt batch plants are anticipated**
    - Equipment staging areas – **Equipment staging areas will be located on Figure 2 when they are established.**
    - Borrow sites – **No off-site borrow sites are anticipated**
    - Offsite material disposal sites - **No off-site material disposal sites are anticipated**

A Site Location Map (Figure 1) and a Site Plan (Figure 2) are provided in Attachment 1. The Site Plan (Figure 2) will be added prior to construction.

2. Operational Controls. The plan must describe the best management practices (BMPs) used in day-to-day operations on the project site that reduce the contribution of pollutants in stormwater runoff.

a. **SWPP plan contact.** The SWPP plan contact must be an individual who is knowledgeable and experienced in the application of erosion and sediment control BMPs who will oversee the implementation of the SWPP plan and the installation, inspection and maintenance of the erosion and sediment control BMPs before and during construction. The contact may be identified by name or title.

SWPPP contact: **Skip Vest** Phone: **(303) 684-4388**

Title: QHSER Director

b. **Chain of responsibility.** A chain of responsibility must be developed by the owner with all operators on site to ensure the SWPP plan will be implemented and remains in effect until (1) the project is complete, (2) final stabilization has been achieved, and (3) a notice of termination (NOT) has been submitted to the department.

The owner and operator are the same entity, therefore, a chain of responsibility is not required for this project.

c. **Good housekeeping.** Describe good housekeeping practices used to maintain a clean and orderly project.

Properly handle construction debris and waste materials. The appropriate containers for debris and waste material must be provided until disposal. Litter and debris must be picked up regularly to reduce the chance of being carried away by wind or water. Collected material must be taken to the appropriate facility for disposal or recycling.

Liquid or soluble material (i.e., oil, fuel, paint and hazardous substances) must be stored properly to prevent spills, leaks or discharges off-site. Restricted access to storage areas must be provided to prevent vandalism. Storage and disposal of hazardous waste must be in compliance with applicable regulations.

1) Describe how the following items will be properly handled to minimize exposure to stormwater and not be carried offsite by wind or water. Attach additional pages if needed and label 2-c-1.
   - Litter
   - Debris
   - Chemicals
   - Parts

See Attachment 2, Section 2-c-1 for good housekeeping BMPs that will be used to manage on-site chemicals, hazardous and non-hazardous waste, solid wastes and on-site equipment.

2) Describe how off-site accumulations of tracked sediment caused by vehicles and equipment leaving the project will be reduced and cleaned up. Attach additional pages if needed and label 2-c-2.

   Note: The general permit NDR10-0000 requires you to removed accumulated sediment tracked onto off-site paved surfaces within 24 hours or within a shorter time period specified by local authorities or the department. Be sure to check with local authorities, most specify either the end of the day or within 24 hours. You also should consider whether public safety will be an issue.

See Attachment 2, Section 2-c-2 for information on stabilized construction entrances and management of tracked sediment.

3) Describe how dust generation will be reduced and how off-site accumulations will be cleaned up. Attach additional pages if needed and label 2-c-3.

Proposed dust general control measures are described in Attachment 2, Section 2-c-3.

d. **Preventative maintenance.** Describe what preventative maintenance practices are used, including routine inspections and maintenance, to ensure the proper operation of the following. Attach additional pages if needed and label 2-d.

- Stormwater management devices (for example: oil-water separators, catch basins, fiber rolls, etc.)

Preventative maintenance and inspection procedures for stormwater controls devices are provided in Attachment 2, Section 2-d.

- Equipment used on-site, such as a pre-startup inspection

Attachment 2, Section 2-C-2 includes the procedures for maintenance and inspections of on-site construction equipment and machinery.

e. **Spill prevention and response procedures.** Describe spill prevention and response procedures used in areas where spills could occur. Bulk storage of petroleum products and other chemicals must have adequate leak and spill protection to prevent spilled material from entering waters of the state or storm sewer systems or from draining onto adjacent property.

Attachment 2 , Section 2-e provides site information for preventing and responding to spills and/or releases at the Site. Include, where appropriate:

- Specific handling procedures.
- Storage requirements.
- Spill containment procedures.
- Spill cleanup procedures.

Reportable spills are those that:

- Threaten or are in a position to threaten waters of the state, such as surface or ground water.
- Cause immediate danger to human health or safety.
- Cause harm or threaten to harm wildlife or aquatic life.
- Are releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (see 40 CFR 110.10 and CFR 117.21) or Section 102 of CERCLA (see 40 CFR 302.4).

Note: CFR stands for *Code of Federal Regulations*, and CERCLA stands for *Comprehensive Environmental Response, Compensation, and Liability Act*.

Spill Reporting

Report any spill that may seriously endanger health or the environment **as soon as possible**, but no later than 24 hours from the time you became aware of the spill. The report must be made to EPA-Region 8, Emergency Response Branch, at 800.424.8802 and the state of North Dakota, Division of Homeland Security, at 800.472.2121.

Some releases may require immediate response by trained emergency personnel. This may be coordinated through the Department of Health, Department of Emergency Services and any other state or local emergency response agencies that may be needed. **If there is any question as to proper response, call the Department of Health at 701.328.5210 or the North Dakota hazardous materials emergency assistance and spill reporting number (800.472.2121) and provide all relevant information about the incident.**

North Dakota Department of Health:

Division of Water Quality	701.328.5210
Division of Waste Management	701.328.5166
Division of Air Quality	701.328.5188
Division of Municipal Facilities	701.328.5211

North Dakota hazardous materials emergency assistance and spill reporting:
800.472.2121 (24-hour hotline)

Nonemergency releases may be reported by filling out the online Environmental Incident Report Form at www.ndhealth.gov/WQ/GW/spills.htm.

Materials will be added to this list prior to be brought on-site

Material/Chemical	Quantity	Handling Procedures	Storage Requirements	Spill Containment Procedures	Spill Clean-up Procedures

Attach additional pages if needed

f. **Employee training.** Describe how personnel are informed about their responsibility in implementing the practices and controls in the plan. Employee training can include spill response procedures, good housekeeping practices, and erosion and sediment control practices. Note: Employee training must be provided at least annually, as new employees are hired or as necessary to ensure compliance with the plan and the general permit, NDR10-0000. Attach additional pages if needed and label 2-f.

Employees involved in implementing the SWPPP (including performing inspections) will be trained on the contents of the SWPPP. This education program will include reviewing the SWPPP and hands-on training in erosion controls, spill prevention and response, good housekeeping, proper material handling, disposal and control of waste, equipment fueling, and proper storage, washing, and inspection procedures. All applicable employees will be trained prior to their first day on the site, and at least annually thereafter, and will sign the training form located in Attachment 3.

g. **Concrete wash water, grindings and slurry.** Concrete wash water may not be discharged to any water of the state or any storm sewer system or allowed to drain onto adjacent properties. Disposal must be limited to a defined area or an area designated for cement washout. The area must be sufficient to contain the wash water and residual cement.

Please note that as the project progresses, the wash out area will probably move. Be sure to keep the current position of the wash out area up-to-date on the site map.

Describe what practices will be used to prevent concrete wash water, grindings and slurry from entering waters of the state and storm sewer systems, or draining onto adjacent property. Attach additional pages if needed and label 2-g.

See Attachment 2 , Section 2-g for details on BMPs associated with designated washdown areas.

h. **Dewatering and basin draining operations.** These operations must not adversely affect receiving waters or downstream landowners. The operation should be inspected daily and a record should be maintained. The following conditions apply to dewatering activities covered by the construction general permit:

- Dewatering is limited to stormwater and groundwater that may collect on site, and the following allowable non-stormwater sources: fire-fighting, fire hydrant flushing, potable water line flushing, infrequent building and equipment wash down without detergents, uncontaminated foundation drains, springs, lawn watering and air conditioning condensate.

  Note: You are allowed to discharge the non-stormwater discharges sources only if you describe what measures will be used to minimize their impact to water quality.

  A temporary dewatering permit, NDG07-0000, is required for other sources such as hydrostatic testing, contaminated groundwater or surface water. Information about the temporary dewatering permit may be found at: www.ndhealth.gov/WQ/Dewatering/DewateringHome.htm. Discharging wastewater from processing operations or sanitary facilities is not authorized by the construction general permit, NDR10-0000.

- The operation must not lead to sediment deposits within storm sewers, ditches and surface waters. The operation must not cause or potentially cause a visible plume in a surface water.

Describe how dewatering operation will be operated to minimize the release of sediment and amount of erosion caused by the discharge.

Stormwater that accumulates on-site will be allowed to evaporate. No basins or other retention structures are currently planned to be on-site due to the primarily linear nature of the construction. If dewatering and/or basin-draining become necessary, this section of the SWPPP will be updated prior to undertaking any dewatering operations.

3. Erosion and Sediment Controls. An erosion and sediment control plan must be developed for the project. The plan must identify the appropriate control measures and when they will be implemented during each major phase of the project (e.g., clearing, grading, and building phases). – **See Erosion Control Plan Provide in Attachment 4.**

The basic requirements of an erosion and sediment control plan are:

a. Sediment basins – or an appropriate combination of equivalent sediment controls such as smaller sediment basins, and/or sediment traps, silt fences, fiber logs, vegetative buffer strips, berms, etc. – are required for all down-slope boundaries of the disturbance area and for those side-slope boundaries as may be appropriate for site conditions.

b. Temporary erosion protection (such as cover crop planting or mulching) or permanent cover must be provided where activities have been completed or temporarily ceased. For areas with a continuous positive slope within 200 lineal feet of a surface water, this must be accomplished within 21 days. These areas include graded slopes, pond embankments, ditches, berms and soil stockpiles.

   A general rule of thumb is that seed germination will occur when the soil temperature is above 50°F. Soil temperature information may be found at ndawn.ndsu.nodak.edu.

c. All control measures must be properly selected, installed and maintained in accordance with the manufacturer's specifications and good engineering practices. Include with this plan a copy of the use or installation directions for measures that are used during the project. If periodic inspections or other information indicates a control has been used inappropriately, or incorrectly, it must be replaced or modified for the situation. You may deviate from the manufacturer's specifications and erosion and sediment control guidelines below if you provide justification for the deviation and document the rationale for the deviation in your SWPP plan.

d. If sediment escapes from the site, off-site accumulations of sediment must be removed in a manner and at a frequency sufficient to minimize off-site impacts. The plan must be modified to prevent further sediment deposition off-site.

e. Stormwater controls are expected to withstand and function properly up to a two-year, 24-hour precipitation event. Visible erosion and/or off-site sediment deposits should be minimal. A two-year, 24 hour rain event in North Dakota ranges from 1.9 inches in the west to 2.3 inches in the east.

f. If the project discharges to a waterbody that has a TMDL allocation for sediment, suspended solids or turbidity, this plan must be consistent with the requirements of the TMDL. If the TMDL requires certain practices be used to meet the waste load allocation (WLA), then the practices must be included in this plan.

The erosion and sediment control plan must conform to the guidelines outlined in Appendix 1 of NDR10-0000 for designing, implementing and maintaining effective erosion and sediment controls. The following questions break down the requirements of Appendix 1.

☐ Yes X No	1. Where practical, temporary or permanent sediment basins must be provided when 10 or more acres of disturbed area drains to a common location. The basins must be provided prior to runoff leaving the site or entering surface waters. The use of sediment basins is encouraged, but not required, in areas with steep slopes or highly erodible soils even if less than 10 acres drains to one area. Is the use of sediment basins practical for the project? If no, skip to question #10. Things to consider include public safety, soil type, slope and available area.
☐ Yes ☐ No	2. Where appropriate, are temporary sediment basins installed in areas with steep slopes or highly erodible soils?
☐ Yes ☐ No	3. Are all basins sized or designed to meet one of the following guidelines? • Basins must be sized to provide 3,600 cubic feet of storage for every acre of disturbed area draining to the basin; or • Basins must be designed to provide storage for a two-year, 24-hour storm event plus more than 1,800 cubic feet of storage from each disturbed acre that drains to the basin.
☐ Yes ☐ No	4. Are basin outlets designed to avoid short-circuiting? Short-circuiting usually occurs when the outlet is

	near the inlet. This causes water to exit the basin immediately upon entering and little treatment is achieved.
☐ Yes ☐ No	5. Are basin outlets designed to avoid the discharge of floating debris?
☐ Yes ☐ No	6. Are the basins designed to allow complete drawdown for maintenance activities? Examples of drawdown devices include perforated riser pipes, pumps, skimmers or other means.
☐ Yes ☐ No	7. Is the drawdown designed to release the storage volume in a 24-hour or longer period?
☐ Yes ☐ No	8. Does the basin have a stabilized emergency overflow to prevent failure of pond integrity?
☐ Yes ☐ No	9. Does the basin outlet have an energy dissipater?
X Yes ☐ No	10. If temporary sediment basins are not practical in areas where 10 or more acres of disturbed area drains to a common location, then a combination of erosion and/or sediment controls with equivalent storage must be used for all down-slope construction boundaries and side-slope boundaries as appropriate. Examples of additional controls include smaller sediment basins, sediment traps, silt fences, vegetative buffer strips, etc. Have erosion and sediment controls been provided that have the same sediment-control capabilities as the sediment basins they replaced?
X Yes ☐ No	11. Has temporary erosion protection been provided for exposed soil areas where activities have been completed or will temporarily cease?
X Yes ☐ No	12. Has permanent cover been provided for exposed soil areas where activities have been completed or will temporarily cease?
☐ Yes ☐ No	13. For areas with a continuous positive slope within 200 lineal feet of a surface water, does the plan address how temporary erosion protection or permanent cover will be applied within 21 days of completing or ceasing earthmoving activities in these areas (pond embankments, ditches, berms, soil stockpiles)? Temporary stockpiles without significant silt, clay or organic components, such as clean aggregate stockpiles, demolition concrete stockpiles, and sand stockpiles, are exempt. **Not Applicable**
X Yes ☐ No X Yes ☐ No	14. Do temporary soil stockpiles have effective sediment controls? Does the plan address how temporary soil stockpiles will not be placed in surface waters, stormwater conveyance systems, curb and gutter systems, conduits or ditches?
☐ Yes X No ☐ Yes ☐ No ☐ Yes ☐ No	15. Are there any temporary or permanent drainage ditches that drain water from the construction site or divert water around the site? Does the plan address how the normal wetted perimeter of these ditches will be stabilized within 200 lineal feet of the property edge or point of discharge to a surface water? Does the plan address how the normal wetted perimeter will be stabilized within 24 hours of connecting to a surface water?
☐ Yes ☐ No	16. Does the plan address how pipe outlets will be provided with temporary or permanent energy dissipation within 24 hours of connecting to a surface water? **Not Applicable – no pipe outlets**
☐ Yes ☐ No	17. Where applicable, are splash pads and/or downspout extensions provided for roof drains to prevent erosion? **Not Applicable – no roof drains**

☐ Yes ☐ No	18. For slopes with a grade of 3:1 or steeper, is the slope length broken up every 75 feet? **Not Applicable – no grades of 3:1 or steeper with a length over 75 feet**.
☐ Yes ☐ No	19. Do temporary or permanent drainage ditches and sediment basins that are part of a treatment system have appropriate sediment controls? **Not Applicable – no temporary or permanent drainage ditches or sediment basins**
☐ Yes ☐ No	20. Are all storm drain inlets within the project limits and in the immediate vicinity of the site protected? This includes inlets affected by sediment tracked from the site. Note: Inlet protection is a last line of defense. Additional sediment and erosion control practices must be used on-site. Inlet protection must conform to local ordinances or regulations. Maintenance and cleaning of inlet protection must be performed in a timely manner. Inlet protection may be removed for a particular inlet if a specific concern, such as street flooding/freezing or snow removal, has been identified and documented in the SWPP plan. In these situations, additional erosion and sediment control practices must be used in place of the lost inlet protection. **Not Applicable – No storm drain inlets**.
☐ Yes ☐ No	21. Do inlet protection devices provide adequate drainage to prevent excessive flooding? **Not Applicable – No storm drain inlets**.
X Yes ☐ No	22. Do vegetative buffers have a minimum width of 25 feet for every 125 feet of disturbed area that drains to the buffer? For each additional 5 feet of disturbance, an additional 1 foot of buffer must be added. The buffer should have a slope of 5 percent or less, and the area draining to the buffer should have a slope of 6 percent or less. Note: In some instances, a minimum width of 25 feet may not be necessary based on past experience with buffers. In those cases, a short explanation about what your experience has shown should be included in this plan.
X Yes ☐ No	23. Are concentrated flows being minimized throughout the vegetative buffer?
X Yes ☐ No	24. Do vegetative buffers consist of dense, grassy vegetation? Dense, grassy vegetation is 3 to 12 inches tall with uniform coverage over 90 percent of the buffer. No more than 10 percent of the buffer may consist of woody vegetation.

4. Stormwater Management. The plan must identify what permanent practices will be used to control pollutants in stormwater discharges once construction is complete. This refers to post-construction controls like permanent infiltration devices or low-impact development practices. This does not refer to devices used to stabilize the site as a result of construction activity, such as silt fence or erosion control blanket, so this section may not apply to all projects.

Maintenance of on-site stormwater management features is your responsibility until a notice of termination has been submitted or the feature is accepted by the party responsible for long-term maintenance (e.g., a municipality accepts a stormwater pond built during the project). In the site map identify:

a. Stormwater ponds; flow reduction practices that use open vegetated swales and natural depressions; infiltration of on-site runoff; and sequential systems that combine several practices.

b. Velocity / energy dissipation devices placed at discharge locations (e.g., riprap) and appropriate erosion protection for outfall channels and ditches (e.g., hard armor or soft armor practices).

Post-construction stormwater controls other than revegetation are not anticipated. This SWPPP will be updated if additional post-construction controls are identified.

5. Maintenance. All erosion and sediment control (ESC) measures and other protective measures identified in the plan must be maintained in effective operating condition. The plan must indicate the appropriate maintenance or cleanout interval for selected erosion and sediment controls. Attach additional pages if needed and label 5.

If site inspections identify BMPs that are not operating effectively, maintenance must be arranged and accomplished as soon as practicable.

When describing the maintenance and cleanout frequency of selected measures, try not to use vague terms like "as needed." Instead describe what is meant by "as needed," such as when one-third full or at the end of each work day.

Maintenance frequencies and cleanout frequencies are provide with the maintenance procedures listed in Attachment 2, Section 2-d.

ESC Measure	Maintenance Frequency	Cleanout Frequency

Maintenance Considerations:

a. All erosion prevention and sediment control practices must be inspected to ensure integrity and effectiveness. All nonfunctional practices must be repaired, replaced or supplemented with functional practices.

b. At a minimum, you must investigate and comply with the following maintenance requirements:

- All control devices that function similarly to silt fence or fiber rolls must be repaired, replaced or supplemented with effective controls when they become nonfunctional or the sediment reaches one-third the height of the device. These repairs must be made within 24 hours of discovery or as soon as field conditions allow access.

- Sediment that has collected within temporary or permanent sedimentation basins must be removed when one-half of the sediment storage volume has been reached. Drainage and removal must be completed within 72 hours of discovery or as soon as field conditions allow access.

c. All sediment deltas and deposits must be removed from surface waters, drainage ways, catch basins and other drainage systems. All areas where sediment removal resulted in exposed soil must be restabilized. The removal and stabilization must take place immediately, but no more than seven (7) days after the discovery unless precluded by legal, regulatory or physical access constraints. All reasonable efforts must be used to obtain access. Once access is obtained, removal and stabilization must take place immediately, but no more than seven (7) days later. You are responsible for contacting all of the appropriate authorities and receiving the applicable permits prior to conducting any work.

d. Accumulations of tracked and deposited sediment must be removed from off-site paved surfaces within 24 hours or sooner if required. Sediment tracking must be minimized by the appropriate management practice, like a dedicated site exit with an aggregate surface or designated off-site parking area. You are responsible for street sweeping and/or scraping if your practices are not adequate to prevent sediment from being tracked from the site.

e. Off-site accumulations of sediment must be removed in the manner and frequency sufficient to minimize off-site impacts; for example, fugitive sediment in the street could be washed into the storm sewer by the next rain event and/or pose a safety hazard to users of public streets.

f. If a vegetative buffer is silt covered, contains rills, or is otherwise rendered ineffective, other control measures must be implemented. Any eroded areas have to be repaired and stabilized.

6. Inspections. Site inspections must be conducted to monitor the condition of stormwater discharge outlets and the effectiveness of erosion and sediment controls and other best management practices. Personnel conducting inspections must be familiar with the permit conditions and the proper installation and operation of erosion and sediment control measures. At a minimum, inspections must be performed and recorded once every 14 calendar days and within 24 hours of a 0.50-inch or more rain event. You may use a rain gauge or the nearest National Weather Service precipitation gauge station; each must be within 5 miles of the project. Inspection frequency may be reduced based on site conditions. Refer to part III.A of the construction general permit for more information.

All erosion and sediment control measures **identified in the plan** must be inspected to ensure they are operating correctly and in serviceable condition.

Surface waters, drainage ditches and conveyance systems must be inspected for sediment deposits.

Exit points from the construction site (onto paved surfaces) must be inspected for sediment being tracked by vehicles or

equipment.

Vegetative buffers must be inspected for the proper distribution of flows, sediment accumulation and signs of rill formation.

Erosion and sediment controls found in need of maintenance between inspections need to be repaired or supplemented with appropriate measures as soon as possible.

Discharge outlets from material storage areas, vehicle maintenance areas and permanent stormwater control measures must be inspected. Look for evidence of, or the potential for, pollutants entering a drainage system. The plan must be revised if any deficiencies are noted.

Inspections will be performed by or under the direction of the permittee at least once every 14 calendar days and within 24 hours after any storm event of greater than 0.50 inches of rain per 24-hour period during active construction. A rain gauge at the site or another gauge, including a National Weather Service precipitation gauge station, must be located within 5 miles of the stormwater discharge. The inspection form that is provided in Attachment 3 will be used for inspections.

Completed areas that have been stabilized but do not meet the 70% perennial vegetative cover criteria may be inspected once per month. •Inspections may be suspended for parts of the site that meet final stabilization. Inspections may be suspended where earthwork has been suspended due to frozen ground conditions. Inspections must resume as soon as runoff occurs or the ground begins to thaw

Any erosion or sediment control measure that is determined to require more frequent inspections will be identified in the table below and the permittee will perform inspections at the revised frequency identified in 6.a.

a. Some erosion and sediment control measures may require more frequent inspections based on location or as a result of a recurring maintenance issue. The measure, location and inspection frequency should be outlined below:

ESC Measure	Location	Inspection Frequency

b. Location of rain gauge being used: _____
A rain gauge location will be identified prior to beginning construction. The SWPPP will be updated to include the location.

c. In some instances, more than one inspector may be responsible for reviewing different areas of the site, or there may be different inspectors involved with different phases.

A single inspector will be responsible for reviewing all areas of the site at the commencement of construction. This inspector will be identified prior to construction activities. If other inspectors are identified, this SWPPP will be updated to reflect the new inspector(s).

Inspector(s)	Area of Inspection	Construction Phase of Inspection	Start Date	End Date

e. All inspections and maintenance activity must be recorded in writing. Records of each inspection and maintenance activity shall include:
1) The date and time of the inspection.
2) The name of the person(s) conducting the inspection.
3) The findings of the inspection, including recommendations for corrective actions.
4) Any corrective actions taken (including dates, times and party completing the maintenance activity).
5) The date and amount of all rainfall events greater than 0.05 inches in 24 hours.
6) Documentation that the SWPP plan was amended when substantial changes were made to erosion and

sediment controls or other best management practices.

The form provided in Attachment 3 will be used for all inspections. Completed copies of the form will be maintained with this SWPPP.

7. Records Location and Retention.

a. The following documents must be kept in a field office, trailer, shed or vehicle that is on-site during normal working hours:
   1) A completed and signed copy of the notice of intent – **Included in Attachment 5**
   2) The permit coverage letter from the North Dakota Department of Health - **Included in Attachment 5**
   3) The stormwater pollution prevention plan
   4) Site inspection records – **Included in Attachment 3**
   5) A copy of the North Dakota Pollutant Discharge Elimination System General Permit associated with stormwater discharges from construction activity, NDR10-0000 **- Included in Attachment 5**

b. If a reasonable on-site location is not available, then the documents may be retained at a readily available alternative location, preferably with the SWPP plan contact. If the site is inactive, then the documents may be stored at a local office.

c. All records and information must be kept for at least three years or longer if requested by the North Dakota Department of Health or United States Environmental Protection Agency.

8. Plan Review and Revisions.

a. The plan must be signed in accordance with Part IV-E of NDR10-0000.

b. The plan must be made available, upon request, to the North Dakota Department of Health, United States Environmental Protection Agency, or operator of the local municipal separate storm sewer system.

c. The plan must be amended whenever there is a change in design, construction, operation or maintenance that could have a significant effect on the potential for the discharge of pollutants to the waters of the state. It also must be amended if it is found to be ineffective in controlling pollutants present in stormwater.

SWPPP Revision Documentation

Item Revised	Revision Made	Date	Initials

9. Final Stabilization.

Final stabilization means that:

a. All soil-disturbing activities at the site have been completed and a uniform perennial vegetative cover with a density of 70 percent of the native cover for unpaved areas and areas not covered by permanent structures, or equivalent permanent stabilization measures (such as the use of riprap, gabions or geotextiles) has been achieved.

b. For areas with an average annual rainfall of less than 20 inches only, all soil-disturbing activities at the site have been completed and temporary erosion control measures (e.g., degradable rolled erosion control product) are selected, designed and installed, along with an appropriate seed base to provide erosion control for at least three years and achieve 70 percent vegetative coverage within three years without active maintenance.

c. For soil-disturbing activities on land used for agricultural purposes, final stabilization may be accomplished by returning the disturbed land to its pre-disturbance agricultural use. Areas disturbed that were not previously used for agricultural activities, such as buffer strips immediately adjacent to waters of the state, and areas that are not being returned to their pre-disturbance agricultural use must meet the final stabilization criteria in (a) or (b) above.

Final stabilization has been achieved when one of the criteria above has been met and:

a. All drainage ditches constructed to drain water from the site following construction have been stabilized to preclude erosion.

b. All temporary, synthetic and structural erosion and sediment controls have been removed.

c. Sediment has been removed from all stormwater conveyances and basins used for permanent water quality management. Removed sediment must be stabilized to prevent subsequent erosion in the future.

Final stabilization also can be achieved when a new permittee has assumed control of the site.

In the case of residential construction, final stabilization is achieved when erosion protection and down-gradient perimeter controls for individual lots have been installed and the residence has been transferred to the homeowner. In addition, a "homeowner fact sheet" must be given to the homeowner to inform them of the need for, and benefit of, stabilizing their property. You also must demonstrate that the homeowner received the fact sheet.

The individual(s) described below is(are) responsible for the following portion(s) of the Stormwater Pollution Prevention Plan:

Skip Vest	**Caliber Bear Den Interconnect**	QHSER Director
Name	Company	Title

All aspects of the SWPPP
SWPP Plan Responsibility

Name	Company	Title

SWPP Plan Responsibility

Name	Company	Title

SWPP Plan Responsibility

Name	Company	Title

SWPP Plan Responsibility

Name	Company	Title

SWPP Plan Responsibility

Attach additional pages if needed.

CERTIFICATION

Certification Instructions:

The stormwater pollution prevention plan (SWPPP) must be signed by a responsible corporate officer, a general partner, or a principal executive officer or ranking elected official.

The SWPPP may be signed by a duly authorized representative of the individual described above if:

- The authorization is made in writing by the person described above and submitted to the North Dakota Department of Health; and

- The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the plant manager, the superintendent, a position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters.

If the authorization is no longer accurate for any reason, a new authorization satisfying the above requirements must be submitted to the Department of Health prior to or together with any reports, information or applications signed by the authorized representative.

Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein. Based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Name: Skip Vest

Signature:



Title: QHSER Director

Date: 6/17/2016

Attachment 1
Site Maps

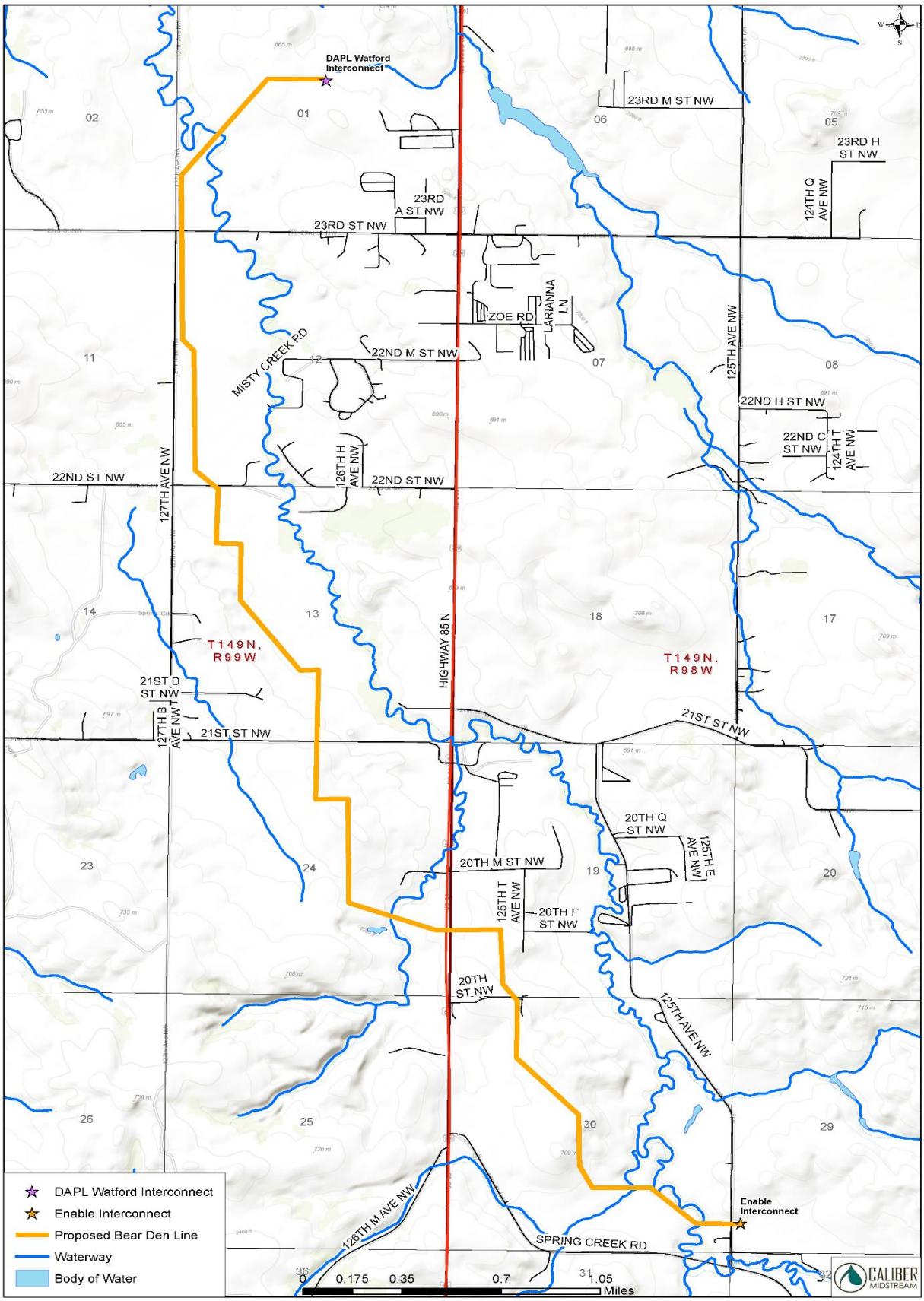

DAPL Watford Interconnect
23RD M ST NW
23RD H ST NW
124TH Q AVE NW
23RD A ST NW
23RD ST NW
ZOE RD
LARIANNA LN
MISTY CREEK RD
22ND M ST NW
125TH AVE NW
22ND H ST NW
22ND C ST NW
124TH T AVE NW
126TH H AVE NW
22ND ST NW
127TH AVE NW
T149N, R99W
T149N, R98W
HIGHWAY 85 N
21ST D ST NW
127TH B AVE NW
21ST ST NW
20TH Q ST NW
125TH E AVE NW
20TH M ST NW
125TH T AVE NW
20TH F ST NW
20TH ST NW
125TH AVE NW
126TH M AVE NW
SPRING CREEK RD
Enable Interconnect
DAPL Watford Interconnect
Enable Interconnect
Proposed Bear Den Line
Waterway
Body of Water
0 0.175 0.35 0.7 1.05
Miles
CALIBER MIDSTREAM

Figure 1

Attachment 2
Supplemental Information for SWPPP Operational Practices (2-c, 2d, 2e, and 2-g)

2-c Good Housekeeping BMPS

General housekeeping refers to any management and/or work practices implemented on a construction site to prevent the contamination of stormwater by materials other than sediment. General housekeeping practices involve proper management of chemicals and other potentially hazardous construction materials, equipment, and wastes. The following sections detail the specific BMPs and work practices that will be implemented on the Site.

2-c-1 Chemical and Solid Waste Management

Chemical/Materials Management

Several BMPs have been selected for use during this project to address potential stormwater contamination from leaks or spills and from the storage and handling of materials. Each BMP will be put in place and/or utilized as needed through the project duration. Protective measures shall be in place at all times and BMP procedures shall be followed throughout the project duration to prevent or mitigate pollution. The BMPs are described in the following subsections. Materials of concern include petroleum products and antifreeze for construction equipment.

Storage and Labeling Procedures

These practices are to be implemented for the proper handling, storage, and labeling of materials in order to prevent spills or leaks into the stormwater. These practices are to be implemented in all areas where delivery and storage of materials may be detrimental to the environment.

- All containers and materials shall be properly and legibly labeled.
- Material safety data sheets (MSDS) shall be made available for all materials.
- Hazardous material storage and handling shall comply with applicable regulations and requirements.
- Where possible, cover stockpiled materials (see additional sediment controls in the Erosion Control Plan required for soil stockpiles). Do not allow water to pond around stored drums.
- Do not pinch a drum with a forklift when unloading or moving.
- Mark any damaged containers.
- Chemicals, drums, and bagged materials will not be stored directly on the ground. Materials will be stored in a bermed, lined area or on secondary containment.
- Chemically incompatible materials shall not be stored together or in the same storage facility.
- When possible, keep chemical products in their original containers, bungs on lids closed, and labeled in accordance with U.S. Department of Transportation (DOT) and U.S. Environmental Protection Agency (EPA) regulations.
- Containment areas that have collected precipitation will not be drained until SWPPP coordinator has ensured that drainage will not contaminate surrounding soil.

- Sufficient separation shall be allowed between storage containers to allow for cleanup and emergency response.
- Personnel shall be trained in proper material handling and storage techniques, how to identify potential sources of pollutants, and spill prevention and response procedures.
- Leaks or spills shall be contained and cleaned up immediately.
- Less hazardous, recycled, or non-toxic materials shall be used whenever possible.
- Used and excess materials shall be recycled and/or properly disposed of.
- Materials shall be used only where and when necessary to complete the construction activity. Excess application of materials shall be avoided.

Solid Waste Management (Litter and Debris)

These practices are to be implemented for the proper handling and disposal of solid waste (including hazardous waste) in order to prevent spills or leaks into the stormwater. These practices are to be implemented in all areas where delivery and storage of materials may be detrimental to the environment:

Collection, Storage, and Disposal

- Provide covered dumpsters of sufficient size and number to contain the solid waste generated by Site operations.
- Keep the site clean of litter and debris.
- Remove full dumpsters from the project site as soon as possible.
- Depose of litter stored in collection areas and containers every 2 weeks or more frequently.
- Prevent stormwater runoff from contacting stored solid waste through the use of berms, dikes, or other temporary diversion structures.
- Locate solid waste storage areas more than 50 feet from drainage facilities and watercourses and away from areas prone to flooding or ponding.
- Dumpster washout is not allowed on the project site.

Sanitary Waste Management

- Locate portable toilets a minimum of 20 feet away from storm drain inlets, drainage facilities, watercourses, and from traffic circulation. If unable to meet the 20-foot distance requirement, provide secondary containment for portable toilets.
- Educate employees, subcontractors, and suppliers on sanitary waste storage and disposal procedures and potential dangers to humans and the environment from sanitary wastes.
- Hold regular meetings to discuss and reinforce deposal procedures and educate new employees.
- Properly connect temporary sanitary facilities that discharge to the sanitary sewer system to avoid illicit discharges. Comply with local, municipal, county, and sewer district requirements.
- Ensure that sanitary facilities are maintained in good working order by a licensed service. Use only reputable, licensed sanitary waste haulers.

Hazardous Waste Management

- Segregate hazardous and non-hazardous construction debris and waste.
- Ensure adequate waste storage space is available, waste collection containers are conveniently located, and adequate cleanup and containment materials are available onsite.
- Store wastes in an appropriate type of container and properly labeled per EPA, Occupational Safety and Health Administration (OSHA), and DOT regulations.
- Hazardous material storage and handling shall comply with applicable regulations and requirements.

Equipment and Parts Maintenance Procedures

These practices are to be used during vehicle and equipment staging, fueling, cleaning, and maintenance to prevent associated stormwater pollutants from entering stormwater. These BMPs apply to facilities or designated construction work areas where vehicles and equipment are staged, fueled, cleaned, or maintained

- Use drip pans or absorbent materials under equipment to catch/contain leaks.
- All maintenance areas are required to have spill kits and/or use other spill protection devices.
- Absorbent spill clean-up materials should be available and should be disposed of properly after use.
- Dedicated maintenance areas should be protected from stormwater runon and runoff and should be located at least 50 feet from downstream drainage facilities and watercourses.
- Use offsite maintenance facilities whenever practical.
- Properly dispose of used oils, fluids, lubricants, and spill cleanup materials. Do not dump fuels and lubricants onto the ground, place used oil in a dumpster, or pour into a storm drain or watercourse.
- Repair fluid and oil leaks immediately.
- Provide spill containment dikes or secondary containment around stored oil and chemical drums.
- Properly dispose or recycle used batteries.
- Inspect vehicle and equipment maintenance and staging areas regularly.
- Vehicles and equipment should be inspected on each day of use. Leaks should be repaired immediately or the equipment/vehicle should be removed from the Site.
- Inspect equipment for damaged hoses and leaky gaskets routinely and repair or replace as needed.
- Perform cleaning, washing, and maintenance in a centralized station offsite where possible.
- Proper spill and illicit discharge reporting and cleanup procedures shall be followed for both hazardous and non-hazardous materials.

2-c-2 Construction Entrances

Stabilized construction entrances will be installed at any point where construction traffic leaves to or enters from an existing paved road to reduce or eliminate the tracking of sediment onto public rights-of-way or streets. A stabilized construction entrance is stabilized pad of aggregate underlain with filter cloth. Stabilized construction entrances will be implemented at all areas of construction entrance and egress prior to the entrance being used and will be shown on Figure 2 prior to being used as a construction entrance. Construction entrances should meet the following requirements:

- Stabilized site entrances must be long and wide enough to allow the largest construction vehicle that will enter the site to fit through with room to spare. If many vehicles are expected to use an entrance in any one day, the site entrance must be wide enough for two vehicles to pass at the same time with room on either side of each vehicle.
- If a site entrance leads to a paved road, the end of the entrance must be flared so that long vehicles do not leave the stabilized area when they turn onto or off the paved roadway.
- If a construction site entrance crosses a stream, swale, or other depression, a bridge or culvert must be provided to prevent erosion from unprotected banks.
- Stone or gravel must be installed at a depth of at least 6 inches for the entire length and width of the stabilized construction entrance. Additional gravel will be added, as needed, to maintain proper functioning of the pad during construction activities.
- Accumulated sediment tracked onto off-site paved surfaces will be removed within 24 hours.

2-c-3 Dust Control

Dust control BMPs reduce surface activities and air movement that causes dust to be generated from disturbed soil surfaces. Actual dust control measures to be used at the site will be selected prior to beginning any earth-disturbing activities and may include:

- *Sprinkling/Irrigation*. Sprinkling the ground surface with water until it is moist is an effective dust control method for haul roads and other traffic routes. Water application must not result in offsite discharge.
- *Vegetative Cover*. In areas not expected to handle vehicle traffic, vegetative stabilization of disturbed soil may be used. Vegetative cover provides coverage to surface soils and slows wind velocity at the ground surface, thus reducing the potential for dust to become airborne.
- *Mulch*. Mulching is a quick and effective means of dust control for a recently disturbed area.
- *Wind Breaks*. Wind breaks are barriers (either natural or constructed) that reduce wind velocity through a site and, therefore, reduce the possibility of suspended particles. Wind breaks may be trees or shrubs left in place during site clearing or constructed barriers such as a wind fence, snow fence, tarp curtain, hay bale, crate wall, or sediment wall.
- *Tillage*. Deep tillage in large open areas brings soil clods to the surface where they rest on top of dust, preventing it from becoming airborne.
- *Stone*. Stone is be an effective dust deterrent for construction roads and entrances.

This SWPPP will be updated when the specific dust control measures to be used at the site have been selected. Any dust/sediment accumulated offsite will be swept and/or collected.

2-d Preventative Maintenance

Stormwater Management Devices

Maintenance procedures for stormwater management devices that that may be used at the site are based on information contained in the construction general permit (NDR10-0000) and EPA guidance found at http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=min_measure&min_measure_id=4. General maintenance procedures for the stormwater controls include:

Check Dams

- Inspect after each storm event to ensure structural integrity.
- The center of a check dam should always be lower than its edges. Additional stone may have to be added to maintain the correct height.
- Remove large debris, trash, and leaves during inspections.
- Accumulated sediment will be removed when the sediment has reached a height of approximately one-half the original height of the dam (measured at the center),
- When check dams are removed, care will be taken to remove all dam materials to ensure proper flow within the channel.
- If erosion or heavy flows cause the edges of a dam to fall to a height equal to or below the height of the center, it will be repaired immediately.

Fiber Rolls

- Inspections should ensure that fiber rolls remain firmly anchored in place and are not crushed or damaged by traffic at the site
- Fiber roll**s** must be repaired, replaced, or supplemented when they become nonfunctional (e.g., split, torn, unraveled, or slumping) or the sediment reaches 1/3 of the height of the device.
- Repairs must be made within 24 hours of discovery, or as soon as field conditions allow access.

Sediment Basins

- Inspect basins after each storm event to ensure proper drainage from the collection pool and determine the need for structural repairs.
- Replace material eroded from earthen embankments or stones moved from rock dams immediately.

- Locate sediment basins in an area that is easily accessible to maintenance crews for removal of accumulated sediment.
- Remove sediment from the basin when the storage capacity has reached approximately 50 percent. Drainage and removal must be completed within 72 hours of discovery or as soon as field conditions allow.
- Remove trash and debris from around dewatering devices promptly after rainfall events

Sediment Traps

- Remove accumulate sediment when the basin reaches about 50 percent sediment capacity.
- Inspect the sediment trap after each rainfall event to ensure that the trap is draining properly and check the structure for damage from erosion.
- Check the depth of the spillway and maintain it at a minimum of 1.5 feet below the low point of the trap embankment

Silt Fences

- Silt fences will be evaluated during routine inspections to determine whether they need maintenance because they are full or damaged by construction equipment.
- Silt fence inspections will ensure that the bottom edge of the fence remains anchored into the ground.
- Sediment deposits from behind the fence will be removed when they reach 1/3 the height of the fence or a second fence will be installed.

Organic Filter Barriers (e.g., Straw or Hay Bales)

- Degraded or rotting bales will need to be replaced on a regular basis (as often as every 3 months depending on local conditions).
- Erosion from washouts around the bales be repaired if observed during inspections
- Sediment that settles in ponded areas around correctly installed bales will be cleaned out when the sediment accumulation reaches one-third of the bale height.
- Straw bales will be removed when they burst open or are no longer needed.

Vegetated Buffers

- Routine maintenance will be performed to keep vegetation healthy in vegetated buffers and may include weed and pest control, mowing, fertilizing, liming, irrigating, and pruning.
- Vegetated buffers will be inspected after heavy rainfall and at least once a year while construction activities are occurring at the site. If more than 6 inches of sediment has accumulated, it will be removed.

Erosion Control Blankets (Rolled Erosion Control Products)

- Inspect blankets after installation and periodically during construction activities.
- Inspect blankets and mats before and after significant storm events, for erosion and

undermining.

- Repair damages and failures immediately.
- Repair the slope or channel before reinstalling blankets if washouts or breakages have occurred.

Mulching

- Anchor mulches to resist wind displacement
- Mulched areas will be inspected frequently to identify areas where it has loosened or been removed, especially after rainstorms.
- Areas will be reseeded, if necessary, and the mulch cover will be replaced immediately.
- Mulch binders will be applied at rates recommended by the manufacturer.
- If washout, breakage, or erosion occurs, repair, reseed and remulch surfaces, and install new netting. Continue inspections until vegetation is firmly established

2-e Spill Prevention and Response Procedures

These practices are implemented to prevent and control spills to ensure that spills and leaks do not result in water quality impacts and applies to all construction activities. Spill prevention and response measures shall be implemented any time chemicals or hazardous substances are used, stored, or handled and includes the following measures

Spill Response Procedures

- Project areas and activities potentially susceptible to spills shall be identified. Areas and activities that are most vulnerable to spills include: loading and unloading areas, fuel and chemical storage areas, process activities, dust or particulate generating processes, and waste disposal activities.
- Spills shall be contained and cleaned up as soon as possible.
- If complete cleanup is not immediately possible, then spills shall be fully covered and not exposed to rainfall.
- Spills shall not be washed down or buried.
- Residuals left over from the cleanup activity such as absorbent pads or containers of spill material shall be disposed of properly.
- Proper spill and illicit discharge reporting procedures shall be followed for both hazardous and non-hazardous materials.
- An area where a spill has occurred shall be inspected to verify that spill residuals are not present after the initial cleaning and that the area does not need to be re-cleaned.
- Emergency phone numbers shall be posted at the construction area.
- Personnel shall be trained in emergency response procedures.
- Proper notification of regulatory agencies shall occur in the event of a reportable spill.

Cleanup Response Procedures

Response guidelines have been identified below for responding to spills that may potentially result in an illicit discharge. It is the contractor's responsibility to have all emergency phone numbers available at the construction site as well to notify the proper response agencies in a timely manner. It is also the contractor's responsibility to ensure timely and proper cleanup of any spill.

For **non–hazardous materials** such as gasoline or oil that may be spilled in small quantities which do not enter state waters or pose a potential to do so, the following measures shall be implemented:

- Use absorbent materials to contain spills and clean the area of residuals.
- Dispose of the absorbent material properly.
- Do not hose down spill area with water.

- Notify individual identified in the SWPPP as responsible for SWPPP implementation.

For **non-hazardous materials** that qualify as a significant spill or spills of any size that enter state waters or have the potential to do so, follow the spill reporting procedures presented in section 2-d of the SWPPP and clean up spill immediately. Use absorbent materials if the material is on an impermeable surface. Construct an earthen dike to contain a spill on dirt areas. If rainfall is present at the time of the spill, cover the spill with a tarp to prevent contaminating runoff.

For spills involving **hazardous materials**, follow the spill reporting procedures presented in section 2-d of the SWPPP and cleanup spill immediately. A licensed contractor or HazMat team shall be used to properly clean up spills.

2-g Designated Washdown Areas

Designated washout areas and associated procedures ensure the proper washout of concrete trucks, tools, and equipment and prevent fresh concrete from entering a storm drain. The following BMPs will be implemented:

- Concrete-related waste will not be allowed to enter watercourses, but will be collected and properly disposed of or placed in a temporary concrete washout structure.
- A sign will be installed adjacent to each temporary concrete washout structure to inform operators to utilize the structures.
- Temporary concrete washout facilities should be located a minimum of 50 feet from storm drain inlets, open drainage facilities, and watercourses, unless determined infeasible by SWPPP responsible party. Each facility should be located away from construction traffic or access areas to prevent disturbance or tracking.
- Temporary concrete washout facilities should be constructed above grade or below grade at the option of the contractor and have sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.
- Wash concrete only from mixer truck chutes into approved concrete washout facility. Washout may be collected in an impermeable bag for disposal.
- Above-grade temporary concrete washout structures should have a minimum length and width of 10 feet or larger to provide sufficient volume to contain all liquid and concrete waste generated by washout operations.
- Plastic lining should be a minimum of 10-mil polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.

Attachment 3
SWPPP forms

Site Inspection Record Template
Construction
(06-2016)

Project Name: _____

Coverage Number: _____

Inspector: _____ Date: _____ Time: _____

Precipitation Amount: _____ Date: _____

Areas Inspected (Choose Applicable): ☐ Active areas

☐ Stabilized areas with less than 70% cover

☐ Areas that have achieved final stabilization

Is there evidence of, or the potential for, pollutants entering drainage systems or waters of the state from:

- Material Storage Areas ☐ Y ☐ N
- Vehicle Maintenance Areas ☐ Y ☐ N

Observations / Corrective Actions:

_____

_____

_____

☐ Y ☐ N	Have all erosion and sediment controls and best management practices identified in the plan been installed or implemented?
☐ Y ☐ N	Are erosion and sediment controls operating correctly and in serviceable condition?
☐ Y ☐ N	Are erosion and sediment controls operating consistently and effectively?
☐ Y ☐ N	Are there any devices similar to silt fence or fiber rolls where sediment has reached more than 1/3 the height of the device? (Removal and repairs must be made within 24 hours.)
☐ Y ☐ N	Are there any sediment basins where collected sediment has reduced the storage capacity by 1/2? (Drainage and removal must be completed within 72 hours.)
☐ Y ☐ N	Is there evidence of sediment deposits in surface waters, drainage ditches or other stormwater conveyance systems? (Removal and stabilization must be completed within 7 days unless prohibited by legal, regulatory or physical access constrains. All reasonable efforts must be made to obtain access. Once permission is granted, removal must take place within 7 days.)
☐ Y ☐ N ☐ NA	Is there evidence of sediment being tracked off-site by vehicles or equipment? (Sediment tracked or deposited on paved surfaces must be removed within 24 hours.)
☐ Y ☐ N	Is there evidence of sediment depositing off-site other than in surface waters, drainage ditches and stormwater conveyance systems? (Sediment must be recovered in a manner and frequency sufficient to minimize off-site impacts – for example, sediment could wash away during the next precipitation event.)
☐ Y ☐ N ☐ NA ☐ Y ☐ N ☐ NA ☐ Y ☐ N ☐ NA	Is stormwater flow distributed evenly over vegetative buffers? Is sediment accumulating in vegetative buffers? Are rills forming within vegetative buffers? (If vegetative buffers are silted covered, contain rills or are otherwise rendered ineffective, other erosion and sediment controls must be implemented. Eroded areas must be repaired and stabilized.)
☐ Y ☐ N	Are litter, debris, chemicals and parts being managed properly to minimize stormwater pollution?
☐ Y ☐ N	Are liquid or soluble materials like oil, fuel, paint, etc., properly stored to prevent spills, leaks or other

	discharges?
☐ Y ☐ N	Is there evidence of concrete wash water discharging to waters of the state, storm sewer systems or onto adjacent properties?
☐ Y ☐ N	Is there evidence of wastewater from processing operations or sanitary facilities (i.e., portable toilets) discharging from the site? (These types of discharges are not covered by the construction general permit, NDR10-0000. They must be stopped immediately if they are not covered by another type of permit. The following non-stormwater discharges are allowable if the appropriate prevention measures are in place: fire-fighting, fire hydrant flushing, potable water line flushing, infrequent building and equipment wash down without detergents, uncontaminated foundation drains, springs, lawn watering and air conditioning condensate. Please note that discharges from temporary dewatering activities, such as hydrostatic testing or disinfection of new pipelines may require coverage under the temporary dewatering general permit, NDG07-0000.)
☐ Y ☐ N	Is there evidence of wash water from tools or equipment draining to waters of the state, drainage ditches or storm sewer systems?
☐ Y ☐ N ☐ NA	Are permanent stormwater management measures (e.g., oil-water separators, rain gardens) functioning properly?

Corrective Actions and Schedule:

_____

_____

_____

- Are best management practices effective to minimize the discharge of sediment from the site? ☐ Y ☐ N
- Do best management practices need to be adjusted? ☐ Y ☐ N
- Are additional best management practices needed? ☐ Y ☐ N

Comments:

_____

_____

_____

List all spills, leaks or hose-breaks that have occurred since the last inspection:

-Size	-Location	-Was it reportable?	-Was it reported?
_____	_____	☐ Y ☐ N	☐ Y ☐ N
_____	_____	☐ Y ☐ N	☐ Y ☐ N
_____	_____	☐ Y ☐ N	☐ Y ☐ N

- Were Spill Prevention Procedures adequate? ☐ Y ☐ N
- What Spill Response Procedures were used?

Comments

_____

_____

_____

- Has the SWPP Plan been updated as a result of this inspection? ☐ Y ☐ N

- Has the Site Map been updated as a result of this inspection? ☐ Y ☐ N

Training Log

I have reviewed the SWPPP and received training in erosion controls, spill prevention and response, good housekeeping, proper material handling, disposal and control of waste, equipment fueling, and proper storage, washing, and inspection procedures.

Name	Company	Training Date

Attachment 4
Erosion Control Plan

Various types of structural controls will be used for erosion and sediment control at the Project Site. Final identification of specific control devices that will be used will be identified prior to the commencement of construction. If additional erosion and/or sediment control devices are identified prior to or during construction, they will be added to this plan and to applicable sections of the SWPPP. The stormwater controls are expected to withstand and function properly during precipitation events of up to the 2 year, 24 hour storm event. Visible erosion and/or off-site sediment deposition from such storm events should be minimal. The 2 year, 24 hour rainfall event in North Dakota ranges from about 1.9 inches in the west to 2.3 inches in the east.

Erosion control devices that may be selected for the facility construction and pipeline construction activities are presented below. Design, installation, and maintenance specifications can be found at http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=min_measure&min_measure_id=4

Natural Gas Processing Plant, Crude Oil Storage Facility, and Salt Water Basin Construction Area (Faciity Construction)

Sediment Controls

Sediment control BMPs will be installed at the site perimeter to reduce runoff velocity and cause deposition of the transported sediment prior to runoff leaving the site. Based on conditions at the site, one or more of the following sediment control BMPs may be used:

- ***Organic Filter Barriers***. An organic filter barrier is a temporary linear sediment barrier consisting of straw bales or similar material, designed to intercept and slow sediment-laden sheet flow runoff.
- ***Sand Bag Barriers***. A sand bag barrier is a temporary berm constructed of stacked sandbags along the perimeter of a site or along the right-of-way in a disturbed area, designed to intercept and slow the flow of sediment-laden runoff. Sandbag barriers allow sediment to settle from runoff before water leaves the construction site.
- ***Gravel Filter Berm.*** A gravel filter berm is a temporary berm constructed of open graded rock or bags of gravel installed at the toe of a slope, or the perimeter of a developing or disturbed area, designed to intercept and detain sediment-laden water from an unprotected area, detain the sediment, and release the water in sheet flow.
- ***Fiber Rolls.*** Fiber rolls (also called fiber logs or straw wattles) are tube-shaped erosion-control devices filled with straw, flax, rice, coconut fiber material, or composted material. Each roll is wrapped with UV-degradable polypropylene netting for longevity or with 100 percent biodegradable materials like burlap, jute, or coir. Fiber rolls complement permanent best management practices used for source control and revegetation. When installed in combination with straw mulch, erosion control blankets, hydraulic mulches, or bounded fiber matrices for slope stabilization, these devices reduce the effects of long or steep slopes. Fiber rolls also help to slow, filter, and spread overland flows. This helps to prevent erosion and minimizes rill and gully development. Fiber rolls also help reduce sediment loads to receiving waters by filtering runoff and capturing sediments.

- ***Vegetated Buffers.*** Vegetated buffers are areas of natural or established vegetation maintained to protect the water quality of neighboring areas. Buffer zones slow stormwater runoff, provide an area where runoff can permeate the soil, contribute to ground water recharge, and filter sediment. Slowing runoff also helps to prevent soil erosion and streambank collapse. Vegetative buffers will have a minimum width of 25 feet for every 125 feet of disturbed area draining to the buffer and will have a slope of 5 percent or less. The area draining to the buffer should have a slope of 6 percent or less. Vegetated buffers should consist of 90% dense, grassy vegetation.
- ***Silt Fences***. A silt fence is a geotextile fabric stretched between either wooden or metal posts with the lower edge of the fabric securely embedded in the soil typically located downstream of disturbed areas to intercept sheet flow runoff. The two main purposes for silt fences are to intercept and detain small amounts of sediment from disturbed areas during construction and decrease the velocity of sheet flows and low-to-moderate level channel flows.

Due to the nature of stormwater flow from the site, sediment basins are not anticipated to be required for construction activities. In addition, they are not generally considered practical due to the primarily linear nature of the construction. However, sediment basins and sediment traps have been included in this plan in the event that they become necessary.

- ***Sediment Basins and Traps***. Sediment basins and sediment traps can be used to capture sediment from stormwater runoff before it leaves a construction site. Both structures allow a pool to form in an excavated or natural depression, where sediment can settle. The pool is dewatered through a single riser and drainage hole leading to a suitable outlet on the downstream side of the embankment or through the gravel of the rock dam. The water is released more slowly than it would be without the control structure. For common drainage locations that serve an area with 10 or more acres disturbed at one time, a temporary (or permanent) sediment basin that provides storage for a calculated volume of runoff from the drainage area from a 2-year, 24-hour storm, or equivalent control measures, must be provided where attainable until final stabilization of the site. Where no such calculation has been performed, a temporary (or permanent) sediment basin providing 3,600 cubic feet of storage per acre drained, or equivalent control measures, must be provided where attainable until final stabilization of the site.

Additional sediment control devices that may be used on sloped construction areas to minimize erosion and runoff of sediment include:

- ***Mulching.*** Mulching is an erosion control practice that uses materials such as grass, hay, wood chips, wood fibers, straw, or gravel to stabilize exposed or recently planted soil surfaces. Mulching is highly recommended and is most effective when used in conjunction with vegetation. In addition to stabilizing soils, mulching can reduce stormwater velocity and improve the infiltration of runoff. Mulching can also aid plant growth by holding seeds, fertilizers, and topsoil in place, preventing birds from eating seeds, retaining moisture, and insulating plant roots against extreme temperatures.
- ***Erosion Control Blankets (Rolled Erosion Control Products)***. Erosion-control blankets are used to help limit erosion and establish vegetation on slopes and in ditches where conventional seeding and/or structural methods would be inadequate. By reducing the negative effects of rainfall impact and runoff, erosion-control blankets provide slopes and ditches with a temporary, stable environment for seed to germinate.

Temporary erosion protection or permanent cover will be provided for exposed soil areas where activities have been completed or temporarily ceased. For those areas with a continuous positive slope within 200 lineal feet of a surface water, temporary erosion protection or permanent cover will be applied within 21 days of completing or ceasing earth moving activities. These areas include pond embankments, ditches, berms and soil stockpiles. Mulching, erosion control blankets or vegetative cover will be used as temporary erosion protection.

Temporary soil stockpiles will have effective sediment controls, and will not be placed in surface waters, including stormwater conveyances such as curb and gutter systems, or conduits and ditches. Effective sediment controls may include earthen berms or organic filter barriers.

The normal wetted perimeter of any temporary or permanent drainage ditch that drains water from a construction site, or diverts water around a site, will be stabilized at least 200 lineal feet from the property edge, or from the point of discharge to any surface water. Stabilization will be completed within 24 hours of connecting to a surface water.

Any sediment that escapes from the site will be removed in a manner and at a frequency sufficient to minimize off-site impacts. If sediment escapes off-site, the SWPPP will be modified to prevent further sediment deposition off-site.

Pipeline Construction

Sediment control during pipeline construction may include many of the sediment controls listed above, including the following:

- Organic Filter Barriers
- Sand Bag Barriers
- Gravel Filter Berm
- Fiber Rolls
- Vegetated Buffers.
- Silt Fences

Additionally, check dams may be used during pipeline construction as described below:

- *Check Dams.* To reduce erosion in channels, swales and ditches caused by high flow velocities through the installation of temporary dams constructed of rocks or gravel bags. Check dams reduce flow velocity and channel scour and encourage sediment deposition.

As with facility construction areas, temporary erosion protection or permanent cover will be provided for exposed soil areas where activities have been completed or temporarily ceased. For those areas with a continuous positive slope within 200 lineal feet of a surface water, temporary erosion protection or permanent cover will be applied within 21 days of completing or ceasing earth moving activities. These areas include pond embankments, ditches, berms and soil stockpiles. Mulching, erosion control blankets or vegetative cover will be used as temporary erosion protection.

Temporary soil stockpiles will have effective sediment controls, and will not be placed in surface waters, including stormwater conveyances such as curb and gutter systems, or conduits and ditches. Effective sediment controls may include earthen berms or organic filter barriers.

The normal wetted perimeter of any temporary or permanent drainage ditch that drains water from a construction site, or diverts water around a site, will be stabilized at least 200 lineal feet from the property edge, or from the point of discharge to any surface water. Stabilization will be completed within 24 hours of connecting to a surface water.

Any sediment that escapes from the site will be removed in a manner and at a frequency sufficient to minimize off-site impacts. If sediment escapes off-site, the SWPPP will be modified to prevent further sediment deposition off-site.

Final Stabilization

Erosion control devices that may be used during final stabilization will be included in the SWPPP after construction has commenced. Potential final stabilization controls will be identified and included in this SWPPP by September 2016.

Attachment 5
Notice of Intent, Permit Coverage Letter, and CGP 10-0000

APPLICATION (NOTICE OF INTENT) TO OBTAIN COVERAGE UNDER NDPDES GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY (NDR10-0000)

NORTH DAKOTA DEPARTMENT OF HEALTH
DIVISION OF WATER QUALITY
SFN 19145 (12/15)

FOR DEPT. USE ONLY

Application No.
Date Received

GENERAL INFORMATION

1. Name of Owner of Construction Project	2. Contact First Name	3. Contact Last Name	4. Contact Phone No.
Caliber Midstream	Skip	Vest	(720) 684-4388

5. Contact E-mail Address
svest@calibermidstream.com

6. Mailing Address	7. City	8. State/Province	9. Zip Code
1200 17th Street Suite 2100	Denver	CO	80202

10. Name of Operator Working at Site	11. Contact First Name	12. Contact Last Name	13. Contact Phone No.
Caliber Midstream	Skip	Vest	(720) 684-4388

14. Contact E-mail Address
svest@calibermidstream.com

15. Mailing Address	16. City	17. State/Province	18. Zip Code
1200 17th Street Suite 2100	Denver	CO	80202

PROJECT INFORMATION

19. Name of Construction Project
Bear Den Pipeline Project

20. Brief Description of Construction Activity
6.2 mile 12" crude oil pipeline beginning at the future DAPL Facility (149N 99W 001) and continuing South thru 149N 99W sections 001,012,013,024 and 149N 98W sections 019,030,029. ROW width 150'.

21. Project Start Date	22. Estimated Completion Date	23. Estimated Total Area of Site (acres)	24. Estimated Area of Disturbance (acres)
09/01/2016	11/01/2016	120.73	120.73

Project Location						
	25. Physical Address: Linear Pipeline Project (see attached map)				26. City: Watford City	
	OR	27. Township	28. Range	29. Section	30. Quarter Section (ABCD Format)	31. County: McKenzie
		32. Latitude (Decimal Degrees)			33. Longitude (Decimal Degrees)	
Receiving Waters	34. Name of Municipal Storm Sewer System or Description of Receiving Water: None					

35. A SWPPP must be prepared and available for review at the time of application. You are not required to submit the SWPPP with the application unless otherwise notified by the department. The SWPPP must be completed prior to the start of construction (or the applicable construction phase). Please refer to Part I(D)(2)(c) of the permit.

RETURN COMPLETED APPLICATION TO:

North Dakota Department of Health
Division of Water Quality, 4th Floor
918 East Divide Avenue
Bismarck, ND 58501-1947

Telephone: (701) 328-5210
Fax: (701) 328-5200

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein. Based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

36. Printed Name of Owner(s)	37. Title
Skip Vest	QHSER Director
38. Signature of Owner(s)	39. Date
[signature]	5/27/2016
40. Printed Name of Operator(s)	41. Title
Skip Vest	QHSER Director
42. Signature of Operator(s)	43. Date
[signature]	5/27/2016

SFN 19145

Instructions

Submission of this application is notice that the owner(s) and operator(s) identified on the application intend to discharge stormwater associated from construction activity to waters of the state in accordance with conditions set forth in North Dakota Pollution Discharge Elimination System general permit NDR10-0000.

Permit coverage becomes effective seven days after a complete application is submitted (based on the department receipt date) unless otherwise notified by the department.

General Information

1. **Name of Owner of Construction Project.** Enter the individual, company, organization or state who owns the property where the construction project is to take place. "Owner" means the person or party possessing the title of the land on which the construction activities will occur; or . . . for a lease holder, the party or individual identified as the lease holder; or the contracting government agency responsible for the construction activity.

2-3. **Contact Person.** Provide the contact person for the owner. If the contact person is an agent of the owner, such as a consultant, provide this information on a separate page.

4. **Contact Phone No.** Provide a valid phone number for the contact person.

5. **E-mail Address.** Provide a valid e-mail address for the contact.

6-9. **Mailing Address.** Provide a valid mailing address for the owner.

10. **Name of Operator Working at Site (attach additional, if needed).** List the operator(s) who will be responsible for the construction activities at the site. The operator is someone who has day to day supervision of construction activities and is jointly responsible with the owner for compliance with the permit conditions as they pertain to the construction activities delegated to the operator.

11-12. **Contact Person Name.** State the contact person who will be responsible for overseeing construction activities at the site for the operator.

13. **Contact Phone No.** Provide a valid phone number for the contact person.

14. **E-mail Address.** Provide a valid e-mail address for the contact.

15-18. **Mailing Address.** Provide a valid mailing address for the operator.

Project Information

19. **Name of Construction Project.** Provide a descriptive, but brief, name of the construction project. Limit the name to 75 characters.

20. **Brief Description of Construction Activity.** Provide a brief description of the scope of work for the construction project.

21. **Project Start Date.** Provide the estimated project start date.

22. **Project end date.** Provide the estimated project end date, if known. The date provided does not imply that the permit will expire on the projected end date. The permit will be terminated only after a notice of termination is submitted to the department.

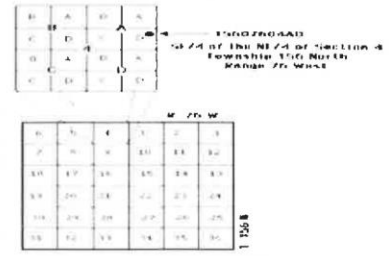
23. **Estimated Total Area of Site.** Enter the estimated acreage of the site/property in acres.

24. **Estimated Area of Disturbance.** Enter the estimated total acreage of land to be disturbed by construction activity.

25. **Physical Address.** Enter a physical address if one is available. For residential construction, avoid using a recorded plat survey, such as lot and block number. If a street addresses it not available, please use an alternative project location description (boxes 23 through 26).

26. **City.** Enter city in which project is located. If the project is located in a rural area, enter the nearest city.

27-30. **Township, Range, Section, Quarter Section.** Provide the numerical township, range and section of the construction project. Provide the quarter section in the ABCD format. See below.



31. **County.** Provide the county in which the project is occurring.

32-33. **Latitude and Longitude.** Provide the latitude and longitude in decimal degrees at the center of the site.

34. **Municipal Storm Sewer System or Description of Receiving Water.** If the project is located within city limits, enter the name of the city along with receiving water of the city storm sewer. Provide the name of the receiving body of water if outside city limits (i.e. Red River, unnamed tributary to Cherry Creek, wetlands, etc.).

Stormwater Pollution Prevention Plan (SWPPP) Requirements

35. As part of the permit, a SWPPP must be developed and available for review at the time of application. You are not required to submit the SWPPP with the application unless otherwise notified by the department. The SWPPP must be completed prior to the start of construction (or the applicable construction phase). Please refer to Part I(D)(2)(c) of the permit.

Signature Information

36-39. **Owner Information.** The signatory must be a responsible corporate officer, general partner, principal executive officer, or ranking elected official as required in Part IV.6.a of the permit number NDR10-0000.

40-43. **Operator Information.** The signatory must be a responsible corporate officer, general partner, principal executive officer, or ranking elected official as required in Part IV.6.a of the permit number NDR10-0000.

Please Note: Some internet browsers may not display the form properly and some features of the form may not be available or displayed. If you experience issues viewing the form, please read the following options for possible solutions:

In Firefox® browser: Go to the tools menu>options>applications. Under the actions column for Portable Document Format, change to Use Adobe® Reader in the drop down menu.

In Google Chrome™ Browser: Go to the address bar and type in chrome://plugins/ and click enter. Once in the plugin menu, go to the Chrome pdf viewer and click disable. Then go to the Adobe® Reader viewer and click enable. Once these changes are made, refresh the document.

Permit No: NDR10-0000
Effective Date: April 01, 2015
Expiration Date: March 31, 2020

AUTHORIZATION TO DISCHARGE UNDER THE

NORTH DAKOTA POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with Chapter 33-16-01 of the North Dakota Department of Health rules as promulgated under Chapter 61-28 (North Dakota Water Pollution Control Act) of the North Dakota Century Code,

Facilities both qualifying for and satisfying the requirements identified in Part I of the permit

are authorized to discharge stormwater associated with **construction activity**

to waters of the state

in accordance with conditions set forth in this permit.

This permit and the authorization to discharge shall expire at midnight,

March 31, 2020.

Signed this 31 day of March, 2015.

Karl H. Rockeman, P.E.
Director
Division of Water Quality

BP 2014.06.12

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I. PERMIT COVERAGE AND LIMITATIONS

A. Discharges Covered

1. This permit applies to all areas within the state of North Dakota, except for those areas defined as Indian Country. Construction activity located within Indian Country within the state of North Dakota must obtain a permit through the United States Environmental Protection Agency. If the construction activity is located with the jurisdiction of the state of North Dakota, and the United States Environmental Protection Agency, a permit must be obtained from both regulatory entities.

2. This permit applies to stormwater discharges associated with construction activity and small construction activity as defined in Title 40 of the Code of Federal Regulations (CFR), Parts 122.26(b)(14)(x) and (b)(15), respectively. The reference to construction activity in this permit includes both large construction activity and small construction activity as described below.

    a. Large construction activity includes clearing, grading and excavation, that disturbs land of equal to or greater than five (5) acres and includes the disturbance of less than five (5) acres of total land area that is a part of a larger common plan of development or sale if the larger common plan will ultimately disturb five (5) acres or more.

    b. Small construction activity includes clearing, grading and excavation, that disturbs land of equal to or greater than one (1) acre, and includes the disturbance of less than one (1) acre of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb equal to or greater that one (1) and less than five (5) acres.

    c. Discharges of stormwater from oil and gas exploration, production, processing or treatment operations, or transmission facilities composed of contaminated runoff by contact with or that has come into contact with, any overburden, raw material, intermediate products, finished product, byproduct, or waste products located on the site of such operations.

3. Stormwater discharges from support activities (e.g., equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) may be covered by this permit as part of a related construction site. The support activities may only be in association with one project. If the support activity is associated with more than one project, a separate stormwater permit (Industrial or mining, extraction or paving material preparation) is required.

4. Certain non-stormwater discharges from facilities covered by this permit and meeting the requirements specified in Part II(A).

5. Stormwater discharges from construction activity covered by the previous permit, issued October 12, 2009, where a notice has been submitted to obtain coverage under this permit.

6. Projects which have obtained coverage under this permit shall amend and implement a Stormwater Pollution Prevention Plan (SWPPP) that meets the requirements of this permit within ninety (90) days of the effective date of this permit.

7. Discharges from dewatering activities related to construction activities (discharges of uncontaminated stormwater).

8. Local Authority. This permit does not preempt or supersede the authority of local agencies or operators of municipal separate storm sewer systems to prohibit, restrict, or control discharges of stormwater to storm sewer systems or other water courses within their jurisdiction.

B. Discharges Not Covered

1. Stormwater discharges associated with industrial activity from any source other than construction activities described in Part I(A).

2. Post-construction discharges from industrial activity that originate from the site after construction activities have been completed at the site. Industrial and post-construction stormwater discharges may need to be covered by a separate stormwater permit.

3. The placement of fill into waters of the state requiring local, state, or federal authorizations (such as U.S. Army Corps of Engineers Section 404 permits).

4. This permit does not substitute for obligations under the National Environmental Policy Act (NEPA), Endangered Species Act (ESA), Wild and Scenic Rivers Act, or National Historic Preservation Act (NHPA), it is your responsibility to ensure the project and resulting discharges comply with the respective requirements.

5. Discharges to waters for which there is a total maximum daily load (TMDL) allocation for sediment and/or parameters associated with sediment transport are not covered unless you develop a Stormwater Pollution Prevention plan (SWPPP) that is consistent with the assumptions and requirements in the approved TMDL. To be eligible for coverage under this general permit, the SWPPP must incorporate the conditions applicable to the discharge necessary for consistency with the assumptions, allocations and requirements of the TMDL. If a specific numeric wasteload allocation has been established that would apply to discharges from construction activity, the permittee must incorporate that allocation into the SWPPP and implement necessary steps to meet that allocation. Information about TMDL allocations may be found at the following website: www.ndhealth.gov/WQ/SW/Z2_TMDL/default.htm.

6. Stormwater discharges that the department determines will cause, or have the reasonable potential to cause or contribute to a violation of the standards for quality for waters of the state (North Dakota Administrative Code (N.D.A.C.) 33-16-02.1).

7. Discharges from hydrostatic testing, well points, water line disinfection and treatment of gasoline or diesel contaminated groundwater.

8. Discharges of wash water using detergents, wastewater, or sanitary waste.

C. Obtaining Coverage and Authorization Effective Date

1. To obtain authorization under this general permit for stormwater discharges you must submit a complete application and develop a SWPPP in accordance with Part II(C) of this permit. A SWPPP must be in place as a condition of the permit and a copy of the SWPPP must be retained by the permittee.

2. Permit coverage will become effective seven (7) days after you submit a complete application unless otherwise notified by the department (based on the department receipt date).

3. Upon the effective date of permit coverage you, as the permit applicant, are authorized to discharge stormwater from eligible activities under the terms and conditions of this permit.

D. Application (Notice of Intent) Process

1. You must use a Notice of Intent (NOI) to complete your application. An NOI form (or a replacement application form) is available at the following website: www.ndhealth.gov/WQ/Storm/Construction/ConstructionHome.htm.

2. Application Content and Conditions.

   a. The owner, or owner jointly with the operator (usually the general contractor), shall submit a completed application for this permit. The owner is responsible for compliance with all terms and conditions of this permit. The operator has day to day supervision of construction activities and is jointly responsible with the owner for compliance with the permit conditions as they pertain to the construction activities delegated to the operator.

   b. The application (Notice of Intent) shall contain, at a minimum, the following information:

      (1) Owner name, mailing address and phone number;
      (2) Project contact name and phone number;
      (3) Project/site name;
      (4) Project/site location (street address; section, township, range; or latitude and longitude) and county;
      (5) A brief description of the construction activity;
      (6) The anticipated start date and the anticipated completion date for the project (if known);
      (7) The estimated total area of the site and the total area of disturbance in acres;
      (8) The name of receiving water(s), or the name of the municipal storm sewer system and receiving water(s);
      (9) The signature of the applicant(s), owner (and operator if co-applicants) signed in accordance with the signatory requirements in Part IV(A)(6) of this permit.

   c. A SWPPP (Part II(C)) for the project must be prepared and available for review, upon request, by the department at the time of application. A partially complete plan is acceptable when it clearly identifies the item(s) to be completed, the person(s) responsible for completing the item(s) and the deadline for completing the item(s). The SWPPP must be completed prior to the start of construction (or the applicable construction phase). You are not required to submit the SWPPP with the application unless otherwise notified by the department.

3. For residential construction activity occurring within a common plan of development (such as a subdivision) subject to the permit requirements, coverage may be obtained by the following:

   a. The owner of the lot(s) shall submit one (1) NOI for all of the owner's construction activity within the common plan of development, or

   b. The operator, such as a homebuilder who may represent one (1) or more lot owners, shall submit one (1) NOI for all of the operator's construction activity within each addition of the common plan of development.

      In addition, a SWPPP must be developed and implemented for the permittee's activities within the common plan of development. Additional phases of the common plan of development may be included under the initial application and permit coverage provided the SWPPP is amended to include the additional area or phases.

4. For oil and gas exploration, production, processing, treatment operations, or transmission facilities, which discharge contaminated stormwater, permit applications may be submitted for individual project sites or for an area of operations such as well field or by county.

5. Completed applications and any reports required by this permit shall be submitted to:

North Dakota Department of Health
Division of Water Quality
918 East Divide Avenue
Bismarck, ND 58501-1947

E. Notice of Termination (NOT)

1. Permittees wishing to terminate coverage under this permit must submit a Notice of Termination (NOT) or other written request identifying the facility, reason why the permit is no longer needed and signed in accordance with Part IV(A)(6) of this permit. Compliance with the conditions of this permit is required until a NOT is submitted to the department.

2. Permittees may only submit a NOT after one of the following conditions have been met:

   a. Final stabilization (Part II(E)) has been achieved on all portions of the site for which the permittee is responsible.

   b. Another owner/operator/permittee has assumed control, in accordance with the transfer provisions (Part I(F)), over all areas of the site that have not achieved final stabilization.

   c. For residential construction only, a NOT is not required for each lot that is sold, transferred, or has achieved final stabilization. The permittee must modify their SWPPP to indicate that permit coverage is no longer required for that lot. The SWPPP shall indicate the reason why coverage is no longer needed and the date the lot was sold, transferred, or achieved final stabilization. In order to terminate coverage, all lots under the control of the owner or operator must be sold, transferred, or achieved final stabilization (Part II(E)).

F. Transfer of Ownership or Control

1. When the owner or operator of a construction project changes, the new owner or operator must submit a written request for permit transfer/modification within fourteen (14) days of assuming control of the site or commencing work on-site, or of the legal transfer, sale or closing on the property; except as provided in Part I(F)(2). Late submittals will not be rejected; however the department reserves the right to take enforcement for any unpermitted discharges or permit noncompliance. For stormwater discharges from construction activities where the owner or operator changes, the new owner or operator can implement the original SWPPP created for the project or develop and implement their own SWPPP. Permittee(s) shall ensure either directly or through coordination with other operators that their SWPPP meets all terms and conditions of this permit and that their activities do not interfere with another party's erosion and sediment control practices.

2. A permit transfer/modification request is not required for the legal transfer, sale or closing on a property between permittees covered by this permit. Examples include the sale of a property parcel from a developer to a builder, or the transfer of an easement from a developer to a local government authority. If the new party is not covered by this permit at the time of transfer or sale, then the new owner/operator must submit a completed application/NOI within 14 days of assuming control of the site.

II. STORMWATER DISCHARGE REQUIREMENTS

A. Prohibition of Non-Stormwater Discharges

The discharge of wastewater is not authorized by this permit. The following sources of non-stormwater discharges are allowed if they are not a significant source of pollution and are identified in the SWPPP: fire-fighting, fire hydrant flushing, potable water line flushing, equipment wash down without detergents or hazardous cleaning products, uncontaminated foundation drains, springs, surface water, lawn watering, chemical treatment of stormwater and air conditioning condensate. Impervious surface wash water may not be directed into any surface water or storm drain inlet unless appropriate pollution prevention measures have been implemented. Discharges may not come into contact with oil and grease deposits or any other toxic or hazardous materials (unless cleaned up using dry clean-up methods). The SWPPP must include a description of the pollution prevention measures to be implemented while non-stormwater discharges are occurring.

If chemical treatment for sediment removal is intended to be used on-site, the permittee shall provide the department with the information outlined in Appendix 1(A)(14) of this permit for approval prior to use. This information shall be provided to the department no later than sixty (60) days prior to use.

B. Releases in Excess of Reportable Quantities

This permit does not relieve the permittee of the reporting requirements of 40 CFR 110, 40 CFR 117, and 40 CFR 302, nor the reporting requirements found in Chapter 33-16-02.1 of the North Dakota Administrative Code. Any releases which meet any reporting requirement, must be reported to the agencies identified in Part IV(A)(7).

C. Stormwater Pollution Prevention Plans

All permittees shall implement a SWPPP for any construction activity requiring this permit until final stabilization is achieved. The SWPPP and revisions are subject to review by the department. The objectives of the SWPPP is to identify potential sources of sediment and other sources of pollution associated with construction activity, and to ensure practices are implemented and maintained to reduce the contribution of pollutants in stormwater discharges from the construction site to waters of the state and storm sewer systems. Stormwater management documents developed under other regulatory programs may be included or incorporated by reference in the SWPPP, or used in whole as a SWPPP if it meets the requirements of this part.

The SWPPP may identify more than one permittee and may specify the responsibilities of each permittee by task, area, and/or timing. Permittees may coordinate and prepare more than one SWPPP to accomplish this. However, in the event there is a requirement under the SWPPP for which responsibility is ambiguous or is not included in the SWPPP, each permittee shall be responsible for implementation of that requirement. Each permittee is responsible for assuring that their activities do not render another permittee's controls ineffective.

The SWPPP must incorporate the requirements provided in Appendix 1 and shall include

the following information.

1. **Site Description**. Each plan shall provide a description of the construction activity and potential sources of pollution as indicated below:

   a. A description of the overall project and the type of construction activity;

b. Estimates of the total area of the site and the total area that is expected to be disturbed by excavation, grading, grubbing, or other activities during the life of the project;

c. A proposed timetable/schedule, or chart, of activities that includes major phases/stages, BMP implementation, BMP removal, disturbances, and stabilization for major portions of the site;

d. A description of the soil within the disturbed area(s);

e. The name of the surface water(s) and municipal storm sewer system at or near the disturbed area that will receive stormwater runoff from the project site; and

f. A site map which indicates the following items as applicable (more than one (1) map may be needed). If an item is not applicable, provide rationale describing why the item is not applicable to the construction activity:

   1) Project boundaries;
   2) Areas of ground disturbance during each phase/stage of the project;
   3) Areas where disturbance will not occur, such as avoidance areas (e.g. wetlands, critical habitat, Threatened and Endangered Species, etc);
   4) Drainage patterns including: flow direction (run-on and runoff);
   5) Dividing lines, discharge points, and storm sewer system inlets which the site drains to or may be affected by the activity;
   6) Pre-existing and final grades;
   7) Location of all temporary and permanent sediment and erosion controls during each particular phase;
   8) Location of any stormwater conveyances such as: retention ponds, detention ponds, ditches, pipes, swales, stormwater diversions, culverts, and ditch blocks;
   9) Location of potential sources of pollution (e.g. portable toilets, trash receptacles, etc.);
   10) Location of soil stockpiles;
   11) Identify steep slopes;
   12) Surface waters, including an aerial extent of wetland acreage;
   13) Location of surface water crossings;
   14) Locations where stormwater is discharged to surface waters;
   15) Location of dewatering discharge points;
   16) Locations of where chemical treatment of stormwater will be performed, including discharge points;
   17) Fueling locations, vehicle and equipment maintenance areas, designated wash water collection site, lubricant and chemical storage, paint storage, material storage, staging areas, and debris collection area;
   18) Location of any impervious surfaces upon completion of construction; and
   19) Where included as part of the project, the site maps for off-site concrete/asphalt batch plants, equipment staging areas, borrow sites or excavated fill material disposal sites. Site maps must show items 1 through 18 of this section.

g. Projects that discharge stormwater which flows to a water body listed as impaired under section 303(d) of the Federal Clean Water Act due to sediment, suspended solids or turbidity must identify the water body and impairment in the SWPPP. The Department's 303(d) list may be found at the following website under Integrated Reports: www.ndhealth.gov/WQ/SW/Z2_TMDL/Integrated_Reports/B_Integrated_Reports.htm.

h. For water bodies which have a TMDL, the SWPPP must describe and conform to the Waste Load Allocations (WLA) of the water body as per Part II(C)(4)(g) of this permit. Information about TMDL allocations may be found at the following website: www.ndhealth.gov/WQ/SW/Z2_TMDL/default.htm.

2. **Narrative.** The SWPPP must include a narrative description of the selected operational controls and sediment and erosion controls as outlined in Part II(C)(3), Part II(C)(4), and Appendix 1 of this permit. When applicable, a description of the requirements for any additional environmental regulations (federal) and local requirements related to the project, as it relates to waters of the state, must also be included or incorporated by reference (e.g. The Wild and Scenic Rivers Act, The National Historic Preservation Act, The Endangered Species Act, Fish and Wildlife Coordination Act, National Environmental Policy Act, Section 404 of the Clean Water Act, etc.).

   The narrative shall describe at a minimum:

   a. The installation, removal (if applicable), and maintenance requirements of selected Best Management Practices (BMPs) for each phase/stage of construction activity;
   b. The rationale for the selection of all BMPs (calculations should be included if appropriate);
   c. Whether selected BMPs are temporary or permanent;
   d. Any descriptions of infeasibility or explanations as required in Part II, Part III(A), and Appendix 1 of this permit.

3. **Operational Controls**. The SWPPP shall describe the BMPs used in day to day operations on the project site that reduce the contribution of pollutants in stormwater runoff.

   a. The SWPPP must identify a person knowledgeable and experienced in the application of erosion and sediment control BMPs who will oversee the implementation of the SWPPP, and the installation, inspection and maintenance of the erosion and sediment control BMPs before and during construction, until a NOT is filed or the permit is transferred. A knowledgeable and experienced person is someone who meets the requirements of Part II(C)(3)(e) of this permit.

      The owner shall develop a chain of responsibility with all operators on the site to ensure that the SWPPP will be implemented and stay in effect until the construction project is complete, the entire site has undergone final stabilization, and a NOT has been submitted to the department.

   b. The SWPPP must include a description of good housekeeping practices used to maintain a clean and orderly site. The SWPPP shall describe how litter, debris, chemicals and parts will be handled to minimize exposure to stormwater. The SWPPP also shall describe what measures will be used to reduce and remove sediment tracked off-site by vehicles or equipment. In addition, the SWPPP shall describe methods which will be used to reduce the generation of dust.

   c. The SWPPP shall describe preventative maintenance practices used to ensure the proper operation of erosion and sediment control devices (e.g., fiber rolls, erosion control blankets and silt fences) and equipment used or stored on site. The SWPPP shall describe proper inspection procedures for ensuring proper operation of erosion and sediment control devices.

   d. The SWPPP shall describe spill prevention and response procedures where potential spills can occur. Specific handling procedures, storage requirements, spill containment, cleanup procedures, and disposal must be identified. Storage structures for petroleum products and other chemicals shall have adequate leak and spill protection to prevent any spilled materials from entering waters of the state or storm sewer systems.

      The potential discharge of hazardous substances in stormwater discharges shall be minimized by including measures onsite, detailed in the SWPPP to prevent and respond to releases of hazardous substances. If a reportable quantity release occurs, the SWPPP shall be revised to prevent the reoccurrence of such a release.

e. The SWPP shall outline how employees and responsible parties shall be trained on the implementation of the SWPPP. Training must be provided at least annually, as new employees or responsible parties are hired or as necessary to ensure compliance with the SWPPP and the general permit. Employees and responsible parties include individuals who are responsible for design, installation, maintenance and repair of stormwater controls and conducting inspections.

   1) On-site personnel must understand the requirements of this permit as it pertains to their role in implementing the SWPPP. On-site personnel must know:

      a. The purpose of the SWPPP, requirements of the SWPPP, and how the SWPPP will be implemented;

      b. The location of all BMPs identified in the SWPPP; and

      c. Correct installation, function, maintenance and removal (if applicable) of BMPs identified in the SWPPP.

   2) Personnel responsible for performing site inspections must understand when inspections must be conducted (Part III(A)), what must be inspected (Part II(C)(7), how to record findings, when to initiate corrective actions, and properly document corrective actions.

   3) Maintenance personnel must understand when maintenance must be performed on BMPs in order to maintain properly functioning BMPs and what needs to be recorded for corrective actions/maintenance records in accordance with Part III(A)(5) of this permit.

f. The SWPPP must describe how concrete grindings and slurry will be managed. Wastewater from concrete washout, cleanout or washout from: stucco, paint, joint compound, and other building materials shall not be discharged to waters of the state, storm sewer systems or curb and gutter systems.

   1) Wash water must be collected in leak-proof containers or leak-proof pits. Containers or pits must be designed and maintained so that overflows cannot occur due to inadequate sizing, precipitation events, or snowmelt.

g. The SWPPP shall describe any dewatering activities planned at the site. Dewatering or basin draining (e.g., pumped discharges, trench/ditch cuts for drainage) related to the permitted activity must be managed with appropriate BMPs, such that the discharge does not adversely affect the receiving water. The following conditions apply to dewatering activities:

   1) Dewatering is limited to un-contaminated stormwater, surface water, and groundwater that may collect on-site and those sources identified in Part II(A), if they are not a significant source of pollution. A separate permit must be obtained to discharge water from other sources such as hydrostatic testing of pipes, tanks, or other similar vessels; disinfection of potable water lines; pump testing of water wells; and the treatment of gasoline or diesel contaminated groundwater or surface water.

   2) The permittee(s) must operate the discharge to minimize the release of sediment and provide adequate BMPs where necessary to minimize erosion due to the discharge. Discharges must not lead to the deposition of sediment within stormwater conveyance systems or surface waters. Discharges must not cause or potentially cause a visible plume within a surface water body.

3) When dewatering, utilize structures or BMPs which allow for draw down to occur from the surface of the water, unless infeasible. If infeasible, documentation must be provided in the SWPPP. In addition, you must describe what BMP(s) will be used in its place.

4) In addition to the inspection requirements in Part III, dewatering activities shall be inspected daily. The inspection must include the dewatering site, areas where BMPs are being implemented and the discharge location. A record shall be maintained to document the inspections of the dewatering operation and actions taken to correct any problems that may be identified.

   a. Records shall contain at a minimum:

      i. Date and time of the inspection,
      ii. Inspector name,
      iii. Approximate volume of water discharged,
      iv. . Findings of the inspection, including recommendations and schedule for corrective actions;
      v. Corrective actions taken (including dates, times, and party completing maintenance activities); and
      vi. Documentation that the SWPPP has been amended when changes are made to the dewatering activity in response to inspections.

5) Local authorities may require specific BMPs for discharges affecting their storm sewer system.

4. **Erosion and Sediment Controls**. Erosion and sediment controls and stabilization requirements must be implemented for each major phase of site activity (e.g., clearing, grading, building, and landscaping phases). A description of the erosion and sediment controls and site stabilization methods must be provided in accordance with Part II(C)(2) of this permit. Erosion and sediment controls, and site stabilization must conform to the requirements provided in Appendix 1. The description and implementation of controls shall address the following minimum components:

   a. The selection of erosion and sediment controls, and site stabilization shall consider the following:

      1. The expected amount, frequency, intensity, and duration of precipitation events;

      2. The nature of stormwater run-on and runoff from the site as well as changes during, and as a result of, construction activity. This includes changes to impervious surfaces, slopes, seasonal changes, and drainage features on-site;

      3. Channelized flow, must be handled in order to minimize erosion at outlets and to minimize impacts to downstream receiving waters;

      4. Soil types (wind and water erodibility, and settling time); and

      5. Seasonal conditions.

   b. Sediment basins, or an appropriate combination of equivalent sediment controls such as smaller sediment basins and/or sediment traps, silt fences, fiber logs, vegetative buffer strips, berms, etc., are required for all down slope boundaries of the disturbance area and for those side slope boundaries as may be appropriate for site conditions.

c. Temporary or permanent erosion protection and stabilization (such as cover crop planting or mulching) must be initiated immediately, as described in Appendix 1(A), for all exposed soil areas where activities have been completed or temporarily ceased.

d. All control measures must be properly selected, installed and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections or other information indicates a control has been used inappropriately or incorrectly, the permittee must replace or modify the control for site situations. Corrective actions must be made prior to the next anticipated rainfall event of within 24 hours of discovery (whichever comes first) or as soon as field conditions allow. Documentation must be provided in the maintenance records if field conditions do not allow access along with a plan of action for performing maintenance activities.

   The permittee may deviate from the manufacturer's specifications and erosion and sediment control requirements in Appendix 1 if they provide justification for the deviation and document the rationale for the deviation in the SWPPP. Any deviation must provide equivalent erosion and sediment control.

e. If sediment escapes from the site, off-site accumulations of sediment must be removed in a manner and frequency sufficient to minimize off-site impacts as outlined in Appendix 1(B). The SWPPP must be modified to prevent further sediment deposition off-site.

f. Stormwater controls are expected to withstand and function properly during precipitation events of up to the 2-year, 24-hour storm event. Visible erosion and/or off-site sediment deposition from such storm events should be minimal. The 2-year, 24-hour rainfall event in North Dakota ranges from about 1.9 inches in the west to 2.3 inches in the east.

g. For projects that discharge stormwater which flows to a water body for which there is a TMDL allocation for sediment and/or parameters associated with sediment transport, the SWPPP must be consistent with the assumptions, allocations, and requirements in the approved TMDL. If a TMDL specifies certain BMPs or controls to meet a WLA applicable to the project's discharges, the BMPs or controls must be incorporated into the SWPPP. Information about TMDL allocations may be found at the following website: www.ndhealth.gov/WQ/SW/Z2_TMDL/default.htm.

5. **Stormwater Management**. The SWPPP must identify permanent practices incorporated into the project to control pollutants in stormwater discharges occurring after construction operations have been completed.

   a. Identify stormwater ponds; flow reduction methods; infiltration of runoff on-site; sequential systems which combine several practices or other post-construction stormwater management features.

   b. Identify velocity / energy dissipation devices placed at discharge locations and appropriate erosion protection for outfall channels and ditches.

   c. Maintenance for on-site stormwater management features is the responsibility of the permittee until the NOT is submitted or the feature is accepted by the party responsible for long term maintenance.

   d. The design, installation and use of stormwater management features must comply with applicable local, state or federal requirements.

6. **Maintenance**. All erosion and sediment control measures and other protective measures identified in the SWPPP must be maintained in effective operating condition. The SWPPP must indicate, as appropriate, the maintenance or clean out interval for sediment controls. If site inspections, required in Part III of this permit, identify BMPs that are not operating effectively, maintenance shall be arranged and accomplished in accordance to Appendix 1 or as soon as practicable.

7. **Inspections**. The SWPPP must provide for site inspections as outlined in Part III. The permittee shall ensure that personnel conducting site inspections are familiar with permit conditions and the proper installation and operation of control measures. Inspectors must be knowledgeable in their role of the SWPPP, as outlined in Part II(C)(3)(e) of this permit. The erosion and sediment control measures and stabilized areas identified in the SWPPP shall be observed to ensure they are operating correctly and in serviceable condition. Inspections shall include areas used for storage of materials, permanent stormwater control measures and vehicle maintenance areas. These areas shall be inspected for evidence of, or the potential for, pollutants entering a drainage system. If necessary, the plan shall be revised based on the observations and deficiencies noted during the inspection.

8. SWPPP Review and Revisions.

a. The SWPPP shall be signed in accordance with the Signatory Requirements, Part IV(A)(6), and retained on-site for the duration of activity as outlined in Part III(B).

b. The permittee shall make the SWPPP available upon request to the department, EPA, or, in the case of discharges to a municipal storm sewer system, the operator of the municipal system.

c. The permittee shall amend the SWPPP whenever there is a change in design, construction, operation, maintenance, or BMPs. The SWPPP shall be amended if the plan is found to be ineffective in controlling pollutants present in stormwater. The SWPPP shall be amended as soon as practicable.

D. Local Requirements

All stormwater discharges must comply with the requirements, policies, or guidelines of municipalities and other local agencies as applicable to the construction site. Any discharges to a storm sewer, ditch or other water course under the jurisdiction of a municipality must comply with any specific conditions or BMPs required by the municipality or agency.

E. Final Stabilization

The permittee(s) must ensure final stabilization of the site. The permittee(s) should submit a NOT within 30 days after final stabilization has been achieved, or another owner/operator (permittee) has assumed control according to Part I(F) for all areas of the site that have not undergone final stabilization. Final stabilization can be achieved in one of the following ways.

1. All soil disturbing activities at the site have been completed and all soils must be stabilized by a uniform perennial vegetative cover with a density of 70 percent of the pre-existing cover over the entire pervious surface area, or other equivalent means necessary to prevent soil failure under erosive conditions and;

   a. All drainage ditches, constructed to drain water from the site after construction is complete, must be stabilized to preclude erosion;

b. All temporary erosion prevention and sediment control BMPs (such as silt fence) must be removed as part of the site final stabilization; and

c. The permittee(s) must remove all sediment from conveyances and temporary sedimentation basins that will be used as permanent water quality management basins. Sediment must be stabilized to prevent it from being washed into basins, conveyances or drainage ways discharging off-site or to surface waters. The cleanout of permanent basins must be sufficient to return the basin to design capacity.

2. For areas of the state where the average annual rainfall is less than 20 inches, all soil disturbing activities at the site have been completed and erosion control measures (e.g., degradable rolled erosion control product) and stabilization methods are selected, designed, and installed along with an appropriate seed base to provide erosion control for at least three years and achieve 70 percent of the pre-existing vegetative cover within three (3) years without active maintenance. Sites must meet the criteria outlined in items 1(a), (b), and (c) above.

3. Disturbed areas on land used for agricultural purposes that are restored to their pre-construction agricultural use are not subject to these final stabilization criteria. If the construction activity removed standing crop, the area must be restored in accordance with the landowner.

   Areas disturbed that were not previously used for agricultural activities, such as buffer strips immediately adjacent to waters of the state, and areas which are not being returned to their pre-disturbance use must meet the final stabilization criteria in (1) or (2) above.

4. For residential construction only, final stabilization may be achieved when soil is stabilized (see Appendix 1(A)(3)) and down gradient perimeter control for individual lots has been implemented and the residence has been transferred to the homeowner. Additionally, the permittee must distribute a “homeowner fact sheet” to the homeowner to inform the homeowner of the need for, and benefits of, final stabilization. The permittee also must demonstrate that the homeowner received the fact sheet.

III. SELF MONITORING AND REPORTING

A. Inspection and Maintenance Requirements

1. Inspections shall be performed by or under the direction of the permittee at least once every 14 calendar days and within 24 hours after any storm event of greater than 0.25 inches of rain per 24-hour period. Inspections are only required during normal working hours. The permittee shall use a rain gauge on-site or utilize the nearest National Weather Service precipitation gauge station. Rain gauge locations or stations must be representative of the site.

   a. “Within 24 hours after any storm event greater than 0.25 inches rain per 24-hour period” means that you are required to conduct an inspection within 24 hours once a storm event has produced 0.25 inches, even if the storm event is still continuing. If there is a storm event at your site that continues for multiple days, and each day of the storm produces 0.25 inches or more rain, you are required to conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the end of the storm.

2. There may be times when a site inspection may not be practical at the specified time. Adverse climatic conditions, such as flooding, high winds, tornadoes, electrical storms, site access constraints, etc., may prohibit inspections. The permittee must include a description of why the inspection(s) could not be performed at the designated time in the next inspection record. If an inspection is delayed due to adverse weather conditions or rain events outside normal working hours, an inspection must be conducted during the next working day, or as conditions allow.

3. Some erosion and sediment control measures may require more frequent inspection based on location (e.g., sensitive areas or waters of the state) or as a result of recurring maintenance issues. Erosion or sediment control measures found in need of maintenance between inspections must be repaired or supplemented with appropriate measures as soon as practicable. Erosion and sediment control measures which require more frequent inspection based on location or as a result of recurring maintenance issues must be identified in the SWPPP.

4. All inspections conducted during construction must be recorded in writing and these records must be retained in accordance with Part III(B). Records of each inspection activity shall include:

    a. Date and time of inspections;

    b. Name of person(s) conducting inspections;

    c. Findings of inspections, including recommendations and schedule for corrective actions;

    d. Date and amount of all rainfall events greater than 1/4 inch (0.25 inches) in 24 hours; and

    e. Documentation that the SWPPP has been amended when changes are made to BMPs in response to inspections.

    f. All inspection reports shall be signed in accordance with Part IV(A)(6) of this permit.

5. Corrective actions (maintenance activities) performed during construction must be recorded in writing and these records must be retained in accordance with Part III(B). Records for maintenance activity shall include:

    a. Best Management Practice corrected;

    b. Date and time of corrective action;

    c. Name of person(s) performing corrective actions;

    d. Corrective actions taken; and

    e. Corrective actions/maintenance records shall be signed in accordance with Part IV(A)(6) of this permit.

6. Completed areas that have been stabilized but do not meet the 70 percent perennial vegetative cover criteria for final stabilization may be inspected once per month. Inspections may be suspended for parts of the construction site that meet final stabilization requirements of Part II(E) of this permit. The SWPPP must update to identify any areas which meet this condition.

7. Inspections may be suspended where earthwork has been suspended due to frozen ground conditions. The required inspections and maintenance must resume as soon as runoff occurs or the ground begins to thaw at the site. The permittee must record freeze/thaw and runoff dates as part of the inspection records.

B. Records Location

A copy of the completed and signed NOI, coverage letter from the department, SWPPP, site inspection records, and this general permit shall be kept at the site of the construction activity in a field office, trailer, shed, or in a vehicle that is on-site during normal working hours. If the site does not have a reasonable on-site location, then the documents must be retained at a readily available alternative location; preferably with the individual responsible for overseeing the implementation of the SWPPP. Electronic copies of records are acceptable if the records can be accessed on-site. If the site is inactive, then the documents may be stored at a local office. Permittees should avoid using personal electronic devices for storing electronic records.

IV. STANDARD CONDITIONS

A. COMPLIANCE RESPONSIBILITIES BP 2014.12.08

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

2. Proper Operation and Maintenance

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit. If necessary to achieve compliance with the conditions of this permit, this shall include the operation and maintenance of backup or auxiliary systems.

3. Planned Changes

The department shall be given advance notice of any planned changes at the permitted facility or of an activity which may result in permit noncompliance. Any anticipated facility expansions, production increase, or process modifications which might result in new, different, or increased discharges of pollutants shall be reported to the department as soon as possible. Changes which may result in a facility being designated a "new source" as determined in 40 CFR 122.29(b) shall also be reported.

4. Duty to Provide Information

The permittee shall furnish to the department, within a reasonable time, any information which the department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the department, upon request, copies of records required to be kept by this permit. When a permittee becomes aware that it failed to submit any relevant facts or submitted incorrect information in a permit application or any report, it shall promptly submit such facts or information.

5. Records Retention

All records and information (including calibration and maintenance) required by this permit shall be kept for at least three years or longer if requested by the department or EPA.

6. Signatory Requirements

All applications, reports, or information submitted to the department shall be signed and certified.

All permit applications shall be signed by a responsible corporate officer, a general partner, or a

principal executive officer or ranking elected official.

All reports required by the permit and other information requested by the department shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described above and submitted to the department; and

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters.

If an authorization under 6. Signatory Requirements is no longer accurate for any reason, a new authorization satisfying the above requirements must be submitted to the department prior to or together with any reports, information, or applications to be signed by an authorized representative.

Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

7. Twenty-four Hour Notice of Noncompliance Reporting

1. The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of the circumstances. The following occurrences of noncompliance shall be included in the oral report to the department at 701.328.5210:

   a. Any lagoon cell overflow or any unanticipated bypass which exceeds any effluent limitation in the permit under 8. Bypass of Treatment Facilities;

   b. Any upset which exceeds any effluent limitation in the permit under 9. Upset Conditions; or

   c. Violation of any daily maximum effluent or instantaneous discharge limitation for any of the pollutants listed in the permit.

2. A written submission shall also be provided within five days of the time that the permittee became aware of the circumstances. The written submission shall contain:

   a. A description of the noncompliance and its cause;

   b. The period of noncompliance, including exact dates and times;

   c. The estimated time noncompliance is expected to continue if it has not been corrected; and

   d. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

   Reports shall be submitted to the address in **Part I(D) Application (Notice of Intent) Process.** The department may waive the written report on a case by case basis if the oral report has been received within 24 hours by the department at 701.328.5210 as identified above.

   All other instances of noncompliance shall be reported no later than at the time of the next Discharge Monitoring Report submittal. The report shall include the four items listed in this subsection.

8. Bypass of Treatment Facilities

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to any of the following provisions in this section.

Bypass exceeding limitations-notification requirements.

a. Anticipated Bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of bypass.

b. Unanticipated Bypass. The permittee shall submit notice of an unanticipated bypass as required under 7. Twenty-four Hour Notice of Noncompliance Reporting.

2. Prohibition of Bypass. Bypass is prohibited, and the department may take enforcement action against a permittee for bypass, unless:

a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

c. The permittee submitted notices as required under the 8(a). Anticipated Bypass subsection of this section.

The department may approve an anticipated bypass, after considering its adverse effects, if the department determines that it will meet the three (3) conditions listed above.

9. Upset Conditions

An upset constitutes an affirmative defense to an action brought for noncompliance with erosion and sediment or site stabilization methods if the requirements of the following paragraph are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

1. An upset occurred and the permittee can identify its cause(s);

2. The permitted facility was, at the time being, properly operated;

3. The permittee submitted notice of the upset as required under 7. Twenty-four Hour Notice of Noncompliance Reporting and

4. The permittee complied with any remedial measures required under 10. Duty to Mitigate.

In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

10. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. The permittee, at the department's request, shall provide accelerated or additional monitoring as necessary to determine the nature and impact of any discharge.

11. Removed Materials

Collected screenings, grit, solids, sludges, or other pollutants removed in the course of treatment shall be buried or disposed of in such a manner to prevent any pollutant from entering any waters of the state or creating a health hazard.

12. **Duty to Reapply**
Any request to have this permit renewed should be made 15 days prior to its expiration date.

B. GENERAL REQUIREMENTS

1. **Inspection and Entry**
The permittee shall allow department and EPA representatives, at reasonable times and upon the presentation of credentials if requested, to enter the permittee's premises to inspect the construction activity and monitoring equipment, to sample any discharges, and to have access to and copy any records required to be kept by this permit.

2. **Availability of Reports**
Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the department and EPA. As required by the Act, permit applications, permits, and effluent data shall not be considered confidential.

3. **Transfers**
This permit is not transferable except upon the filing of a Transfer/Modification request (Part I(F)) by the new party. The current permit holder should inform the new controller, operator, or owner of the existence of this permit and also notify the Department of the possible change.

4. **New Limitations or Prohibitions**
The permittee shall comply with any effluent standards or prohibitions established under Section 306(a), Section 307(a), or Section 405 of the Act for any pollutant (toxic or conventional) present in the discharge or removed substances within the time identified in the regulations even if the permit has not yet been modified to incorporate the requirements.

5. **Permit Actions**
This permit may be modified, revoked and reissued, or terminated for cause. This includes the establishment of limitations or prohibitions based on changes to Water Quality Standards, the development and approval of waste load allocation plans, the development or revision to water quality management plans, or the establishment of prohibitions or more stringent limitations for toxic or conventional pollutants and/or sewage sludges. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

6. **Need to Halt or Reduce Activity Not a Defense**
It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

7. **State Laws**
Nothing in this permit shall be construed to preclude the institution of legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation preserved under Section 510 of the Act.

8. **Oil and Hazardous Substance Liability**
Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

9. **Property Rights**
The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

10. **Severability**

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

V. DEFINITIONS Permit Specific BP 2009.02.05

"303(d) List" or "Section 303(d) List" means a list of North Dakota's water quality-limited waters needing total maximum daily loads or TMDLs developed to comply with section 303(d) of the Clean Water Act. A copy of the latest integrated report is available on the state's web site at: www.ndhealth.gov/WQ/SW/Z2_TMDL/Integrated_Reports/B_Integrated_Reports.htm.

"Act" means the Clean Water Act.

"Bankfull" means the channel is filled to the top of one or both of its banks.

"BMP" or "Best Management Practices" means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the state. BMPs also include treatment requirements, operating procedures and practices to control construction site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

"Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

"Common Plan of Development or Sale" means a contiguous area where multiple separate and distinct land disturbing activities may be taking place at different times, on different schedules, but under one proposed plan. One plan is broadly defined to include design, permit application, advertisement or physical demarcation indicating that land-disturbing activities may occur.

"Construction Activity" means construction activity as defined in 40 CFR part 122.26(b)(14)(x) and small construction activity as defined in 40 CFR part 122.26(b)(15). This includes a disturbance to the land that results in a change in topography, existing soil cover (both vegetative and non-vegetative), or the existing soil topography that may result in accelerated stormwater runoff, leading to soil erosion and movement of sediment into surface waters or drainage systems. Examples of construction activity may include clearing, grading, filling and excavating. Construction activity includes the disturbance of less than one acre of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb one (1) acre or more. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the facility.

"Department" means the North Dakota Department of Health, Division of Water Quality.

"Energy Dissipation" means methods employed at pipe outlets to prevent erosion. Examples include, but are not limited to: concrete aprons, riprap, splash pads, and gabions that are designed to prevent erosion.

"Indian Country" means (1) All land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and including rights-of-way running through the reservations; (2) All dependent Indian communities within the borders of the United States whether within the originally or subsequently acquired territory thereof, and whether within or without the limits of a state; and (3) All Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same.

"Infeasible" means not technologically possible or not economically practicable and achievable in light of best industry practices.

"Immediately" means as soon as practicable, but no later than the end of the next work day, following the day when the earth-disturbing activities have temporarily or permanently ceased.

“Large Construction Activity” means land disturbance of equal to or greater than five (5) acres. Large construction activity also includes the disturbance of less than one acre of total land area that is part of a larger common plan of development or sale, if the larger common plan will ultimately disturb equal to or greater that five acres.

“Normal Wetted Perimeter” means the area of a conveyance, such as a ditch, channel, or pipe that is in contact with water during flow events that are expected to occur once every year.

“Non-Stormwater Discharges” means discharges other than stormwater. The term includes both process and non-process sources. Process wastewater sources that require a separate NDPDES permit include, but are not limited to industrial processes, domestic facilities and cooling water. Non-stormwater sources that may be addressed in this permit include, but are not limited to: fire-fighting, fire hydrant flushing, potable water line flushing, equipment wash down without detergents or hazardous cleaning products, uncontaminated foundation drains, springs, surface water, lawn watering, chemical treatment of stormwater and air conditioning condensate.

“Operator” means the person (usually the general contractor) designated by the owner who has day to day operational control and/or the ability to modify project plans and specifications related to the SWPPP. The person must be knowledgeable in those areas of the permit for which the operator is responsible and must perform those responsibilities in a workmanlike manner.

“Owner” means the person or party possessing the title of the land on which the construction activities will occur; or if the construction activity is for a lease holder, the party or individual identified as the lease holder; or the contracting government agency responsible for the construction activity.

“Permanently Ceased” means clearing and excavation within any area of your construction site that will not include permanent structures has been completed.

“Permanent Cover” means final stabilization. Examples include grass, gravel, asphalt, and concrete.

"Severe Property Damage" means substantial physical damage to property, damage to best management practices which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in construction.

"Significant Materials" includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; hazardous substances designated under Section 101(14) of CERCLA; any chemical the facility is required to report pursuant to Section 313 of Title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with stormwater discharges.

"Significant Spills" includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (see 40 CFR 110.10 and CFR 117.21) or Section 102 of CERCLA (see 40 CFR 302.4).

“Small Construction Activity” means land disturbance of equal to or greater than one acre and less than five acres. Small construction activity also includes the disturbance of less than one acre of total land area that is part of a larger common plan of development or sale, if the larger common plan will ultimately disturb equal to or greater than one and less than five acres

"Stabilized" means the exposed ground surface has been covered by appropriate materials such as mulch, staked sod, riprap, erosion control blanket, or other material that prevents erosion from occurring. Grass seeding alone is not stabilization. Snow cover and frozen ground conditions are not considered stabilized.

“Steep Slopes” means slopes which are fifteen (15) percent or greater in grade.

"Stormwater" means stormwater runoff, snow melt runoff, and surface runoff and drainage.

“Stormwater Associated with Industrial Activity” means stormwater runoff, snow melt runoff, or surface runoff and drainage from industrial activities as defined in 40 CFR 122.26(b)(14).

“Stormwater Associated with Small Construction Activity” means the discharge of stormwater from:

(i) Construction activities including clearing, grading, and excavating that result in land disturbance of equal to or greater than once acre and less than five acres. Small construction activity also includes the disturbance of less than one acre of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb equal to or greater than one and less than five acres. Small construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the facility.

(ii) Any other construction activity designated by EPA or the department, based on the potential for contribution to a violation of a water quality standard or for significant contribution of pollutants to waters of the state.

“Temporarily Ceased” means clearing, grading, and excavation within any area of the site that will not include permanent structures, will not resume (i.e., the land will be idle) for a period of 14 or more calendar days, but such activities will resume in the future.

"Temporary Erosion Protection" means methods employed to prevent erosion. Examples of temporary cover include; mulch, straw, erosion control blanket, wood chips, tackifiers, and erosion netting.

"Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with permit requirements because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed erosion and sediment controls or site stabilization methods, inadequate erosion and sediment controls or site stabilization methods, lack of preventive maintenance, or careless or improper operation.

“Waters of the State” means any and all surface waters that are contained in or flow in or through the state of North Dakota as defined in NDCC 61-28-02. This definition includes all water courses, even if they are usually dry.

“You” means the owner, operator or permittee as appropriate.

Appendix 1 – Erosion and Sediment Control Requirements

Requirements for designing, implementing and maintaining erosion and sediment controls.

A. Erosion and Sediment Control Practices

1. Sites using temporary (or permanent) sediment basins must meet the following requirements:

    a. Sediment basins shall be designed for a calculated volume of runoff from a 2-year, 24-hour storm per acre drained to the basin and provides not less than 1,800 cubic feet of sediment storage below the invert of the outlet pipe from each acre drained to the basin; or

    b. Basins shall be sized to provide 3,600 cubic feet of sediment storage below the invert of the outlet pipe per acre drained to the basin if calculations are not performed.

    c. Basin outlets must be designed to avoid short-circuiting and the discharge of floating debris. Basins must be designed with the ability to allow complete basin drawdown for maintenance activities. Basins must release the storage volume in at least 24 hours. Outlet structures must be designed to withdraw water from the surface, unless not practicable. If not practicable, rationale must be provided in the SWPPP. The basin must have a stabilized emergency overflow to prevent failure of pond integrity. Energy dissipation must be provided for the basin outlet.

2. Erosion, sediment, and stabilization practices shall be provided. Erosion, sediment and stabilization practices include such things as: silt fences, fiber logs, vegetative buffer strips, erosion control blankets, mulch, hydro-seeding combined with mulch or tackifiers, etc.

3. All exposed soil areas must be stabilized (see definitions). Stabilization must be initiated immediately where activities have been permanently or temporarily ceased on any portion of the site and will not resume for a period exceeding fourteen (14) calendar days. Stabilization must be completed as soon as practicable, but no later than fourteen (14) calendar days after the initiation of soil stabilization. Temporary stockpiles without significant silt, clay or organic components (e.g., clean aggregate stockpiles, demolition concrete stockpiles, sand stockpiles) are exempt from this requirement.

    a. For slopes with a grade of 3:1 or greater, stabilization must be initiated immediately once activities have been completed or temporarily ceased. Stabilization must be completed as soon as practicable, but no later than seven (7) calendar days after the initiation of soil stabilization.

4. Temporary soil stockpiles must have effective sediment controls, and cannot be placed in surface waters, including stormwater conveyances such as curb and gutter systems, or conduits and ditches.

5. The normal wetted perimeter of any temporary or permanent drainage ditch that drains water from a construction site, or diverts water around a site, must be stabilized at least 200 linear feet from the property edge, or from the point of discharge to any surface water. Stabilization shall be completed prior to connection with a surface water. Any remaining portion of the temporary or permanent drainage ditch must be stabilized within fourteen (14) calendar days for portions which construction activities have temporarily or permanently ceased.

6. If stabilization requirements cannot be met due to circumstances beyond the control of the

permittee, the permittee may comply with following:

a. If vegetative stabilization is to be used, immediately initiate, and within 14 calendars days complete, the installation of temporary non-vegetated stabilization; or

b. Complete all methods of initiating stabilization as soon as conditions or circumstances allow.

If any conditions in parts a or b above are encountered, the permittee must document the circumstances which prevented you from meeting the stabilization requirements in the SWPPP of this paragraph and provide a schedule in the SWPPP which will be followed in order to meet the stabilization requirements.

Permittees are responsible for implementing winter stabilization methods during frozen ground conditions if the site was not stabilized prior to the ground freezing.

7. Stream diversions or any temporary or permanent drainage ditch or trench, which will have continuous flow, shall be stabilized with appropriate controls prior to connection with any surface water. The entire area (channel and bank) of the stream diversion or temporary or permanent drainage ditch, or trench, must be appropriately stabilized to bankfull height.

8. While working in or around surface waters, sediment and erosion controls must be used above the anticipated level of the surface water. Floating silt curtain does not satisfy the down slope and side slope boundary requirements in Part II(C)(4)(b) of this permit, unless the construction activity is on or below the elevation of the surface water. The floating silt curtain must be placed as close to shore as possible. Sediment control must be installed where exposed soils drain to the surface water immediately after construction activity along the waterline has been completed.

9. Pipe and culvert outlets must be provided with energy dissipation within 24 hours of connection to a surface water.

10. Splash pads and/or downspout extensions must be provided for roof drains to prevent erosion from roof runoff.

11. All storm drain inlets in the immediate vicinity of the construction site must be protected by appropriate BMPs during construction until all disturbed areas and stockpiles with the potential to discharge to the inlet have been stabilized. This includes storm drain inlets which may be affected by sediment tracked onto paved surfaces by vehicles or equipment.

12. Inlet protection devices are a last line of control – erosion and sediment control practices must be used on-site. Inlet protection devices must conform to local ordinances or regulations. In general, inlet protection devices need to provide for adequate drainage to prevent excessive roadway flooding. Inlet protection may be removed for a particular inlet if a specific concern (i.e., street flooding/freezing, snow removal) has been identified and documented in the SWPPP. In this situation, additional erosion and sediment control practices, or stabilization methods must be used to supplement the loss of the inlet protection device to prevent sediment from entering the storm sewer system.

13. Vegetated buffers must have a minimum width of 1 foot for every 5 feet of disturbed area that drains to the buffer. The width of the buffer shall have a slope of 5 percent or less and the area draining to the buffer shall have a slope of 6 percent or less. Concentrated flows should be minimized throughout the buffer.

    Buffers shall consist of dense grassy vegetation, 3 to 12 inches tall with uniform coverage over 90 percent of the buffer. Woody vegetation shall not be counted for the 90 percent coverage. No more than 10 percent of the overall buffer may be comprised of woody vegetation.

14. A 50 foot natural buffer or equivalent erosion and sediment controls must be provided when a project is within 50 feet of a surface water and stormwater flows to the surface water. If equivalent erosion and sediment controls are used, rationale for using equivalent controls must be provided in the SWPPP.

If working within 100 feet of a surface water listed as impaired for sediment, suspended solids or turbidity, a 100 foot natural buffer or equivalent sediment and erosion controls must be provided. If equivalent erosion and sediment controls are to be used, rationale for using equivalent controls must be provided in the SWPPP.

15. If the permittee(s) intend to use chemical treatment for sediment removal, they must be used in accordance with the manufacturer's specifications. Treatment chemicals must be selected appropriately for the anticipated soil particle size and characteristics of the stormwater (pH, turbidity, flow rate of stormwater flowing into the chemical treatment system, etc.). A description of the chemical treatment process must be included in the SWPPP.

    a. To ensure selection and management of chemicals minimize the potential for harmful effects in the discharge, the permittee shall provide a written request to the department for review and approval. Additional monitoring and reporting may be required as a condition for the approval to discharge.

       A request to discharge chemically treated water shall include all of the following information and be provided sixty (60) days prior to use:

       i. Material Safety Data Sheet/Safety Data Sheet (MSDS/SDS);
       ii. Proposed water additive discharge concentration;
       iii. Discharge frequency (i.e., number of hours per day and number of days per year);
       iv. Monitoring point for product discharge;
       v. Type of removal treatment, if any, that the water additive receives prior to discharge;
       vi. Product function (e.g., coagulant, flocculant, etc.);
       vii. A 48-hour LC_{50} or EC_{50} for a North American freshwater planktonic crustacean (*Ceriodaphnia* sp., *Daphnia* sp., or *Simocephalus* sp.); and
       viii. Results for a toxicity test for one other North American freshwater aquatic species (other than a planktonic crustacean).

    b. Discharges from the chemical treatment of stormwater must not cause a violation of the standards of quality for waters of the state (N.D.A.C. § 33-16-02.1). The discharge must meet the dewatering or basin draining requirements provided in Part II(C)(3)(g) of this permit.

16. Minimize the duration of exposed soils on steep slopes.

B. Maintenance Requirements for Erosion and Sediment Controls

1. All erosion prevention and sediment control BMPs must be inspected to ensure integrity and effectiveness. All nonfunctional BMPs must be repaired, replaced, maintained or supplemented with functional BMPs. If a nonfunctioning BMP is supplemented, the nonfunctional BMP shall be removed. Corrective actions must be made prior to the next anticipated rainfall event or within 24 hours of discovery (whichever comes first), or as soon as field conditions allow access. Documentation must be provided in the maintenance records if field conditions do not allow access along with a plan of action for performing maintenance activities.

   Permittee(s) must investigate and comply with the following inspection and maintenance requirements:

   a. All control devices similar to, and including, silt fence or fiber rolls must be repaired, replaced, maintained or supplemented when they become nonfunctional (torn from posts, visible tears, etc.). Collected sediment must be removed as it approaches 1/2 of the above ground capacity of the control device.

   b. Fiber rolls must be replaced when 1/2 of the original above ground height of the device when it was

installed has been lost as a result of flattening or other damage.

c. Sedimentation basins must be drained and the sediment removed when the depth of sediment collected in the basin reaches 1/2 the storage volume. Drainage and removal must be completed within 72 hours of discovery, or as soon as field conditions allow access. Documentation must be provided in the maintenance records if field conditions do not allow access along with a plan of action for performing maintenance activities.

d. Maintenance and cleaning of inlet protection devices must be performed when sediment accumulates, the filter becomes clogged, and/or performance is compromised.

2. Surface waters, including drainage ditches and conveyance systems, must be inspected for evidence of sediment deposited by erosion. Permittees must remove all deltas and sediment deposits in surface waters, drainage ways, catch basins, and other drainage systems. Areas where sediment removal results in exposed soil must be stabilized. Removal and stabilization must take place immediately, but no more than, seven (7) calendar days after the discovery unless precluded by legal, regulatory or physical access constraints. Permittees shall use all reasonable efforts to obtain access. If precluded, removal and stabilization shall take place immediately, but no more than, seven (7) calendar days after obtaining access. Permittees are responsible for contacting all local, regional, state, and federal authorities, and receiving any applicable permits prior to conducting any work.

3. Vehicle tracking of sediment from the site must be minimized by BMPs. This may include having a designated egress with aggregate surfacing from the site or by designating off-site parking. Permittees are responsible for (or making the arrangements for) street sweeping and/or scraping if BMPs are not adequate to prevent sediment from being tracked onto the street from the site.

   Construction site egress locations must be inspected for evidence of sediment being tracked offsite by vehicles or equipment onto paved surfaces. Accumulations of tracked and deposited sediment must be removed from all off-site paved surfaces by the end of the work day, shift or if applicable, within a shorter time specified by local authorities or the department.

4. If sediment escapes the construction site, off-site accumulations of sediment must be removed in a manner and at a frequency sufficient to minimize off-site impacts (e.g., fugitive sediment in streets could be washed into storm sewers by the next rain event and/or pose a safety hazard to users of public streets).

5. Vegetative buffers must be inspected for proper distribution of flows, sediment accumulation and signs of rill formation. If a buffer becomes silt covered, contains rills, or is otherwise rendered ineffective, other control measures shall be implemented. Eroded areas shall be repaired and stabilized within 24 hours of discovery, or as soon as conditions allow access. Documentation must be provided in the maintenance records if field conditions do not allow access along with a plan of action for performing maintenance activities.

c. Operational Controls

1. Properly handle construction debris and waste materials.

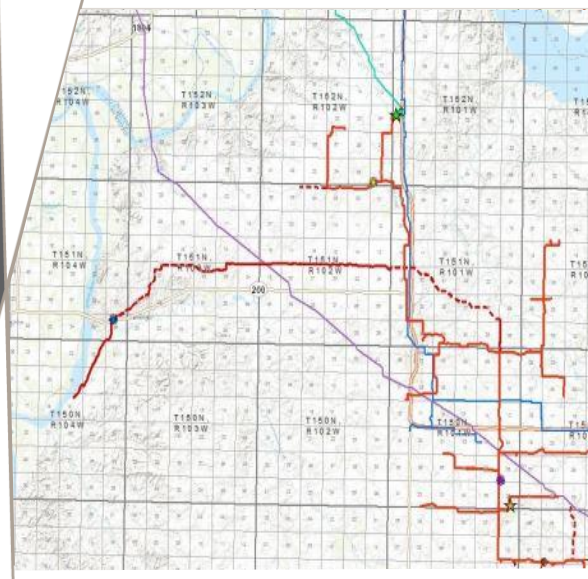
   a. Debris and waste must be handled appropriately until disposal. Litter and debris shall be collected and stored to reduce the potential for wind and water to carry the materials off-site or leachate discharging from a site. Collected material shall be taken to the appropriate facility for disposal or recycling.

   b. Liquid or soluble materials including oil, fuel, paint and any other hazardous substances must be properly stored, to prevent spills, leaks or other discharges. Restricted access to storage areas must be provided to prevent vandalism. Storage and disposal of liquid or soluble material must be in compliance with applicable regulations.

2. Wash water containments must be cleaned out (solids and liquid) before 80 percent of storage capacity is attained.

3. Best management practices used in surface waters must be cleaned immediately upon removal from surface waters to prevent the transfer of aquatic nuisance species.

APPENDIX H
CALIBER 10-YEAR PLAN



Cardno®
Shaping the Future

TEN YEAR PLAN: 2016-2026
Caliber Bear Den Interconnect LLC

June 2016

In accordance with Section 49-22-04 of the North Dakota Century Code and Chapter 6906-02 of the North Dakota Administrative Code, Caliber Bear Den Interconnect LLC. (CBDI), submits the following Ten Year Plan for years 2016 through 2026.

(1) A description of the general location, size, and type of all facilities to be owned or operated by the utility during the ensuing ten years, as well as those facilities to be removed from service during the ten-year period.

CBDI currently does not own or operate any transmission facilities in North Dakota. CBDI is submitting a Certificate of Corridor Compatibility Application and Route Permit Application, requesting permission from the Commission to construct and operate a 5.3 mile- long, 12-inch-diameter crude oil pipeline (the Project). The Project is located in McKenzie County, North Dakota, approximately 3 miles south of the town of Watford City.

CBDI does not own or operate any facilities that it plans to remove from service during the next ten years.

(2) An identification of the location of the tentative preferred site for all energy conversion facilities and the tentative location of all transmission facilities on which construction is intended to be commenced within the ensuing five years and such other information as may be required by the commission. The site and corridor identification shall be made in compliance with the criteria published by the commission pursuant to section 49-22-05.1.

CBDI has no plans to construct any energy conversion facilities in the next five years.

As stated above, CBDI is submitting a Certificate of Corridor Compatibility Application and Route Permit Application, requesting permission from the Commission to construct and operate a 5.3 mile- long, 12-inch-diameter crude oil pipeline. The Project is located in McKenzie County, North Dakota, approximately 3 miles south of the town of Watford City. The project will begin at the Dakota Access Pipeline Watford City Terminal located in Section 1, Township 149 North, Range 99 West, and will proceed south and east to a CBDI owned Truck Loadout Facility and Interconnection with Enable Midstream's Crude Oil Gathering System in Section 30, Township 149 North, Range 98 West.

(3) A description of the efforts by the utility to coordinate the plan with other utilities so as to provide a coordinated regional plan for meeting the utility needs of the region.

After thorough research of the Williston Basin Region, CBDI determined that there was insufficient transmission infrastructure to connect the Bear Den Prospect Area south of Watford City to the new crude oil interstate transmission pipeline being built by Dakota

Access Pipeline (DAPL). CBDI has coordinated with XTO Energy (as anchor client) and Enable Midstream (as gathering pipeline system owner) to transport crude oil to DAPL's interstate transmission pipeline. The Caliber Bear Den Interconnect Pipeline will transport increased production of NGL from the Bakken and Three Forks formations, to new markets established by the construction of the DAPL interstate pipeline.

(4) A description of the efforts to involve environmental protection and land-use planning agencies in the planning process, as well as other efforts to identify and minimize environmental problems at the earliest possible stage in the planning process.

CBDI works diligently to protect the environment, home to its employees and customers. Protection of the environment is an integral element of CBDI's operations, and environmental protection efforts span every phase of each of CBDI's projects, from planning through construction, restoration, and into full operation. When planning projects, CBDI also works closely with local and state land-use planning authorities to try to address land-use planning concerns.

([5]) A statement of the projected demand for the service rendered by the utility for the ensuing ten years and the underlying assumptions for the projection, with that information being as geographically specific as possible, and a description of the manner and extent to which the utility will meet the projected demands.

The development of hydrocarbon production in the Williston Basin has increased significantly in recent years due to advancements in deep horizontal directional drilling techniques and subsequent oil extraction in the Bakken and Three Forks shale formations. The total recoverable amount of Bakken and Three Forks oil reserves is subject to interpretation and speculation. Studies conducted by the North Dakota Department of Mineral Resources (NDDMR)' and the U.S. Geological Survey[2] in 2008 and 2010 indicate that 4.0 to 6.3 billion barrels of recoverable reserves are available in North Dakota's Bakken and Three Forks formations. The most recent U.S. Geological Survey information estimated there may be 7.4 billion barrels of oil still undiscovered in the Bakken and Three Forks formations.[3] Information from the NDDMR indicates that oil production has increased dramatically over the past five years from approximately 263,000 bpd in 2010 to over 1,000,000 bpd in April 2014,[4] and production is expected to continue to increase dramatically.[5] Further, natural gas production was nearly 260 million in 2012.[6] Production is expected to continue to increase dramatically.'

The major constraint in transporting oil and gas from North Dakota to refining centers is the lack of pipeline capacity. Several major projects have been planned to address the growing volumes, but pipeline capacity is not expected to keep pace with the production, leaving incremental volumes to find alternative transportation methods, primarily rail.

CBDI's proposed 12-inch diameter crude oil pipeline will provide needed capacity to transport increased production of crude oil from the Bakken and Three Forks formations. In addition, to accommodate the ever-increasing Bakken development in northwestern

North Dakota, the construction of even more transmission infrastructure will be required, and CBDI may develop additional facilities to address this need within the next ten years.

[1] Bohrer, M., Fried, S., Helms, L., Hicks, B., Juenker, B., McCusker, D., Anderson, F., LeFever, J., Murphy, E., and Nordeng, S., North Dakota Department of Mineral Resources. State of North Dakota Bakken Resource Study Project 23 (2008).

[2] United States Geological Survey. Assessment of Undiscovered Oil Resources in the Devonian-Mississippian Bakken Shale Formation, Williston Basin Province, Montana and North Dakota (2008). Web access in May 2013 at: http://geology.com/usgs/bakken-formation-oil.shtml

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[4] North Dakota Department of Mineral Resources. North Dakota Monthly Oil Production Statistics. Web access in June 2014 at https://www.dmr.nd.gov/oilgas/stats/historicaloilprodstats.pdf

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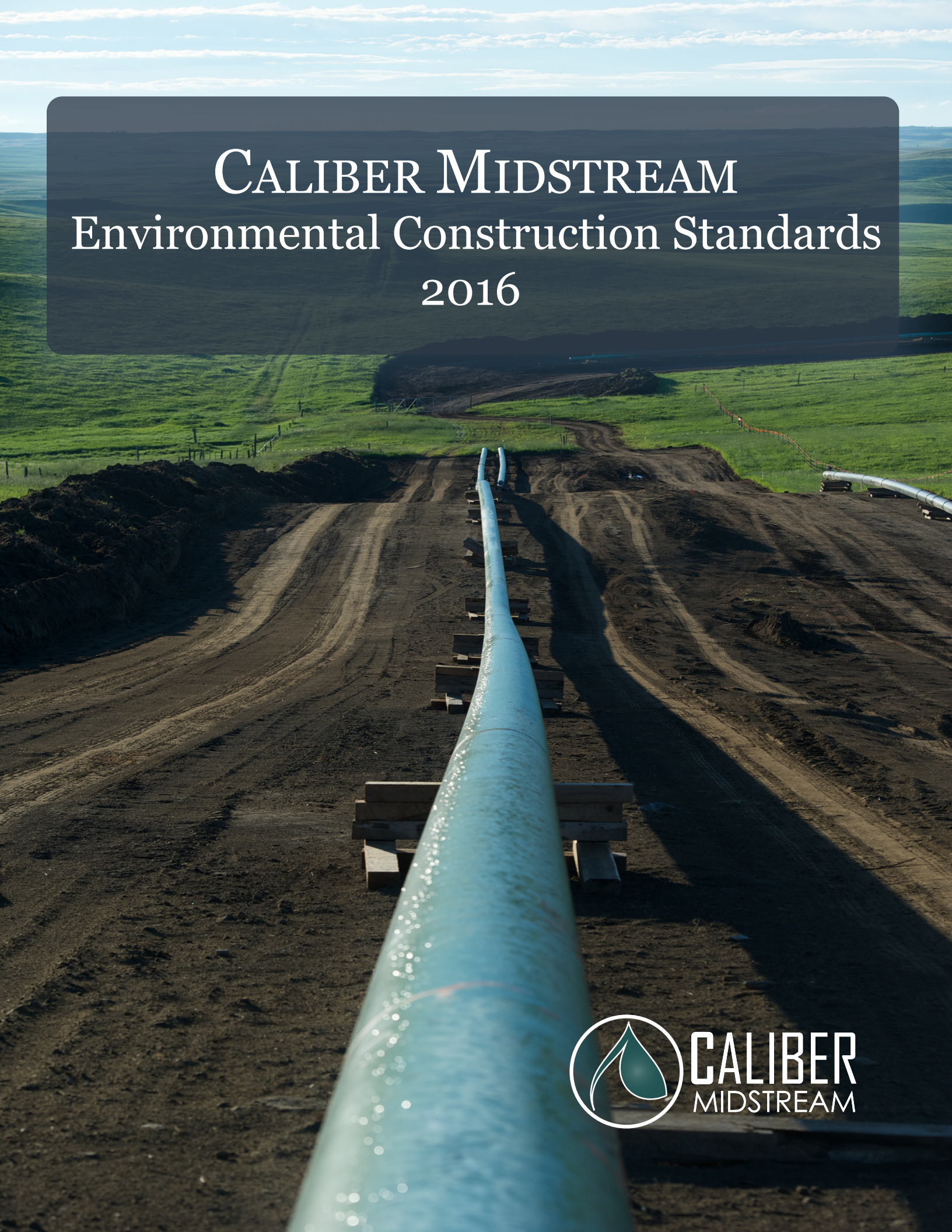
[6] 2012 North Dakota Gas Production by Formation.Web access in June 2014 at: https://www.dmr.nd.gov/oilgas/stats/2012gasprod.pdf.

[7] North Dakota Department of Mineral Resources. Activities and Projections. Web access in May 2013 at: https://www.dmr.nd.gov/oilgas/presentations/ActivityandProjectionsWilliston2010-08-03.pdf

APPENDIX I
ENVIRONMENTAL CONSTRUCTION STANDARDS - 2016



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Caliber Midstream
Environmental Construction Standards
2016

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1.0 Introduction

This Environmental Mitigation Plan (ECS) outlines construction-related environmental policies, procedures, and mitigation measures developed by Caliber Midstream Partners, LP, Caliber North Dakota and their subsidiaries (collectively referred to herein as "Caliber") as a baseline for pipeline construction projects. This ECS was developed based on Caliber's experience implementing best management practices during construction. It is intended to meet or exceed applicable federal, state, tribal, and local environmental protection and erosion control specifications and practices. The ECS is designed to address **typical** circumstances that may be encountered along a pipeline project. Project-specific permit conditions and/or landowner agreements may supersede general practices described in this document.

This document includes the following sections:

- **Section 2.0** of the ECS describes general mitigation measures, including soil erosion and sedimentation control procedures, to be implemented during upland construction and upland restoration;
- **Section 3.0** discusses stream and river construction, crossing, and restoration;
- **Section 4.0** describes practices for wetland construction, crossings, and restoration;
- **Section 5.0** discusses highway, road, and rail crossings;
- **Section 6.0** discusses construction dewatering;
- **Section 7.0** outlines water appropriation practices;
- **Section 8.0** addresses revegetation measures;
- **Section 9.0** addresses winter construction issues;
- **Section 10.0** addresses waste management requirements.

Alternative construction procedures implemented in lieu of this ECS must provide an equal or greater level of protection to the environment, and must be approved in writing by Caliber.

Unless otherwise specified, the construction Contractor (Contractor) is responsible for implementing the requirements of this ECS. Caliber will make the requirements of the ECS and applicable environmental permits known to the Contractor. If the Contractor has questions concerning these environmental requirements, the Contractor will contact an Caliber representative.

Caliber will provide appropriate construction oversight to confirm Company and Contractor compliance with the measures of this ECS and requirements of applicable federal, state, tribal, and local

permits. Caliber's Environmental Inspectors (EIs) will assist the Contractor in interpreting and implementing the requirements of the ECS, and verify compliance with these procedures for the company. Caliber employs experienced EIs to manage unforeseen situations that are not directly addressed by the project documents. Caliber relies on the experience and judgment of the EIs through coordination and consultations with project management staff to address those unforeseen situations should they occur in the field.

The EI will be expected to use judgment in the field to interpret environmental conditions and requirements, but will not be authorized to make major modifications or changes without the prior written approval of Caliber. The EI, in consultation with Caliber Environmental staff, will have the authority to stop all work activities and order corrective mitigation for actions that are not in compliance with the measures in this ECS, Landowner agreements, or environmental permit requirements. The EI will maintain appropriate records to document compliance with these and other applicable environmental permit conditions.

2.0 General Environmental Mitigation Measures

2.1 Temporary Erosion and Sediment Controls

Temporary erosion and sediment controls (ECDs) include, but are not limited to, slope breakers, sediment barriers (i.e. silt fence, straw bales, bio-logs, etc.), stormwater diversions, trench breakers, mulch, and revegetation. The goal of ECDs are to minimize erosion onsite, and prevent construction-related sediment from migrating offsite into sensitive resource areas such as streams, wetlands, lakes, or drainage ditches (dry or flowing). The Contractor must, at all times, maintain erosion and sediment control structures as required in the project construction documents, and as required by all applicable permits. Non-functional erosion and sediment control features must be repaired, replaced, or supplemented with functional materials within 24 hours after discovery, or as otherwise specified in the project permits.

ECDs must be installed after initial clearing but before disturbance of the soil, and must be replaced by permanent erosion controls as restoration is completed. Additional information on ECDs is provided in the upland, waterbody, and wetland sections.

2.2 Right-Of-Way Access

Access to the right-of-way (ROW) will be from public roadways and Caliber-approved private access roads only. Caliber is responsible for creating signs or other methods to identify approved access roads in the field and to ensure that access is confined to only the approved roads. Vehicle tracking of soil from the construction site will be minimized by installation and implementation of Best Management Practices (BMPs) such as stone pads, timber mats, reducing equipment/vehicle access to the ROW where practicable (off-ROW parking), or equivalent. Installation of stone or timber mat access pads must be in accordance with applicable permits and state/federal specifications. If such BMPs are not adequate to prevent sediment from being tracked onto public roads, street sweeping, or other equivalent means of collecting sediment, must be used. If soil is tracked onto a roadway, the Contractor must remove accumulated material from the road and return it to the construction ROW within an upland area as soon as possible, but in no circumstances more than 24 hours after discovery. In addition, soil on roadways cannot be swept and/or graded into the road ditch or onto the shoulder.

2.3 Road Repair

The Contractor must repair private roads, lanes, and public roads damaged when moving equipment or obtaining access to the ROW.

2.4 Right-Of-Way Requirements

All construction equipment and vehicles will be confined to the approved ROW and additional workspace. Prior to commencement of clearing operations, the outer limits of the construction ROW and additional workspace areas will be marked with distinctive stakes and flagging by Caliber.

Construction activities are restricted to the approved designated areas. Other areas (pipe storage and contractor yards, borrow and disposal areas, access roads, etc.) will be posted for use by the Contractor during construction activities.

The construction ROW (construction workspace) for a project will vary and may include a portion of Caliber's existing corridor, new permanent corridor, permitted temporary workspace, and site-specific additional workspaces as defined below. The construction ROW width will be reduced in selected locations (e.g., wetlands, waterbodies, and forested windbreaks), in accordance with applicable permit conditions, as indicated on the project construction alignment sheets and in the field by the use of staking.

2.4.1 ROW (Permanent Easement)

Caliber's existing permanent ROW easement varies in width. Additional footage may be added, depending on the location of the new pipeline(s) in relation to existing pipelines, if applicable. The ROW is maintained to facilitate access and aerial inspection of the pipeline system.

2.4.2 Temporary Workspace

In addition to the ROW/permanent corridor, construction will require Temporary Workspaces (TWS). The TWS will be located adjacent to and contiguous with the proposed ROW/permanent corridor and will be identified on the construction alignment sheets and by distinctive staking of construction limits prior to clearing.

2.4.3 Additional Workspace

Site-specific additional workspace (AWS) locations (construction work areas beyond the permanent corridor and TWS previously described) will be required at select locations such as steep slopes, road, waterbody, railroad, some wetland crossings, and where it is necessary to cross under the existing pipelines or foreign utilities. AWS will typically be located in uplands adjacent to the construction ROW and set back at least 50 feet from sensitive resource boundaries where site-specific field conditions allow. However, to complete work safely, Caliber may need to locate AWS within a wetland or within the 50-foot setback from a wetland or waterbody based on site-specific conditions. AWS adjacent to waterbodies and/or wetlands is addressed further in **Sections 3.4** and **4.4**, respectively.

Caliber will acquire AWS from the landowner where necessary; use of unauthorized workspace is prohibited without Caliber's approval. In all cases, the size of AWS will be kept to the minimum necessary to safely conduct work. All approved AWS locations are depicted on the construction alignment sheets.

2.5 Line List and Permits

Caliber will provide the Contractor with a Construction Line List (CLL) that describes special requirements (e.g., timber salvage, topsoil segregation, restoration measures, fencing requirements,

etc.) as agreed upon with Landowners provided they conform to the project permits. The Contractor must comply with these special requirements and/or permit conditions.

The CLL reflects requirements and comments provided by Landowners; however it is not a comprehensive list of construction requirements. The CLL must be considered in conjunction with other project documents and permits. Any third party agreements between the Contractor and the Landowner must be pre-approved by Caliber and in writing.

Unless otherwise noted within this EMP, Caliber will obtain the necessary permits for the installation of the pipeline. Permit requirements may be more stringent than the requirements of this EMP. In all cases, the more restrictive requirements will apply.

2.6 Upland Clearing and Grading

The initial stage of construction involves the clearing of brush, trees, and tall herbaceous vegetation from the ROW. Clearing may be accomplished with chain saws, mowers, and hydraulic tree-cutting equipment.

2.6.1 Disposal of Non-Merchantable Timber

Unless otherwise directed by Caliber, non-merchantable timber and slash will be disposed of by mowing, chipping, grinding, and/or hauling off site to an approved disposal facility or used in stabilizing erodible slopes or construction entrances. In non-agricultural, non-wetland areas, chips, mulch, or mechanically cut woody debris (excluding slash or brush and less than 1.5 inch diameter and/or 12 inches in length) may be uniformly broadcast (less than 1-inch thickness) across the ROW where they would ultimately be incorporated into the topsoil layer during grading activities, with landowner approval (coordinated through Caliber ROW agents). Burning of non-merchantable wood may be allowed only where the Contractor acquired all applicable permits and approvals (e.g. agency, tribal, and landowner) and in accordance with all tribal, state, and local regulations. The Contractor must provide Caliber with copies of these permits and/or approvals prior to initiating burning.

Burning is not allowed within 100 feet of a wetland or waterbody without site-specific approval from Caliber and in accordance with applicable permits and approvals. Burning is not allowed in wetlands. No chips, mulch, or mechanically cut woody debris will be stockpiled in a wetland and no upland woody debris will be disposed of in a wetland (see **Section 4.3** for further information on clearing in a wetland). Non-merchantable timber may not be disposed of by placing it off the ROW. No woody debris disposal will be allowed in agricultural areas or wetlands.

2.6.2 Disposal of Merchantable Timber

All merchantable timber will be managed in accordance with the contract specifications and landowner agreements.

2.6.3 Upland Grading and Stump Removal

Grading generally follows clearing and involves leveling and smoothing the construction ROW, including TWS, and AWS areas as necessary, to create a safe, even working surface for equipment and vehicles. To facilitate proper cleanup and restoration in upland areas, tree stumps outside the ditch line will be ground no less than four-inches below normal ground surface or completely removed and hauled off to an approved disposal facility. Stumps in the ditch line will be completely removed, ground, and/or hauled off to an approved disposal facility. Topsoil and subsoil disturbed during grading operations will not be mixed with foreign material (e.g., whole stumps and brush).

2.6.4 Trees and Shelterbelts

Care will be taken to minimize tree removal. To the extent practicable, and in accordance with applicable permits, wind breaks and shelterbelts will be crossed by minimizing the width of the ROW. When clearing, trees will be felled onto the ROW to minimize damage to off-ROW vegetation. Shelterbelts within the TWS and AWS must be replanted as specified in the contract and in accordance with applicable project permits and/or landowner agreements.

2.6.5 Irrigation Systems

If pipeline construction activities interfere with the operation of spray irrigation systems, Caliber will establish with the landowner or tenant an acceptable amount of time the irrigation system may be out of service. If feasible, temporary measures will be implemented to allow an irrigation system to continue to operate across the ROW during pipeline construction. Any damage to irrigation systems caused by construction-related activities will be repaired following backfilling.

2.6.6 Drain Tile Inlets

Caliber will attempt to locate existing drain tile inlets that are located near the construction work area prior to construction. Drain tile inlets must be marked using flags. The Contractor must protect located drain tile inlets with the potential to receive stormwater from the construction project using the appropriate ECDs until sources with the potential to discharge have been stabilized. The determination of the specific ECD will be made based on the location of an inlet with respect to the project area, drainage area from the construction work area to the inlet, topography, vegetation, soils, and accessibility to the inlet. Where drain tile inlets are located off of Caliber's ROW, Caliber may not have authorization to install ECDs at the inlet site. In these cases, sediment control measures (typically silt fence) will be installed along the edge of the construction work area that drains to the inlet structure to minimize sedimentation.

2.6.7 Upland Topsoil Segregation

Topsoil generally has physical and chemical properties that are conducive to good plant growth. To prevent the mixing of topsoil with less productive subsoil during construction, topsoil will be segregated in selected areas where soil productivity is an important consideration. A minimum one foot of separation must be maintained between the topsoil and subsoil piles to prevent mixing. Where the one foot separation cannot be maintained, a physical barrier, such as a thick

layer of straw mulch, may be used between the spoil and topsoil piles to prevent mixing. Use of the physical barrier must be reviewed and approved by Caliber on a site-specific basis.

Upland areas where topsoil will be stripped include cropland, hay fields, pasture, residential areas, and other areas as requested by the landowner or as specified in the Project plans, commitments, and/or permits. Topsoil will not be used to construct trench breakers (refer to **Section 2.10**) or to pad the pipe. Gaps must be left and ECDs installed where stockpiled topsoil and spoil piles intersect with water conveyances (i.e., ditches, swales, and waterways) to maintain natural drainage.

2.6.8 Topsoil Segregation Methods

The following topsoil segregation methods may be employed during construction (refer to **Figures 1** through **3**):

- Modified Ditch-Plus-Spoil Side
- Full ROW
- Trench-Line-Only

A Full ROW topsoil segregation technique will typically be used in agricultural cropland, pasture and nonagricultural open areas. Alternative topsoil segregation methods may be used on a site-specific basis or as requested by the landowner. The Trench-Line-Only and the Modified Ditch-Plus-Spoil Side topsoil segregation methods may be used where Caliber determines that the width of the construction ROW is insufficient for other methods to be used.

In areas of steep side slopes adjacent to wetlands and waterbodies, including forested areas, where subsoil will be excavated (e.g., two-toned, side-cut, etc.) to create a level workspace, topsoil will be segregated to the extent practicable and at the direction of Caliber. Topsoil is not typically segregated in standing water wetlands unless specifically requested by the landowner and/or managing land agency in accordance with applicable permit conditions.

2.6.9 Depth of Upland Topsoil Stripping

Topsoil must be stripped to a maximum depth of 12 inches in active crop lands, unless otherwise specified by Caliber or requested by the landowner. Additional space may be needed for spoil storage if more than 12 inches of topsoil are segregated. If less than 12 inches of topsoil are present, the Contractor shall attempt to segregate to the depth that is present.

2.6.10 Temporary Erosion and Sediment Controls

ECDs are intended to slow the velocity of water off-site to minimize erosion, stop the movement of sediments off the construction ROW, and prevent the deposition of sediments into sensitive resources that may be on or adjacent to the ROW. ECDs typically used are silt fence and/or trenched-in and staked straw bales/bio-logs and other barriers such as compacted earth (e.g., drivable berms across travel ways), sand bags, rubber conveyor belt barriers, or other appropriate

materials. If temporary ECDs are removed during the day to allow equipment access, they must be reinstalled at the end of the day.

Temporary ECDs must be installed after clearing and prior to grubbing and grading activities at the base of sloped approaches to streams, wetlands, and roads. Temporary ECDs will also be installed at the edge of the ROW as needed, and/or in other areas determined by the EI to slow water leaving the site and prevent siltation of waterbodies and wetlands down slope or outside of the construction ROW (e.g., swales and side slopes). Temporary ECDs will be placed across the entire construction ROW at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from tile line inlets, drainage ways, wetlands, and/or waterbodies until the area is revegetated and there is no potential scouring or sediment transport to surface waters.

If silt fence is in use, when the depth of sediment reaches about one-third of the height, the sediment must be removed. Non-functional ECDs will be repaired, replaced, or supplemented with functional structures within 24 hours after discovery, or as otherwise specified in the project permits.

Temporary ECDs installed across the travel lane may be removed during active daytime construction; however, ECDs must be properly reinstalled after equipment passage, or activities in the area are completed for the day. These ECDs must also be repaired and/or replaced prior to forecasted inclement weather. The Contractor is responsible for monitoring weather conditions and adjusting resources as needed to address pending and/or existing weather conditions.

2.6.10.1 Temporary Stabilization

Installation of temporary seeding, mulch (straw or hydromulch), and erosion control mats may be required by Caliber in certain locations if there are construction delays within a spread of at least 14 days. The Contractor may be required by Caliber to install temporary stabilization materials sooner based on site conditions, or as required in project permits. Temporary stabilization measures as outlined in **Section 8.2** must be implemented to minimize erosion and for sediment control.

The Contractor must install the appropriate class of erosion control blanket in accordance with manufacture recommendations and/or state Department of Transportation specifications on slopes greater than 5 percent that would be exposed over the winter and drain to surface waters (refer to **Figure 8**). The Contractor must attempt to install erosion control blankets on the exposed slopes prior to snowfall; however, construction progress and/or seasonal weather variations may prevent installation prior to the first snowfall. Installation of erosion control blankets and additional BMPs, as applicable based on site conditions, is required after the first snowfall to protect slopes prior to spring melt and runoff.

2.6.10.2 Temporary Mulch

Mulch will be applied as indicated in **Section 8.2.2**. If exposed soils have not been stabilized prior to freezing of the ground, and soil conditions are such that disking is still effective, crimp in straw mulch to help stabilize these areas, but on steeper slopes erosion controls blankets are still preferable.

2.6.10.3 CAT Tracking

CAT tracking, also known as horizontal slope grading, may be implemented based on site conditions (sandy or silt soils) to reduce erosion potential. CAT tracking is achieved by driving a bulldozer vertically up and down the slope which results in the tracks being oriented horizontally, creating small speed bumps for water.

2.6.11 Temporary Slope Breakers

Temporary slope breakers must be installed to minimize concentrated or sheet flow runoff in disturbed areas in accordance with the following maximum allowable spacing unless otherwise specified in permit conditions.

Slope (%)	Approximate Spacing (ft.)
3-5	250
5-15	200
15-25	150
>25	<100

If the length of the slope is less than the distance of the required spacing, slope breakers are not required unless a sensitive resource area (e.g., wetland) is located immediately down slope, or as requested by the EI. Temporary slope breakers may be constructed using earthen subsoil material, silt fence, straw bales, or in non-agricultural land, rocked trenches may be used. On highly erodible slopes, slope breakers in the form of either earthen or rocked trenches must be used whenever possible.

Temporary slope breakers must be constructed according to the following specifications:

- Earthen berms must be installed with a 2 to 4 percent out slope, with a minimum 6 foot base and a minimum height of 1.5 feet;
- Straw bales used as slope breakers must be trenched in and staked so as to not allow spacing between bales or allow flow underneath the bales;
- The outfall of temporary slope breakers must be directed off the construction ROW into a stable well-vegetated upland area or into an appropriate energy-dissipating sediment control device (e.g., silt fence, straw bales, rock aprons) to prevent the discharge of sediments;
- Proper slope breaker outfalls must be established where topsoil segregation and/or

grading has created a barrier at the edge of the construction workspace;
- Gaps must be created through spoil piles where necessary to allow proper out letting of temporary berms;
- Temporary slope breakers must be inspected daily and repaired as necessary, but no more than 24 hours after discovery or as soon otherwise specified in the project permits, to maintain operational integrity and prevent erosion in active construction areas.

2.6.12 Noise and Dust Control

The Contractor must take all reasonable steps to control construction-related noise and dust near residential areas and other areas as directed by Caliber. Control practices may include wetting the ROW and access roads, limiting working hours in residential areas, reestablishment of vegetation and/or additional measures as appropriate based on site-specific conditions.

2.7 Pipe Delivery, Bending and Welding

Typically, individual joints of pipe will be strung along the construction ROW before excavating the pipeline trench. This operation involves specially designed equipment to deliver pipe from pipe storage yards to the ROW. Where practical, the Contractor will drive stringing trucks along an alignment which corresponds closely to the pipeline centerline to minimize the potential for soil compaction in actively cultivated areas.

2.8 Upland Trenching

Trenching in uplands consists of excavating the trench for the pipeline, and is typically accomplished with a backhoe excavator or a rotary wheel ditching machine. Excavated material will be side cast (stockpiled) within the approved construction ROW separate from topsoil (refer to **Sections 2.6.7** and **2.6.8**), and stored such that the area subject to erosion is minimized. Caliber will coordinate with Landowners to minimize disruption of access caused by the trench during construction. Where deemed appropriate by Caliber, the Contractor will leave plugs of soil in the ditch or will construct temporary access bridges across the trench for the landowner to move livestock or equipment. Trenches will also be sloped where started and ended to allow ramps for wildlife to escape.

2.8.1 Timing

The length of time a trench is left open must be minimized to ensure that installation of the pipe and restoration of the ROW occurs in a timely fashion. Therefore, unless otherwise specified by project permits or Caliber, the Contractor must limit the amount of excavated open trench to a maximum of 3 days of anticipated welding production per spread. This timeframe may be increased or decreased at the discretion of Caliber based on site conditions. Site specific activities such as HDDs, guided bores, road bores, tie-in points, and valve work may be performed independent of a spread.

2.8.2 Pipeline Depth

At a minimum, the pipeline will be buried in accordance with U.S. Department of Transportation regulations (**40 CFR Part 195**). The depth of cover may vary depending on state law, permit requirements, landowner agreements, and site-specific conditions (e.g., depth of drain tile). If a state-level agency specifies a more stringent requirement for pipeline depth than the DOT and/or landowner requirements, Caliber may request a waiver of that requirement. Increased pipeline depth will result in greater amounts of ditch spoil and, consequently, may require additional workspace for storage of the spoil.

2.9 Pipe Installation

Once the trench has been inspected for proper depth, rocks, or other obstructions, the welded pipe is lowered into the trench. In rocky soils, the pipe may be wrapped with a protective shielding if necessary to prevent damage to the pipe coating during backfilling. Use of foam pillows must be approved by Caliber in advance and implemented in accordance with applicable Project permits, local/state/federal regulations, and manufactures recommendations.

2.10 Trench Breakers

Trench breakers will be installed as deemed necessary by Caliber in sloped areas after the pipe has been lowered into the trench. Trench breakers protect against subsurface water flow along the pipe after the trench is backfilled. Trench breakers will be constructed with bags filled with rock-free subsoil or sand.

Use of foam trench breakers must be approved by Caliber in advance and implemented in accordance with applicable Project permits, local/state/federal regulations, and manufactures recommendations. They will be placed from the bottom of the trench to near the top of the trench, completely surrounding the pipe and must be properly keyed into the undisturbed trench walls (refer to **Figures 12** and **13**). The location for trench breakers will be based on field conditions including the degree and length of slope, presence of down slope sensitive resource areas such as wetland and waterbodies, and proximity to other features such as roads and/or railroads. The following conditions apply to the placement and installation of trench breakers unless otherwise directed by Caliber:

- Trench breakers will be spaced as described for permanent berms or as otherwise specified by Caliber.
- Trench breakers will be installed on slopes greater than 5 percent adjacent to streams, wetlands, or other waterbodies.
- Topsoil cannot be used to construct trench breakers.
- Where the pipeline exits a wetland towards areas of lower relief, trench breakers will be installed (within the upland) where there is a potential for underground drainage along the pipe in order to prevent wetland or waterbody drainage.
- At all waterbody crossings, as necessary, to prevent diversion of water into upland portions of the pipeline trench and to keep accumulated trench water out of the waterbody.

- The actual location of each trench breaker will be selected through coordination between Caliber's EIs, Caliber's Craft Inspectors, and the Contractor's Foreman for backfilling activities.

2.11 Drain Tile Repair

If underground drainage tile is damaged by the pipeline's construction, it will be repaired in a manner that assures the tile line's proper operation at the point of repair. The following standards and polices shall apply to the tile line repair:

- Caliber will endeavor to locate all tile lines within the ROW prior to construction so that repairs can be made if necessary. Caliber will contact affected landowners/tenants to attempt to obtain their knowledge of tile line locations prior to construction. If the location of the tile lines is known precisely, those tile lines will be staked or flagged prior to construction to alert construction crews to the possible need for tile line repairs. If previously unidentified tile lines are encountered and cut during grading or trenching activities, they will be flagged at that time.
- Tile lines that are damaged, cut, or removed must be staked and/or flagged by the Contractor in such a manner that they will remain visible until permanent repairs are made prior to final backfilling of the trench. The location of damaged, cut, or removed tile lines will also be recorded using GPS technology or equivalent.
- All damaged lines must be screened or otherwise protected to prevent the entry of foreign materials, small mammals, etc. into the tile lines.
- If water is flowing through any damaged tile line, the tile will be immediately temporarily repaired until such time that permanent repairs can be made. If the tile lines are dry and water is not flowing, temporary repairs are not required if the permanent repairs can be made within 14 days of the time the damage occurred.
- Rain events during dry periods produce flow and require temporary repairs to facilitate draining of the fields to prevent crop damage. All damaged tiles must be temporarily or permanently repaired within 48 hours after a one inch rain event, or flow occurs in a previously non-flowing drain tile.
- Permanent repairs must be conducted in accordance with the contract specifications and must utilize double-walled drain tile and have rock shield installed between the drain tile and newly installed pipeline.
- The original tile alignment and gradient shall be maintained. A laser transit shall be utilized to ensure the proper gradient is maintained for repairs, regardless of length.
- Before completing permanent repairs, the Contractor will probe the tile lines or examine by other suitable means on both sides of the trench for their entire length within the work areas to check for tile that might have been damaged by vehicular traffic or construction equipment. If tile lines are found to be damaged, they must be repaired so that they function as intended.
- Permanent tile line repairs must be made within 14 days of the pipeline being installed within the trench, weather and soil conditions permitting.

2.12 Upland Backfilling

Backfilling follows pipe installation and consists of replacing the material excavated from the trench. In areas where topsoil has been segregated, the subsoil will be replaced first, and the topsoil will be spread uniformly over the area from which it was removed. Prior to backfilling, the trench must be dewatered in accordance with the methods discussed in **Section 6.0**.

2.13 Wet Weather Shutdown

During construction, certain activities may be suspended in wet soil conditions, based on consideration of the following factors:

- Plasticity of the surface soil to a depth of approximately 4 to 8 inches;
- Extent of surface ponding;
- Extent and depth of rutting and mixing of soil horizons;
- Extent and location of potential rutting and compaction (i.e., can traffic be rerouted around wet area); and
- Type of equipment and nature of the construction operations proposed for that day.

If the above factors cannot be achieved to the satisfaction of Caliber, the Contractor must cease work in the applicable area until Caliber determines that site conditions are such that work may continue.

The Contractor is responsible for appropriately planning for work, considering for the potential for wet conditions, and being prepared to implement mitigative measures in the event of wet weather conditions. This is particularly important when conducting work in unsaturated wetlands. The Contractor is responsible for implementing any and all such corrective measures should conditions subsequently worsen where the above described criteria cannot be met.

2.14 Controlling Spread of Undesirable Species

It is Caliber's intent to minimize the potential introduction and/or spread of undesirable species (i.e., invasive species and noxious weeds) along its ROW due to pipeline construction activities. However, it is not practicable for Caliber to eradicate undesirable species that are adjacent to its ROW. Caliber will minimize the potential for the establishment of undesirable species by minimizing the time duration between final grading and permanent seeding.

In consultation with applicable regulatory agencies, Caliber will identify plant species that are considered noxious weeds and/or invasive plants that may occur within the counties being crossed by the pipeline corridor.

Caliber may conduct field surveys along the proposed route to identify existing locations of noxious weeds and invasive species. These field surveys are considered reasonably accurate in documenting the locations of invasive species within and adjacent to wetlands, although additional locations may

be present. Surveys will focus on natural areas, roadside ditches, and pastures. Surveyed areas will be evaluated for presence of the target invasive species within and adjacent to the proposed construction work area (construction ROW and additional workspaces). Locations where the population of the targeted species comprised at least 20 percent of the species density within a 1,000 square foot area will be recorded using a Global Positioning System (GPS) device. Results of the surveys, including location maps, will be provided to the Contractor for proper treatment prior to construction.

2.14.1 Prevention and Control Measures

To prevent the introduction of noxious weeds and invasive species into the project area from other construction sites, construction equipment must be cleaned prior to arriving at the project site. This cleaning must consist of removing visible dirt from the equipment and blowing loose material from equipment using compressed air. The Contractor(s) will keep logs documenting the cleaning history of each piece of equipment and make the logs available to the EI or other Caliber Representative upon request. Contractors may use an equipment cleaning log or an equivalent form approved by Caliber. Equipment found to be in non-compliance with the cleaning requirement will not be allowed on the project site until it has been adequately cleaned.

Prior to clearing and grading of the construction right-of-way and pending landowner permission, major infestation areas identified during surveys or by Caliber's EIs may be treated with the recommended herbicides or their equivalents as identified through consultation with local authorities. All proposed herbicides must be reviewed and approved by Caliber's Environment Department prior to use. Alternatively, full ROW topsoil segregation may be implemented for weed control to allow equipment to work through the area after topsoil has been stripped, as long as they stay on the subsoil (clearing, grading, and restoration equipment must still be cleaned). The Contractor(s) must obtain necessary permits and/or certifications for the use of the applicable herbicides and must comply with state laws regarding the use of those herbicides. Contractor(s) must keep proper documentation of the locations where the herbicides have been used and provide such documentation to Caliber within 3 days of completing the work.

Treatment of known infestation areas will be completed in accordance with applicable chemical contact times (as specified by the manufacturer) in advance of clearing and grading within the construction right-of-way. Treatment may be restricted in areas that are not readily accessible, such as areas where access is limited by topography or other site conditions such as saturated/inundated soils. In the event that an area is determined to be inaccessible, the EI or other designated Caliber Representative will be notified and a site-specific alternative treatment method will be developed.

If additional noxious weed infestations are identified subsequent to herbicide applications, mechanical means (scrape down/blow down) may be used to remove weeds from tracked equipment prior to leaving the infested area. High pressure water wash stations may be established in select areas if the above measures do not adequately remove soil and vegetation

debris from construction equipment. The EI, in consultation with Caliber Environment staff, will determine where this practice will be implemented. The Contractor(s) must keep logs documenting the cleaning history of each piece of equipment and make the logs available to the EI or other Caliber Representative upon request. Any equipment found to be in noncompliance with the cleaning requirement will be removed from the project site until it has been adequately cleaned.

To prevent the spread of noxious weeds and invasive species during construction, mulch used on the Project on a certified organic farm must be composed of weed-free material. Certified weed-free mulch may also be required at site-specific locations. The Contractor(s) will be responsible for identifying and acquiring sources of weed-free and certified weed-free mulch. Sources must be approved by Caliber prior to purchase and copies of the applicable documentation must be provided to Caliber.

Post-construction monitoring of the restored ROW will be conducted by Caliber during the first growing season after restoration is complete. Revegetation in non-agricultural areas will be considered successful when the density and cover of non-nuisance vegetation are similar in density and cover to adjacent undisturbed lands. If this monitoring indicates a higher density and cover of noxious weeds on the ROW compared to adjacent off ROW areas, Caliber will take appropriate measures to control the noxious weeds. These measures may include herbicide spraying, mowing, or burning. Caliber will control noxious weeds in a manner that prevents the spread of weeds onto adjacent agricultural land on land where Caliber has aboveground facilities (e.g., valve sites, pump stations).

2.15 Cleanup and Rough/Final Grading

All waste materials, including litter generated by construction crews, are to be disposed of daily by the Contractor. Initial cleanup and rough grading activities may take place simultaneously. Cleanup involves removing construction debris (including litter generated by construction crews and excess rock) and large woody debris (greater than 1.5 inch diameter and/or 12 inches in length). Rough and final grading includes restoring disturbed areas as near as practicable to preconstruction conditions, returning the topsoil where topsoil has been stripped, preparing a seedbed (where applicable) for permanent seeding, installing or repairing temporary erosion control measures, repairing/replacing fences, and installing permanent erosion controls.

2.15.1 Timing

The Contractor must begin cleanup and rough grading (including installation of temporary erosion and sediment control measures) within 72 hours after backfilling. The Contractor must attempt to complete this cleanup within one week, weather and soil conditions permitting.

2.16 Permanent Erosion and Sediment Controls

During final grading, slopes in areas other than cropland will be stabilized with erosion control structures. Erosion control treatments of specific physical land features are described below.

2.16.1 Slopes

With exception to actively cultivated areas, permanent berms (diversion dikes or slope breakers) will be installed on all slopes, according to the following maximum spacing requirements unless otherwise specified in permit conditions:

Slope (%)	Approximate Spacing (ft.)
3-5	250
5-15	200
15-25	150
>25	<100

Permanent berms must be constructed according to the following specifications:

- Permanent berms must be installed with a 2 to 8 percent out slope.
- Permanent berms must be constructed of compacted earth.
- The outfall of berms will be directed toward appropriate energy-dissipating devices, and off the construction ROW if possible
- Permanent berms will be inspected and repaired as deemed necessary by Caliber to maintain function and prevent erosion.
- Erosion control blankets (curlex, jute, or equivalent) will be placed on slopes over 30 percent or that are a continuous slope to a sensitive resource area (e.g., wetland or waterway).

2.17 Soil Compaction Treatment

Cultivated fields and compacted or rutted areas will be tilled with a deep tillage device or chisel plowed to loosen compacted soils. If subsequent construction and cleanup activities result in further compaction, additional measures will be undertaken to alleviate the soil compaction.

2.17.1 Stone Removal

A diligent effort will be made to remove excess stones equal to or larger than 4 inches in diameter from the upper 8 inches of subsoil or as specified in permit conditions or landowner agreements. After the topsoil is replaced, stone removal efforts will cease when the size and density of stones on the ROW are similar to undisturbed areas adjacent to the ROW. Excess rock will be piled in upland areas where landowner permission has been obtained, or will be hauled off-site to an Caliber approved disposal site.

2.18 Off-Road Vehicle Control Measures

Off-road vehicle control measures will be installed as requested by Landowners or as directed by land management agencies at points of entry. Such measures may include installing fences and gates, or placement of other barriers such as boulders or timbers. Visual screening may also be installed to deter use of the pipeline corridor from unauthorized activities, if requested by the landowner. No Trespassing signs will be installed at aboveground facilities, according to the applicable state regulations to provide clear notice to the public and protect the integrity of the pipeline. All fences and gates removed or damaged will be repaired or replaced.

2.19 Repair of Damaged Conservation Practices

All soil conservation practices (such as terraces, grassed waterways, etc.) that are damaged by the pipeline construction will be restored to preconstruction conditions to the extent practicable.

2.20 Land Leveling Following Construction

Following the completion of the pipeline, the ROW will be restored to its pre-construction conditions as near as practicable. Should uneven settling or documented surface drainage problems occur following the completion of pipeline construction, Caliber will take appropriate steps to remedy the issue.

3.0 Stream and River Crossing General Requirements

Pre-construction planning is an essential part of stream crossings. Stream crossing requirements, including construction methods, timing, erosion control, and restoration are described in this section and in the stream crossing permits issued by state and federal agencies and by tribal authorities (as applicable). If the Contractor considers certain parts of these procedures to be technically impractical due to site-specific engineering constraints, they may submit a request to Caliber for approval of alternative measures. Prior to construction, the Contractor must identify alternative provisions that would provide an equal or greater level of protection to stream and river ecosystems. Caliber will review the Contractor's alternatives and consult with appropriate regulatory agencies and tribal resource specialists (as applicable). The Contractor must receive written approval from Caliber prior to implementing the alternatives. During wet and high runoff conditions, the EI will determine whether conditions warrant additional considerations for construction activities.

The procedures in this section apply to streams, rivers, and other waterbodies such as jurisdictional ditches, ponds, and lakes. These procedures require that judgment be applied in the field and will be implemented under the supervision of Caliber. The intent of the mitigation procedures is to minimize construction-related disturbance to streams and waterbodies by limiting the duration of construction in these areas and by minimizing erosion and sedimentation.

3.1 Time Window For Construction

All in-stream work activities (installation of dams, sheet piling, etc.) must be minimized to the extent practicable on an area and time duration basis. In-stream trenching will be conducted during periods permitted by the appropriate regulatory agencies and applicable permits. Unless otherwise specified in applicable permits and with exception to blasting and other rock breaking measures and directional drill, in-stream construction activities (specifically trenching, pipeline installation, backfill, and restoration of the streambed contours) for wet crossing methods will occur within the following timeframes:

- **Minor Waterbodies** - All waterbodies less than or equal to 10 feet wide at the water's edge at the time of crossing. 24 hours.
- **Intermediate Waterbodies** - All waterbodies greater than 10 feet wide but less than 100 feet wide at the water's edge at the time of crossing. 48 hours.
- **Major Waterbodies** - All waterbodies greater than 100 feet wide at the time of crossing. As specified by Caliber or in the applicable permits.

These timeframes apply regardless of the presence or absence of flow. These timeframes also apply to dry crossing methods as a guideline and can be extended based on site-specific conditions with approval from Caliber Environment staff, Construction Management, and the EI.

3.2 Pre-Construction Considerations

3.2.1 Hazardous Materials

Hazardous materials, chemicals, fuels, lubricating oils, will not be stored and/or concrete coating activities will not occur within 100 feet of streams and waterbodies and in accordance with Caliber's

Spill Prevention, Containment and Control Plan ("Spill Plan"). Refer to the Spill Plan for additional requirements pertaining to hazardous materials and concrete-coating activities.

3.2.2 Refueling/Equipment Care

Construction equipment will be refueled at least 100 feet from streams and waterbodies. Where the Contractor and EI determines that conditions require construction equipment to be refueled within 100 feet of streams, the Contractor must follow the procedures described in Caliber's Spill Plan and implement additional provisions based on site-specific conditions. No equipment will be washed within 100 feet of streams or waterbodies. Overnight parking of equipment is not allowed within 100 feet of a stream or waterbody unless special provisions have been implemented in accordance with Caliber's Spill Plan and prior approval from the EI is obtained. Maintenance (e.g., lubricating) of construction equipment will not be allowed within the 100 foot buffer zone without approval from the EI and with additional special provisions for containment.

3.2.3 Alignment of Crossing

Stream crossings will be designed as close to perpendicular to the axis of the stream channel as engineering and routing constraints allow, creating the shortest crossing length.

3.3 Clearing and Grading

The Contractor will leave a 20-foot buffer (from the ordinary high water mark OHWM / OHWL of undisturbed herbaceous vegetation on all stream banks during initial clearing, except where grading is needed for bridge installation, or where restricted by applicable regulations and/or permit conditions (such as impaired waterways).

Woody vegetation within the 20-foot buffer may be cut and removed during clearing, leaving the stumps and root structure intact. Non-woody vegetation and the soil profile will be left intact until the Contractor is ready to begin trenching the stream crossing. The Contractor must properly install and maintain sediment control measures at the 20-foot buffer line adjacent to streams immediately after clearing and prior to initial ground disturbance. This buffer should not be confused with the 50-foot setback required for extra workspace.

3.3.1 Impaired Waters

Where discharges of stormwater may occur to waters designated under **Section 303(d) of the Clean Water Act** as Impaired Waters, additional BMPs will be implemented as specified in the applicable project permits.

3.4 Additional Workspace

Additional workspaces, as defined in **Section 2.4.3**, include work areas outside the boundary of the typical construction ROW. These spaces are typically used to assemble pipe segments and for temporary spoil storage. Clearing of forested and brushy areas for AWS will be avoided as much as possible. Woody vegetation in wetlands and riparian areas will typically not be cleared for the purpose of AWS unless approved by appropriate regulatory agencies as stipulated in permits issued for the project. Additional workspaces will be constructed as follows:

- Additional workspaces will be located at least 50 feet away from the ordinary high water mark/level (OHWM/OHWL) if topographic or other physical conditions such as stream channel meanders allow (refer to **Figures 15, 16 & 17**).
- If safe work practices or site conditions do not allow for a 50-foot setback, additional workspaces should be located no closer than 20 feet from the OHWM/OHWL, subject to site-specific approval by Caliber.
- Additional workspaces must be limited to the minimum size needed to construct the stream crossing.

3.5 Bridges

Temporary equipment bridges will be used on most waterways (upon approval by the appropriate agency), including small waterways such as ditches and intermittent streams, where there is a potential for stormwater runoff or rain events to transport sediment downstream from equipment crossing the waterway. Bridges will be constructed as described below and will be removed as soon as possible during final restoration. Bridges will not typically be installed at directionally drilled waterbodies.

With exception to clearing-related equipment, fording of waterways is prohibited (i.e. civil survey, potholing, or other equipment are not permitted to ford waterways prior to bridge placement). Clearing equipment and equipment necessary for installation of equipment bridges will be allowed a single pass across waterbodies prior to bridge installation, unless restricted by applicable permits.

3.5.1 Types of Bridges

Equipment bridges will be constructed using one of the following techniques:

- Timber mats (**Figure 19**).
- Rock Flume (**Figure 20**).
- Railroad flat cars.

- Flexi-float or other pre-fabricated portable bridges.
- Other methods as approved by Caliber and appropriate agencies.

3.5.2 Bridge Design and Maintenance

Bridges must be designed as close to perpendicular to the axis of the stream channel, creating the shortest crossing length and must be built and maintained in accordance with applicable permits. Equipment bridges must be designed to withstand the maximum foreseeable flow of the stream. Bridges must not restrict flow or pool water while the bridge is in place, and must be constructed with clean materials. Bridges must be designed and maintained to prevent soil from entering the waterbody. Soil that accumulates on the bridge decking must be removed as needed, or as deemed necessary by the EI.

3.6 Stream and River Crossing Construction Methods

The following stream and river crossing methods are typically used, subject to further restrictions by Caliber and applicable permits and subject to modifications as approved by appropriate regulatory agencies and tribal resource specialists (as applicable) during construction. Caliber commonly requires use of the Directional Drill Method for stream crossings where flows are present.

3.6.1 Wet Trench Method

3.6.1.1 Installation

The wet trench method (**Figure 15**) can be used to cross streams and rivers not permitted to be flumed, dam and pumped, or directionally drilled. The following procedures will be used during wet trench crossings:

- Sediment control measures must be in place before grading from the 20-foot vegetative buffer left on each stream bank. Spoil containment structures must be installed back from the stream bank so that spoil does not migrate into the stream. Grading must be directed away from the waterbody to minimize the potential for sediment to enter the stream. Grading of stream banks must be restricted to the trench line and areas necessary for safe bridge installation.
- After grading, backhoes or draglines will be used to excavate the trench. Where possible, excavating equipment must operate from one or both banks, without entering the stream. If equipment must encroach into the stream, it will operate on clean construction mats. Streambed material will be segregated and placed within a spoil containment structure in approved construction work area limits. Storage of streambed spoil within the stream will only be allowed if expressly approved in the applicable permits.
- Earthen trench plugs (hard plugs) between the stream and the upland trench will be left undisturbed during excavation of the in-stream trench to prevent diversion of the stream flow into the open trench and to prevent water that may have accumulated

in the adjacent upland trench from entering the waterbody. Trench plugs will be removed immediately prior to pipe placement, and then replaced when the pipe is in place. Trench water accumulated upslope of trench plugs must be dewatered appropriately prior to trench plug removal.

- If trench dewatering is necessary, the pump intake will be suspended off the trench bottom and dewatering will take place into a sediment filter bag and/or a straw bale dewatering structure (refer to **Figures 21, 22, 23, & 24**) where directed by Caliber. The trench will be dewatered in such a manner that no heavily silt-laden water flows into streams or wetlands (refer to **Section 6.1**). Only non-woven fabric will be used for filter bags. Landowner approval is required in advance of placement of dewatering structures outside of the approved construction ROW.

- Backfilling will begin after the pipe is positioned in the trench at the desired depth. Backfill material will consist of the spoil material excavated from the trench and parent streambed unless otherwise specified in state or federal permits. The in-stream trench will be backfilled so that the stream bottom is as near as practicable to its pre-construction condition, with no impediments to normal water flow.

3.6.1.2 Temporary Stabilization

The Contractor must restore the stream banks as near as practicable to pre-construction conditions unless that slope is determined to be unstable (refer to **Section 3.8**). Once the banks have been reshaped, ECDs must be installed within 24 hours of backfilling the crossing. Temporary slope breakers will be installed on all sloped approaches to streams in accordance with the spacing requirements previously specified.

A temporary seed mix (e.g., annual rye or annual oats) and mulch and/or erosion control blankets will be installed within a 50-foot buffer on either side of the stream, with exception to actively cultivated land. Silt fence will be installed upslope of the temporary seeding area.

3.6.2 Dam and Pump Method

3.6.2.1 Installation

The dam and pump method is a dry crossing method that is suitable for low flow streams and is a preferred alternative to fluming for crossing meandering channels. The dam and pump method involves damming of the stream with sandbags, inflatable/portable dams, sheet piling, and/or steel plates upstream and downstream of the proposed trench before excavation (see **Figure 16**) and pumping water around the construction area. The following procedures will be used for dam and pump crossings:

- Pumping of the stream across the ROW will commence simultaneously with dam construction to prevent interruption of downstream flow. Stream flow must be

pumped across the construction area through a hose and will be discharged to an energy- dissipation device, such as plywood boards, to prevent scouring of the streambed.

- The pumps must be located on the upstream side of the crossing and must be placed in impermeable, sided structures which will act as containment units for the pumps and fuel containers (refer to Caliber's Spill Prevention, Containment, and Control Plan for sizing specifications of secondary containment structures). The pumps used for the Dam and Pump crossing method must not be placed directly in the stream or on the streambed. Pumps must have a capacity greater than the anticipated stream flow. The pumping operation must be staffed 24 hours a day and pumping must be monitored and adjusted as necessary to maintain an even flow of water across the work area and near- normal water levels upstream and downstream from the crossing. A backup pump of equal or greater capacity must be on-site at all times in the event that the primary pump fails.
- The pump intake must be suspended to prevent sediment from being sucked from the bottom of stream and must be equipped with a screen with less than one-inch diameter openings, or equivalent device, to prevent fish uptake.
- Spill kits must be stored adjacent to pumps and fuel.
- Dams maybe constructed of sandbags, inflatable dams, aqua-dams, sheet piling, and/or steel plates. The dams must prevent the stream from flowing into the construction area. The dams will be continuously monitored for a proper seal. Additional sandbags, plastic sheeting, steel plating, or similar materials will be used where necessary to minimize the amount of water seeping around the dams and into the construction work area.
- Where possible, excavating equipment must operate from one or both banks, without entering the stream. If equipment must encroach into the stream, it will operate on clean construction mats (free of soil and plant material prior to being transported onto the ROW). Streambed material will be segregated and placed within a spoil containment structure in approved construction work area limits. Storage of streambed spoil within the stream will only be allowed if expressly approved in the applicable permits.
- Earthen trench plugs (hard plugs) between the stream and the upland trench will be left undisturbed during excavation of the in-stream trench to prevent diversion of the stream flow into the open trench and to prevent water that may have accumulated in the adjacent upland trench from entering the waterbody. Trench plugs will be removed immediately prior to pipe placement, and then replaced when the pipe is in place. Trench water accumulated upslope of trench plugs must be dewatered appropriately prior to trench plug removal.
- Standing water that is isolated in the construction area by the dams will be pumped into a sediment filter bag and/or a straw bale dewatering structure located in such a manner that no heavily silt-laden water flows into streams or wetlands (refer to **Section 6.1**). Only non-woven fabric will be used for filter bags.

- Backfilling will begin after the pipe is positioned in the trench to the desired depth. Backfill material will consist of the spoil material and parent streambed excavated from the trench unless otherwise specified in state or federal permits. The in-stream trench will be backfilled so that the stream bottom is similar to its pre-construction condition, with no impediments to normal water flow.

3.6.2.2 Temporary Stabilization

Restoration of the stream banks and the installation of temporary erosion controls will be similar to that described for the wet trench method above but must occur immediately following installation of the pipeline. Once the stream banks have been stabilized, the dams and pump will be removed.

3.6.3 Flume Method

3.6.3.1 Installation

The flume method is a dry crossing method that is suitable for crossing sensitive, relatively narrow streams that have straight channels and are relatively free of large rocks and bedrock at the point of crossing. This method involves placement of flume pipe(s) in the stream bed to convey stream flow across the construction area without introducing sediment to the water. The procedures for using the flume method are described below.

- The flume(s) must be of sufficient diameter to transport the maximum flows anticipated to be generated from the watershed. The flume(s), typically 40 to 60 feet in length, must be installed before trenching and will be aligned so as not to impound water upstream of the flume(s) or cause downstream bank erosion. The flumes must not be removed until after the pipeline has been installed, trench has been backfilled, and the stream banks have been stabilized.
- The upstream and downstream ends of the flume(s) must be incorporated into dams made of sand bags and plastic sheeting (or equivalent). The upstream dam must be constructed first and will funnel stream flow into the flume(s). The downstream dam must prevent backwash of water into the trench and construction work area. The dams must be continuously monitored for a proper seal. Adjustments to the dams will be made where necessary to prevent large volumes of water from seeping around the dams and into the trench and construction work area.
- Where possible, excavating equipment must operate from one or both banks, without entering the stream. If equipment must encroach into the stream, it will operate on clean construction mats. Streambed material will be segregated and placed within a spoil containment structure in approved construction work area limits. Storage of streambed spoil within the stream will only be allowed if expressly approved in the applicable permits.
- Earthen trench plugs (hard plugs) between the stream and the upland trench will be

left undisturbed during excavation of the in-stream trench to prevent diversion of the stream flow into the open trench and to prevent water that may have accumulated in the adjacent upland trench from entering the waterbody. Trench plugs will be removed immediately prior to pipe placement, and then replaced when the pipe is in place. Trench water accumulated upslope of trench plugs must be dewatered appropriately prior to trench plug removal.

- If additional trench dewatering is necessary to complete the installation of the pipe, the discharge will be pumped into a sediment filter bag or a straw bale dewatering structure in such a manner that no heavily silt-laden water flows into streams or wetlands (refer to **Section 6.1**). Non-woven fabric must be used for filter bags.
- Backfilling will begin after the pipe is positioned in the trench to the desired depth. Backfill material will consist of the spoil material excavated from the trench and parent streambed unless otherwise specified in state or federal permits. The in-stream trench will be backfilled so that the stream bottom is similar to its pre-construction condition, with no impediments to normal water flow.

3.6.3.2 Temporary Stabilization

Restoration of the ROW and the installation of temporary erosion controls will be similar to that described for the wet trench method above but must occur immediately following installation of the pipeline . After the stream banks have been stabilized, the dams and flume will be removed from the stream bed allowing water to resume its flow in the channel.

3.6.4 Directional Drill and/or Guided Bore Method

3.6.4.1 Installation

Installing the pipe underneath a stream will involve placing a drill unit on one side of the stream (refer to **Figure 18**). A small-diameter pilot hole will be drilled under the stream along a prescribed profile. After the pilot hole has been completed, barrel reams will be used to enlarge the pilot hole to accommodate the desired pipeline diameter. Drilling mud will be necessary to remove cuttings and maintain the integrity of the hole. Water from a Caliber-approved source will be used to prepare the slurry of drilling mud, and will be appropriated according to applicable permits. The pipe section will be pulled through the hole by the drilling rig and welded to the adjoining sections of pipe on each side of the river.

3.6.4.2 Drilling Mud

During drilling operations, drilling mud and slurry will be stored back from the waterbody in an earthen berm sediment control structure, in tanks, or by other methods so that it does not flow into the waterbody, adjacent wetlands or off the workspace.

Caliber developed a contingency plan to address measures to be performed in the event of a release of drilling mud onto the ground surface or waterbody (refer to the Caliber **Drilling Mud Containment, Response, and Notification Plan** for additional details).

After the pipe is in place, excess drilling mud and slurry will be spread over an upland area approved by Caliber and the landowner, or hauled off site to an Caliber approved disposal location.

3.6.4.3 Temporary Stabilization

The directional drilling/guided bore method normally does not result in the disturbance of the stream banks or riparian vegetation (with exception to extremely limited hand clearing of woody required to facilitate guide wire placement), which reduces the potential for erosion and sedimentation at the stream crossing. Consequently, temporary erosion control measures that are installed at open-cut crossings typically are not necessary for drilled/bored crossings.

3.7 Drainage Ditches and Intermittent Streams

Intermittent streams and agricultural ditches will typically be crossed using the wet trench method (refer to **Section 3.6.1**) or as otherwise specified in the applicable permits. If rain is forecasted within 24 hours prior to the crossing, a dry crossing technique as previously detailed may be implemented at the discretion of Caliber. For small, dry intermittent streams and agricultural drainage ditches, standard upland construction procedures may be used, which involve stringing, welding, excavating the trench with backhoes, installing the pipe in the trench, and backfilling the trench with native material. The banks of each crossing will be reshaped, mulched (or erosion control blanket), and, if required, seeded in accordance with **Section 8.0** to stabilize the crossing until permanent erosion control is implemented. No refueling, fuel storage, or equipment maintenance is allowed within 100 feet of a drainage ditch or intermittent stream without approval from the EI with additional special provisions for containment. Where dry swales cross the ROW, silt fence or straw bales will be installed at the edge of the ROW to prevent the flow of sediment from the ROW.

3.8 Permanent Restoration

Stream banks disturbed during installation of the pipeline will be stabilized with erosion control materials such as jute or equivalent and seeded in accordance with **Section 7.0**. Permanent stabilization will be initiated within 24 hours after installation of the crossing using the wet trench method and prior to restoring flow using the dam and pump or flume method, unless site and permit conditions delay permanent installation. Where the banks have been disturbed, the Contractor must restore the slopes as near as practicable to pre-construction conditions unless that slope is determined to be unstable. Where the slope of the banks is determined to be unstable or has the potential to erode or fail, the banks will be reshaped to transition the disturbed areas into the natural stream bank with the intent to stabilize the bank and create a blended, natural appearance.

Berms or other sediment filter devices will be installed at the base of sloped approaches to streams greater than five percent and the outlet of the berm will be directed away from the stream into a well vegetated area. Temporary sediment control devices will remain in place until the area has stabilized and adequate revegetation has established.

3.8.1 Vegetative Bank Restoration

Typically, waterbody banks will be restored as near as practicable to preconstruction conditions after backfilling is complete and will be seeded with an appropriate seed mix as specified in **Section 8.0** and covered with an erosion control blanket. Erosion controls, (e.g. straw bales, bio-logs, silt fences, etc.) will be installed as necessary based on site-specific conditions.

3.8.2 Rock Riprap Restoration

Unstable soils and/or site-specific factors such as stream velocity and flow direction may require additional restoration efforts, such as installation of rock rip-rap, to stabilize disturbed stream banks. Rock rip-rap will be used only where site-specific conditions require and where applicable permits or approvals have been acquired. Geotextile fabric and rock riprap will be placed according to site and permit conditions. Disturbed soils upslope and on either side of the riprap will be prepared for seeding according to **Section 8.0** and other stream bank protection requirements.

3.8.3 Bridge Removal

Equipment bridges will be removed during final cleanup or, if access is needed, after final cleanup and permanent seeding. Restoration of the bridge area will be completed upon bridge removal.

3.8.4 Swales

Swales will be restored as near as practicable to original conditions. Swales will be seeded and either mulched with straw or erosion control blankets will be installed to the perceivable top of bank for the width of the ROW.

3.8.5 Drainage Ditches and Intermittent Streams

Drainage ditches and intermittent streams will be permanently restored and stabilized with erosion control blanket, permanent seeding, or other appropriate measures.

4.0 Wetland Crossing General Requirements

Typical pipeline construction in wetlands consists of clearing, stringing, trenching, dewatering, installation, backfilling, final grading, cleanup, and revegetation. However, due to the unstable nature of some wetland soils, construction activities may differ somewhat from those described for upland areas.

Construction activities must be minimized in wetlands to the extent practicable. The Contractor will also use special construction techniques to minimize the disturbance to plants and soils and to protect wetland hydrology.

Pre-construction planning is an essential part of wetland crossings. Wetland crossing requirements, including construction methods, timing, erosion control, and restoration, are described in this section and in the wetland crossing permits issued by state and federal agencies and applicable tribes. If the Contractor considers certain parts of these procedures to be technically impractical due to site-specific engineering constraints, they may submit a request to Caliber for approval of alternative measures. Prior to construction, the Contractor must identify alternative provisions that would provide an equal or greater level of protection to wetland ecosystems. Caliber will review the Contractor's alternatives and consult with appropriate regulatory agencies. The Contractor must receive approval from Caliber prior to implementing the alternatives.

The procedures in this section apply to all wetlands that will be affected by the project. These procedures require that judgment be applied in the field and will be implemented under the supervision of Caliber and the EI. The intent of these procedures is to minimize construction-related disturbance and sedimentation of wetlands and to restore wetlands as nearly as possible to pre-existing conditions.

4.1 Wetland Access

The Contractor must use the construction ROW and only approved roads to access wetland areas.

4.2 Spill Prevention

4.2.1 Storage of Fuels and Other Materials

No storage of hazardous materials, chemicals, fuels, and lubricating oils, and no concrete coating activities will be permitted in, or within 100 feet of, any wetland unless special provisions have been implemented in accordance with Caliber's Spill Plan and prior approval is obtained from the EI. Vehicles and equipment left on the ROW overnight must be parked at least 100 feet from a delineated wetland unless special provisions have been implemented in accordance with Caliber's Spill Plan, secondary containment structures are functional and properly placed, and prior approval is obtained from the EI.

4.2.2 Refueling, Fuel Handling, and Equipment Maintenance

Construction equipment will be refueled in upland areas at least 100 feet from a wetland. Where the Contractor and EI determines that conditions require construction equipment (e.g., swamp hoe, trench dewatering pumps, or portable generators) to be refueled within 100 feet of a wetland, the Contractor must follow the procedures described in Caliber's Spill Plan and implement additional provisions based on site-specific conditions. No equipment will be washed within 100 feet of streams or waterbodies. Overnight parking of equipment is not allowed within 100 feet of a wetland unless special provisions have been implemented in accordance with Caliber's Spill Plan and approval from the EI. Maintenance (e.g., lubricating) of construction equipment will not be allowed within the 100 foot buffer zone without approval from the EI with additional special provisions for containment.

4.3 Clearing

Clearing the construction ROW in wetlands will be similar to clearing in uplands. For construction to proceed, obstructions (e.g., trees, brush, and logs) need to be removed. Typically, low ground pressure equipment will be used, limiting disturbance to the wetland. Vegetation and trees within wetlands will be cut off at ground level, leaving existing root systems intact; clearing debris will generally be removed from the wetland for disposal. Hydro-axe debris, or similar (less than 1.5 inch diameter and/or 12 inches in length) can be left in the wetland if spread evenly in the ROW to a depth not to exceed 1 inch in thickness and in a manner, as determined by the EI, which will allow for normal revegetation.

4.4 Additional Workspace in Wetlands

In general, Caliber attempts to locate AWS outside of wetlands wherever practicable; however, AWS may be sited in select wetlands where the wetland is adjacent to a waterbody, road, railroads, foreign utility crossings, and/or pipeline cross-over with prior approval from the applicable regulatory agencies. Clearing of forested wetlands for AWS will be avoided as much as possible.

- Staging areas, additional spoil storage areas, and other additional work areas will be located in upland areas at least 50 feet away from wetland boundaries (refer to Figure 24), where safe work practices or site conditions permit. If site conditions do not permit a 50-foot setback, then these areas will be located as far away from the wetland as is practicable. Vegetation will not be cleared between these areas and the wetland in any event. No construction activities including vegetation clearing or earthwork will occur between the AWS and sensitive resource areas (wetlands or waterways).
- The size of the additional workspace areas will be limited to the minimum needed to construct the wetland crossing.

4.5 Grading In a Wetland

Grading in a wetland, if required, must be conducted in a manner consistent with applicable federal, state, and local permits. Grading activities must be confined to the area of the trench and will be minimized to the extent practicable. Grading outside the trench will only be allowed where required to ensure safety and restore the ROW after backfilling the trench with prior approval from Caliber.

ECDs (e.g., silt fence) must be installed across the entire construction ROW upslope of the wetland boundary, where necessary, to prevent sediment flow into the wetland. Where wetlands are adjacent to the construction ROW and the ROW slopes toward the wetlands, ECDs must be installed along the edge of the construction ROW as necessary to prevent sediment flow into the wetlands. ECDs must be installed along the edge of the construction ROW as necessary to contain spoil and sediment within the construction ROW through wetlands.

ECDs must be maintained in proper working order to prevent the flow of sediment into wetlands from spoil piles or sloped approaches that are adjacent to the wetlands. When the depth of sediment reaches one-third of the height of a sediment barrier, the barrier will be replaced and/or the sediment removed. Non-functional sediment-control measures will be repaired, replaced, or supplemented with functional features as soon as field conditions allow, but no later than 24 hours after discovery.

4.6 Right-Of-Way Stabilization

Tree stumps, brush riprap, imported soil, and rock fill cannot be brought in to stabilize the right-of-way in wetlands. Where low ground pressure equipment is not used, construction activities will be accomplished from timber construction mats or equivalent means with prior approval from Caliber (refer to **Figure 25**). The contractor is responsible for having a sufficient number of construction mats to perform the work. Unless otherwise authorized by Caliber in advance, timber mats must be free of soil and plant material prior to being transported onto the ROW and/or moved from one area of the ROW to another area to prevent the spread of noxious and invasive plant species. Timber riprap (also known as corduroy road) cannot be used without prior written approval from Caliber and the appropriate regulatory agencies. Pre-existing corduroy roads in wetlands may be used but may not be improved, maintained, restored, or replaced without site-specific authorization from applicable agencies.

Subsoil from the pipeline trench within the immediate wetland may be placed on top of equipment mats for additional stabilization. Timber mats may be placed over the ditch line or on the working side to facilitate trench excavation. All timber mats, construction debris, and larger woody vegetative debris (greater than 1.5 inch diameter and/or 12 inches in length) will be removed during cleanup of wetlands.

4.7 Trenching

Excavation of the pipeline trench in wetlands typically will be accomplished using backhoe excavators. The duration of open trench must be minimized to the extent possible.

4.7.1 Topsoil Segregation

When constructing in wetland areas without standing water, up to one foot of topsoil (organic layer) will be stripped from the trench line and stockpiled separate from trench spoil to preserve the native seed stock. In standing water wetlands, organic soil segregation is not typically practical; however, the Contractor will attempt to segregate as much of the organic layer as possible based on site/saturation conditions. If normally unsaturated wetlands are saturated at the time of construction, topsoil segregation will be attempted according to **Figure 25** and based on recommendations from the EI and appropriate regulatory agencies.

4.7.2 Trench Breakers

Where the EI determines that the pipeline trench has the potential to drain or partially drain a wetland, trench breakers will be installed as necessary to maintain the original wetland hydrology.

4.8 Pipeline Installation

The following procedures are intended to minimize siltation and disturbance to wetlands during installation.

4.8.1 Push/Pull Method

Large wetlands with standing water can generally not be crossed with typical crossing methods. In these areas, the pipeline will be assembled in an upland area and positioned in the trench using the “push- pull" and/or "float" techniques.

Usually this fabrication requires use of EWS adjacent to the ROW. The trench will be dug by a backhoe (or equivalent) supported on timber mats or equivalent low ground pressure equipment. The prefabricated section of pipeline will then be pushed-pulled into position or floated across the wetland. When the pipeline is in position, floats, if used, will be removed and the pipeline will sink into position. The trench will then be backfilled and the wetland will be restored by a backhoe or similar equipment working from construction mats or by low ground pressure equipment.

4.8.2 Temporary Erosion and Sediment Controls

ECDs at approaches to wetlands will be installed as previously described and in accordance with to the specifications presented on **Figures 6** through **11**.

4.8.3 Concrete Coating

Concrete will generally be mixed off-site, and concrete coated pipe will be transported to the ROW on trucks. If required, pre-fabricated concrete weights and/or saddlebag weights will also be used to provide negative buoyancy. Concrete weights will be manufactured off-site and transported to the ROW. Weights will be strung along the construction ROW, where necessary, until they are placed over the pipe within the excavated ditch. Limited mixing and coating activities may occur on the construction ROW for coating pipe joints and concrete weight repairs

according to the concrete usage specifications in Caliber's Spill Plan. Washing equipment used for mixing, pouring, casting, or coating will not be conducted within 100 feet of any wetland and will be conducted and contained in a leak-proof containment facility or impermeable liner. Erosion and sediment controls will be installed down slope of equipment wash areas where needed to capture sediments and minimize erosion from runoff. Concrete coating on the pipe must be cured for a minimum of 3 days prior to installation in a wetland due to potential toxic effects on wetland and aquatic biota.

4.9 Backfilling

The Contractor shall restore wetlands as near as practicable to pre-construction conditions and must make a reasonable attempt to return the subsoil to its pre-construction density. During backfilling of wetland areas, subsoil material removed from the trench during construction will be replaced so that the material is not mounded above the adjacent ground surface (undisturbed trench wall). Subsoil that exceeds the elevation of the ground adjacent to the trench will be removed from the wetland and disposed of in an upland area or an Caliber-approved disposal site. After the trench has been backfilled with subsoil, previously segregated topsoil will be spread over the trench area and mounded no more than 12 inches above the adjacent, undisturbed soil. In unsaturated wetlands, Caliber may specify a lower maximum mound height based on site conditions.

4.10 Rough Grading, Cleanup, and Temporary Restoration

Cleanup and rough grading activities may take place simultaneously. Cleanup typically will involve removing construction debris and replacing fences removed during construction. Rough grading will include restoring original conditions within the disturbed areas (i.e., ditch line, spoil storage areas, and equipment travel lane) and installing or repairing temporary erosion control measures. Temporary slope breakers will be installed near the boundary between the wetland and adjacent sloped approaches, to prevent sediment flow into the wetland.

4.10.1 Timing

Cleanup and rough grading (including installation of temporary erosion control measures) will begin as soon as practical after the trench is backfilled, weather permitting.

4.10.2 Temporary Stabilization

Where necessary, disturbed wetland areas will be revegetated with oats (40 lbs/acre) and/or a temporary seed mix, unless standing water is prevalent or unless permanent planting or seeding with native wetland vegetation is required by applicable permits. No fertilizer, lime, or mulch will be applied in wetlands. It is generally considered a best management practice to allow the natural seed bank within the wetland to provide revegetation.

5.0 Highway, Road and Rail Crossings

5.1 Additional Workspace

Additional workspaces for bored road and railroad crossings and open-cut road crossings will be determined on a site-specific basis. These workspaces will be adjacent to the road or railroad and limited to the size needed to contain spoil from the crossing.

5.2 Maintenance

Roadway crossings will be maintained in a condition that will prevent tracking of mud onto the roadway (refer to **Section 2.2**).

Rock tracking pads, constructed of stone no smaller than 4-inch or as required by the applicable permits, will be installed adjacent to paved public roads to prevent or minimize the tracking of soil onto the roadway. If the roadside ditch is part of a jurisdictional waterway, a permit must be obtained prior to installing the tracking pad or culvert. If permitted in wetlands, tracking pads will be limited in size to reduce impacts. Tracking pads installed in wetlands must be constructed with clean rock placed on geotextile fabric, as approved by an EI and with approval from applicable regulatory agencies. All rock and fabric must be removed from the wetland during cleanup.

5.3 Temporary Erosion and Sediment Controls

Temporary ECDs (e.g., silt fence and/or double-staked straw bales) will be installed on sloped approaches to road crossings where vegetation has been disturbed (refer to **Figure 26**).

6.0 Construction Dewatering

6.1 Trench Dewatering

At each location where dewatering is to be conducted, the contractor must consider the following conditions in planning the dewatering event. Prior to initiating dewatering activities, the EI must check the water discharge situation to ensure that the best management practices are applied in such a way as to minimize the potential for water containing sediment from reaching a waterbody. Furthermore, landowner approval is required in advance of placement of dewatering structures outside of the approved construction ROW.

1. **Water Discharge Setting** – The contractor shall assess each water discharge situation to include:
   - **Soil Type** - The soil type the discharged water would flow over. The management of discharged water traveling over sandy soil is more likely to soak into the ground as compared to clay soils.
   - **Ground Surface** - The topography in the area that would influence the surface flow of the discharged water.
   - **Adjustable Discharge Rate** - The flow rate of the discharged water (which may need to vary) can be managed based on the site conditions to minimize instances of water from reaching a sensitive resource area such as a wetland or waterbody. (Example - Water discharged at 500 gallons per minute may soak into the ground while if discharged at a higher flow rate would cause water to flow via overland runoff into a sensitive resource area)
   - **Discharge Outfall** - The amount of hose and number/size of pumps needed to attempt to discharge water at a location which drains away from waterbodies or wetlands.

2. **Pump Intake** - Use floating suction hose or other similar measures to prevent sediment from being sucked from bottom of trench.

3. **Overwhelming Existing Drainage** - If the discharge (assumed to be clean) does enter a stream, the flow added to the stream cannot exceed 50 percent of the peak storm event flow (to prevent adding high water volumes to a small stream channel that causes erosion due to imposing high flow conditions on the stream.

4. **Filtering Mechanism** – All dewatering discharges will be directed through a filtering device as indicated below.
   - **Well-Vegetated Upland Area** – Water can be directed to a well-vegetated upland area through a geotextile filter bag. Geotextile bags need to be sized appropriately for the discharge flow and suspended sediment particle size.

- **Straw Bale Dewatering Structure** – Where the dewatering discharge point cannot be located in an upland area due to site conditions and/or distance, the discharge should be directed into a straw bale dewatering structure. The size of the straw bale dewatering structure is dependent on the maximum water discharge rate (refer to **Figures 21, 22, 23 & 24**). A straw bale dewatering structure should be used in conjunction with a geotextile filter bag to provide additional filtration near sensitive resource areas.
- Alternative dewatering methods (e.g., use of water cannons) may be approved by Caliber on a site-specific basis.

6.1.1 Regulatory Notification and Reporting

Caliber will notify appropriate tribal, state and federal agencies as required by all permits/authorizations.

Reports regarding the volume and quality of the water withdrawn and discharged will be submitted by Caliber, as required by the applicable state and/or tribal permits. The Contractor will provide Caliber with the appropriate data to determine volumes of water appropriated.

6.1.2 Flow Measurement

The volume of water discharged from the trench must be recorded as required by the applicable permits. The volume may be determined using a flow meter, or equivalent method as dictated by permit stipulations.

6.1.3 Water Sampling

Water discharged from trench dewatering locations may need to be sampled as required by tribal permits and/or state-issued discharge permits. If required, the Contractor will assist Caliber in obtaining these samples and will be responsible for complying with the permit limitations.

6.2 Hydrostatic Test Discharges

Hydrostatic testing involves filling the new pipeline segments with water acquired in accordance with applicable permits (refer to **Section 6.2**), raising the internal pressure level, and holding that pressure for a specific period of time per federal Office of Pipeline Safety regulations. Hydrostatic testing will be done to assess the integrity of the pipe and welds. Pre-built sections may be hydrostatically tested prior to installation at significant streams and wetland crossings. Water used for hydrostatic testing will be discharged back to the waterbody it was appropriated from or to an Caliber-approved discharge location. After the hydrostatic test is completed, the line will be depressurized and the water expelled. During withdrawal and discharge, the water will be sampled as required by permits. Water volumes must be measured and recorded.

If site conditions or engineering constraints make adhering to these hydrostatic testing procedures and documentation impractical, Caliber will propose alternative provisions to the regulatory agency issuing the NPDES permit and/or applicable tribal permits. Any such alternative will provide an equal

or greater level of protection to the environment than the condition from which Caliber or its Contractor seeks relief.

6.2.1 Refueling

The operation and refueling of hydrostatic test equipment will be in accordance with the conditions outlined in Caliber's Spill Plan.

6.2.2 Permit Requirements

Hydrostatic testing will be conducted in accordance with applicable appropriation and discharge permits obtained by Caliber. Hydrostatic test waters will not be transferred from one waterbody to another, across watersheds, or major drainage divides. Chlorinated source water will be sampled at appropriation. If chlorine levels are at or above aquatic toxicity standards, the water will not be discharged to a surface water without proper treatment.

6.2.3 Siting of Test Manifolds

Hydrostatic test manifolds will be installed where necessary to ensure proper test pressures and incorporates changes due to topography. Where feasible, Caliber will incorporate minor adjustments to the test manifold locations to avoid placement in wetlands and riparian areas. However, completely avoiding the placement of a test manifold in a wetland may not always be possible. The Contractor must install appropriate erosion control measures where the EI determines that topographic conditions, primarily elevation changes, require test sections to be located in a wetland or riparian area.

6.2.4 Water Sampling

Water discharged from hydrostatic tests will be sampled as required by state-issued appropriation or discharge permits. Hydrostatic water discharges will comply with permit limitations as required by the applicable permit (conditions. If required, the Contractor will assist Caliber in obtaining these samples and will be responsible for complying with the permit limitations.

6.2.5 Best Management Practices

Prior to hydrostatic testing the pipeline, Caliber will prepare the pipe by removing accumulated construction debris, mill scale, dirt, and dust using a cleaning pig. The debris will be collected in a temporary receiver and shall be properly disposed of by the Contractor. Upon completion of the cleaning operation, the pipeline will be sealed with the test headers.

Test headers and pigs will be arranged to allow for rinse water to be installed ahead of the fill pigs. Rinse water must be treated and disposed of in accordance with applicable permit conditions.

Following testing, the test section will be depressurized and the water will be discharged to a well-vegetated, upland area with an appropriate dewatering structure such as a geotextile filter bag and/or a hay bale structure that may or may not be lined with geotextile fabric. Direct discharges

to surface waters, if allowed by permit, will be directed into an energy dissipation device such as a splash pup.

At no time will the discharge rate exceed the applicable discharge rates specified in state-issued or other discharge permits. In the event no maximum discharge rate is identified, discharges shall be monitored and adjusted as necessary to avoid scouring, erosion, or sediment transport from the discharge location.

To minimize the potential for introduction and/or spread of invasive species due to hydrostatic testing activities, Caliber will discharge water to the same source location from which it was appropriated. If water is used to test multiple test sections, it will be relayed back to the source water through the pipeline for final discharge. Test water will not be discharged to a waterbody other than the appropriation source, unless coordinated and permitted through the applicable agencies.

6.2.6 Flow Measurement

The total volume of water discharged will be determined with a flow meter (or equivalent), or as required by the applicable state permit. The total volume of water discharged will not exceed the volume specified in the applicable permit.

7.0 Water Appropriation

The following section applies to water appropriation from sources other than Caliber Midstream Freshwater Partners, LLC facilities.

7.1 General

Water may be drawn from local sources, such as lakes, streams, and private or municipal wells for construction activities such as dust control, horizontal directional drilling/guided boring, trench dewatering, and hydrostatic testing. The project will follow applicable permit conditions for the appropriation of water.

Where water is appropriated from lakes or streams, the intake hose will be suspended off of the stream or lake bottom and equipped with a screen with less than one-inch diameter openings, or equivalent device, to prevent fish uptake. During withdrawal, adequate waterbody flow rates and volumes will be maintained to protect aquatic life and allow for downstream uses. The volume and rate of withdrawal will be monitoring to comply with applicable permit conditions.

7.2 Water Sources

Water will only be withdrawn from sources approved by Caliber and in accordance with applicable permits. No additives to the water are permitted unless written approval is received from Caliber and applicable permits authorize such additives.

If appropriation is scheduled to occur during possible periods of low flow, including frozen conditions, a backup source will be identified.

7.3 Flow Measurement

At no time will the withdrawal rate for the water source exceed the rate specified in the applicable permits.

The Contractor must measure the withdrawal rate and total volume of water appropriated with a flow meter (or equivalent) and provide the data to Caliber, as required by the applicable permits.

7.4 Water Sampling

Where required by permit conditions, Caliber will sample the water during appropriation. The Contractor will assist Caliber in obtaining these samples.

7.5 Regulatory Notification And Reporting

Caliber will notify appropriate agencies of the time of appropriations if required by the state appropriations permits. Reports regarding the volume and quality of the water withdrawn will be submitted by Caliber if required by the applicable permits.

8.0 Revegetation and Monitoring

This section was developed in conjunction with **Natural Resources Conservation Service (NRCS)** guidelines. If it is found that any conditions or requirements of this section or any other supporting documents are not in compliance with any governmental law or ordinance, the applicable law or ordinance will take precedent, but will not nullify other portions of this section or supporting documentation. In addition, project-specific permit conditions and Landowner requests (with exception to wetlands) for specific seed mixes (as indicated in the project Line List) take precedence over this section.

8.1 Project Seed Specifications

Specific seed mixes will be determined based on consultations with the NRCS. Seed used will be purchased on a Pure Live Seed (PLS) basis for seeding (both temporary and permanent) revegetation areas. Seed tags will identify:

- Purity;
- Germination;
- Date tested;
- Total weight and PLS weight;
- Weed seed content; and
- Seed supplier's name and business information.

Seed will be used within 12 months of testing as required by applicable state rules and regulations. The seed tags on the seed sacks will also certify that the seed is "Noxious Weed Free". Seed rates used on the project will be based on PLS rate, not actual weight basis. Therefore, to determine the correct application rate if not indicated on the seed tag, a correction calculation must be performed based the purity and germination. For example, a seed mix that has a specified 10 pounds PLS per acre, 95 percent germination rate, and is 80 percent pure needs to be applied at the following rate:

(95% germination × 80% purity)/100 = 76% PLS
10 pounds PLS per acre/.76% PLS = 13.2 pounds per acre actual seeding rate

The species components of individual mixes are subject to availability at the time of purchase. Grass species may be substituted with alternative native or non-invasive species that are included in the NRCS guidelines and subject to approval by Caliber.

Seed tags must be collected by the contractor and provided to Caliber during seeding activities. The tags will be reviewed by Caliber prior to installation to ensure that the seed mix complies with Caliber's specifications and that it is being applied to the correct location. If bulk delivery of seed is made, the above information will still be made available to Caliber. Off-loading/on-loading of seed will not be performed in a designated wetland area.

Legume seed (if used) will be treated with an inoculant specific to the species and in accordance with the manufacturer's recommended rate of inoculant appropriate for the seeding method (broadcast, drill, or hydroseeding). When hydroseeding, four times the manufacturer's recommended rate of inoculant will be used.

The Contractor's proposed seed sources must be submitted to Caliber for review and approval prior to construction. The Contractor must also arrange for appropriate storage of the seed.

8.2 Temporary Revegetation

The primary focus of Caliber's temporary revegetation measures is to quickly establish ground cover vegetation, minimize potential soil erosion, and minimize noxious weed establishment. Caliber's temporary seed mix will be developed based on recommendations from the NRCS. Unless specifically requested by landowners or land managing agencies, Caliber does not intend to establish temporary vegetation in actively cultivated land, standing water wetlands, and/or other standing water areas.

8.2.1 Timing for Temporary Vegetation

Temporary revegetation will be established in construction work areas where 14 days or more will elapse between:

- The completion of final grading at a site and the establishment of permanent vegetation; and/or,
- Where there is a high risk of erosion due to site-specific soil conditions and topography.

Caliber may require the Contractor(s) to conduct temporary seeding sooner than 14 days at site-specific locations near sensitive resource areas and/or areas prone to wind/water erosion.

Temporary vegetation should be established at any time between April 1 and September 1. Attempts at temporary revegetation after this date should be assessed on a site specific basis and with approval from Caliber.

8.2.2 Temporary Use of Mulch

Straw mulch may be used to help stabilize areas during the establishment of temporary vegetation. The contractor(s) will apply mulch during the establishment of temporary vegetation in areas:

- Requested by the Landowner or land managing agency;
- Specified by the applicable permits or licenses; and/or
- As requested by Caliber.

Mulch will be free of noxious weeds as listed in applicable state laws. Certified weed-free mulch may also be required at site-specific locations. The Contractor will be responsible for identifying

and acquiring sources of weed-free and certified weed-free mulch. Sources must be approved by Caliber prior to purchase and copies of the applicable documentation must be provided to Caliber. Mulch used in conjunction with temporary revegetation efforts will be applied at a rate of 2 tons per acre unless otherwise stipulated by permit conditions. Mulch will be uniformly distributed by a mechanical mulch blower, or by hand in areas not accessible to the mulch blower. Strands of mulch will be a minimum of 8 inches in length to allow proper anchoring. Mulch will be anchored/crimped to a depth of 2-3 inches using a mulch-anchoring tool or disc set in the straight position to minimize loss by wind and water, as site conditions allow. Additional erosion control measures (e.g., silt fence, erosion control blankets, hydromulch) may also be applied as previously outlined.

8.3 Permanent Revegetation

Permanent vegetation will be established in areas disturbed within the construction work area (permanent easement, TWS, and AWS) except in actively cultivated areas and standing water wetlands. The seed mixes for permanent seeding will be determined in consultation with the NRCS. Seed mixes will be selected to augment revegetation via natural recruitment from native seed stock in the topsoil and are not intended to change the natural species composition. Rates will be assumed for a drill application and must be adjusted as required for different seeding methods.

8.3.1 Conservation Reserve Program (CRP) Properties

Caliber's Land Agents will contact landowners where the ROW crosses land enrolled in CRP. Caliber will work with the respective landowners to identify the parcel-specific CRP seed mixes. CRP lands will be seeded at the direction of the landowner per the site-specific landowner CRP requirements for that parcel and no non-CRP approved seed mix will be planted on CRP lands. CRP parcels will also be seeded with Caliber's temporary cover seed mix. Seed for CRP seeding must meet the same criteria as other seed described in **Section 8.1.**

8.3.2 Mulch

Straw mulch will be applied to disturbed areas (except for actively cultivated land and wetlands) if requested by the Landowner or land managing agency, if specified by the applicable permits or licenses, or as requested by Caliber. Mulch will specifically be required on:

- Slopes greater than 5 percent; and
- Dry, sandy areas that can blow or wash away (field decision).

Mulch will be free of noxious weeds as listed in applicable state laws. Certified weed-free mulch may also be required at site-specific locations. The Contractor will be responsible for identifying and acquiring sources of weed-free and certified weed-free mulch. Sources must be approved by Caliber prior to purchase and copies of the applicable documentation must be provided to Caliber.

Mulch will be applied at a rate of 2 tons per acre unless otherwise stipulated by permit conditions. Mulch will be uniformly distributed by a mechanical mulch blower, or by hand in areas not accessible to the mulch blower. Strands of mulch will be a minimum of 8 inches in length to allow proper anchoring. Mulch will be anchored/crimped to a depth of 2 to 3 inches using a mulch-anchoring tool or disc set in the straight position to minimize loss by wind and water. In areas not accessible to a mulch-anchoring tool, the mulch may be anchored by liquid tackifier, with advance written approval from Caliber. The manufacturer's recommended method and rate of application will be followed. Mulch will not be applied in wetlands or actively cultivated farmland.

Hydro-mulch and liquid tackifier can be used in place of straw or weed-free hay mulch with prior approval from Caliber. All hydromulch and liquid tackifier products used must be on the applicable state Department of Transportation product list. Application rates will be at the manufacturer's recommended rate, equal to or greater than 2 tons per acre of straw mulch.

8.3.3 Erosion & Sediment Control

Erosion control blankets, such as sewn straw mats, jute mats, coconut erosion control blankets, or biodegradable synthetic erosion control blankets, as approved by Caliber, will be used on slopes over 30 percent, on stream banks and ditch banks and as directed by Caliber. Erosion control blankets will be used according to the manufacturer's recommendations as to weight and material for the specific application. Erosion control blankets will be anchored according to the manufacturer's recommendations.

8.3.4 Dormant Seeding

Dormant seeding is conducted after soil temperatures have cooled to 55 degrees Fahrenheit or cooler to prevent seed germination. Dormant seeding is only practicable if the soil is not frozen and snow is not present. Procedures for applying soil amendments, seedbed preparation, seeding, and mulching are the same as outlined for permanent revegetation.

Where dormant seeding is conducted, one or more of the following temporary erosion and sediment controls will be put in place over the freshly seeded area unless the local soil conservation authority, landowner, or land managing agency specifies otherwise. The temporary measures will be in place within 48 hours of seeding, and are as follows:

- Straw mulch, at not more than 2 tons/acre, anchored;
- Hydromulch, at 2 tons/acre, anchored; and/or
- Erosion control blanket.

Additional erosion control measures will be applied as requested by the EI.

8.3.5 Monitoring

Caliber will monitor and address all areas where stabilization techniques have been implemented in accordance with conditions identified in the applicable project permits and/or licenses.

9.0 Winter Construction

Frozen conditions can preclude effective topsoil segregation. When soil is frozen to a depth greater than the depth of topsoil, the soil will come off in thick slabs that contain both topsoil and subsoil, and mixing can result. If top-soiling must proceed under these conditions, it should be done at the excavation only. A ripper should be used to break up the frozen topsoil. Care should be taken to only rip to the actual depth of topsoil or to a maximum depth of 12 inches, whichever is less. Topsoil in the spoil storage area should be graded smooth to minimize mixing during backfilling. Sufficient time is needed to allow the newly graded topsoil to freeze in place prior to trenching.

Summer construction of large diameter pipelines in saturated/standing water wetlands with unconsolidated soils can be difficult and potentially result in greater wetland disturbance including wider trench widths and extensive rutting/surface disturbance. Constructing across these types of wetlands in the winter can result in fewer impacts. Heavy construction equipment use and travel along the ROW, which may not be possible in summer conditions due to saturated, unstable soil conditions, can be accomplished in the winter by establishing temporary winter frost/ice roads. These frost/ice roads protect underlying vegetation and upper layers of wetland surfaces from disturbance potentially created during summer construction.

The area of open excavation must be minimized during winter construction to reduce amount of frozen backfill, and facilitate restoration to pre-construction contours. If winter conditions preclude final grading and cleanup, the Contractor must stabilize the area and temporary erosion control measures must remain in place until permanent erosion control measures are installed. Depending on site and weather conditions, Caliber may require the Contractor to install dormant seeding, mulching, and/or installation of erosion control blanket on stream banks or other sensitive locations. The Contractor must monitor areas until final restoration is complete.

Other than those issues discussed above, most environmental requirements can be successfully implemented by the Contractor during winter construction.

10.0 Waste Management

Proper handling and management of solid and hazardous wastes and materials are an important aspect of every job. The Contractor must properly handle, store, and dispose of all solid and hazardous materials and wastes that are used or generated by the Contractor as a result of the project. The Contractor must determine if the materials and wastes associated with the project classify as hazardous materials and/or wastes in accordance with applicable federal and/or state criteria. Upon request by Caliber, the Contractor must provide documentation to Caliber to substantiate findings of the regulatory status of materials and/or wastes used and/or generated as a result of the project.

All waste materials are to be collected daily by the Contractor. Wastes must be collected in suitable or approved containers (i.e., labeled and meeting any relevant regulatory requirements) provided by the Contractor. On a routine basis, the Contractor must remove the containers of waste from the site and properly dispose of them. Throughout the duration of the project, the Contractor must cleanup areas to the satisfaction of Caliber. The Contractor is responsible for proper off-site disposal of all wastes generated during the project. No wastes are to be left on Caliber property, along the ROW, or buried in an excavation or otherwise disposed of on Caliber property or ROW.

Any used oil or other waste liquids generated by the Contractor as a result of maintaining its equipment during the course of the project shall be the responsibility of the Contractor to handle in accordance with all applicable regulations and Caliber policies. Used oil and all other waste liquids must be stored in approved storage containers in good condition. The containers must be properly labeled. The Contractor is responsible for disposing of waste liquids in accordance with all applicable regulations.

10.1 Hazardous Wastes

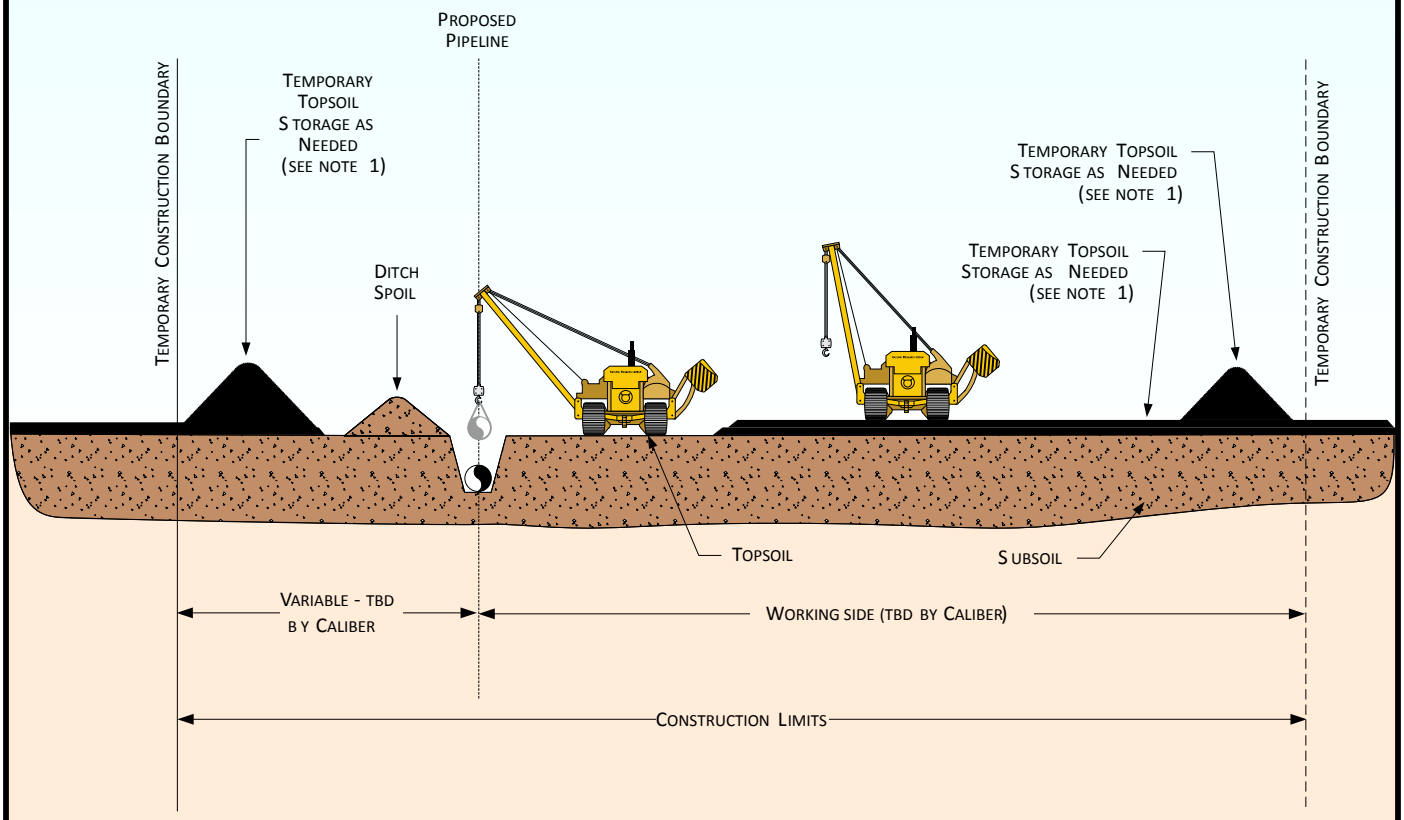
It is the responsibility of the Contractor to ensure that all workers are properly trained in the proper storage, handling and disposal of hazardous wastes generated during the project. The Contractor must ensure that wastes classified as hazardous by federal and state regulations are properly labeled and, if liquid, stored on-site with secondary containment and in accordance with all regulatory requirements. Wastes may not be placed, spilled, or poured on or into the ground. If this should occur, the Contractor is responsible for evaluation and cleanup of contaminated soils and associated costs. The Contractor is responsible for immediately reporting the spill to Caliber. Refer to the Spill Plan for additional details.

If a Contractor generates a hazardous waste from materials they have brought on-site (e.g., paint clean- up solvents, waste paints, etc.), then the Contractor is responsible for proper waste collection, storage and disposal in accordance with all applicable regulations. If a Contractor generates a waste classified as hazardous as a direct result of the constituents coming from an Caliber facility or equipment (e.g., sandblast debris with lead paint, pipeline coatings, etc.), then Caliber will coordinate proper waste collection, storage and disposal with the Contractor. The Contractor remains responsible for the proper handling, storage and disposal of the hazardous waste. Any release of the

hazardous waste as a result of the improper handling, storage or disposal by the Contractor in this instance is the responsibility of the Contractor to rectify to the satisfaction of Caliber and all applicable regulatory agencies.

10.2 Abrasive Blast Debris

The Contractor must, contain and collect spent abrasive blast materials and place it into appropriate containers. The Contractor is responsible for covering the containers with appropriate means of rainwater and stormwater control to prevent said waters from entering or exiting the container. The Contractor is responsible for disposal of the spent abrasive in accordance with applicable federal, state and local regulatory requirements. The Contractor is responsible for determining if the spent abrasive is classified as a “hazardous” or “special” waste as defined by applicable federal and state regulations. If the spent abrasive is determined to be hazardous waste as a direct result of constituents of an Caliber facility or equipment, Caliber will coordinate proper disposal with the Contractor as previously discussed.



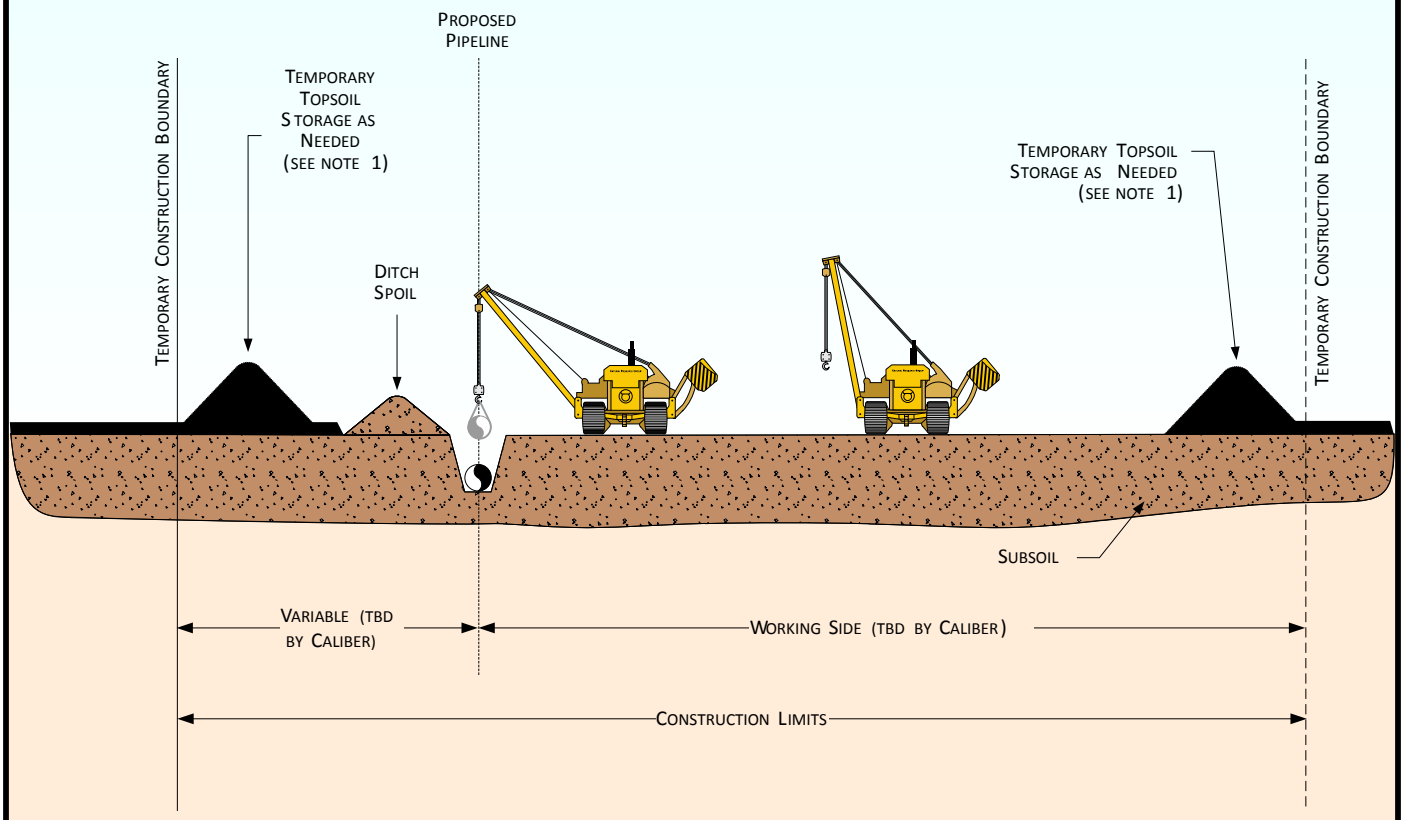
NOTES :

1. STOCKPILE TOPSOIL SEPARATELY FROM DITCH SPOIL AS SHOWN OR IN OTHER CONFIGURATIONS APPROVED BY THE COMPANY

CALIBER MIDSTREAM

Figure 1
Topsoil Segregation- Modified Ditch Plus Spoil Side

ECS-1
SCALE: NTS
DATE: 5-18-2016
REVISION:



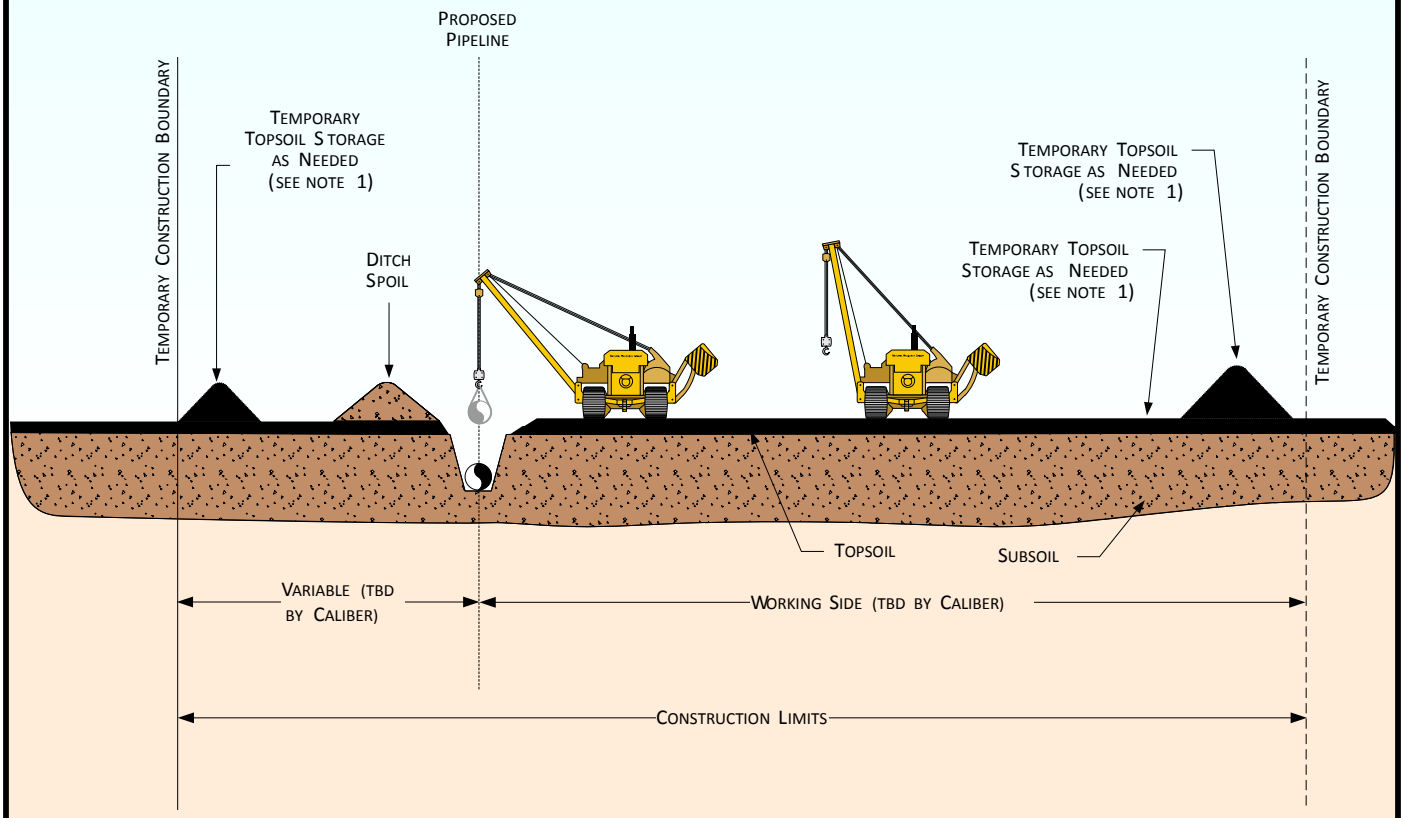
NOTES :

1. STOCKPILE TOPSOIL SEPARATELY FROM DITCH SPOIL AS SHOWN OR IN OTHER CONFIGURATIONS APPROVED BY CALIBER.

CALIBER MIDSTREAM

Figure 2
Topsoil Segregation-
Full Right-of-Way

ECS-2
SCALE: NTS
DATE: 5-18-2016
REVISION:



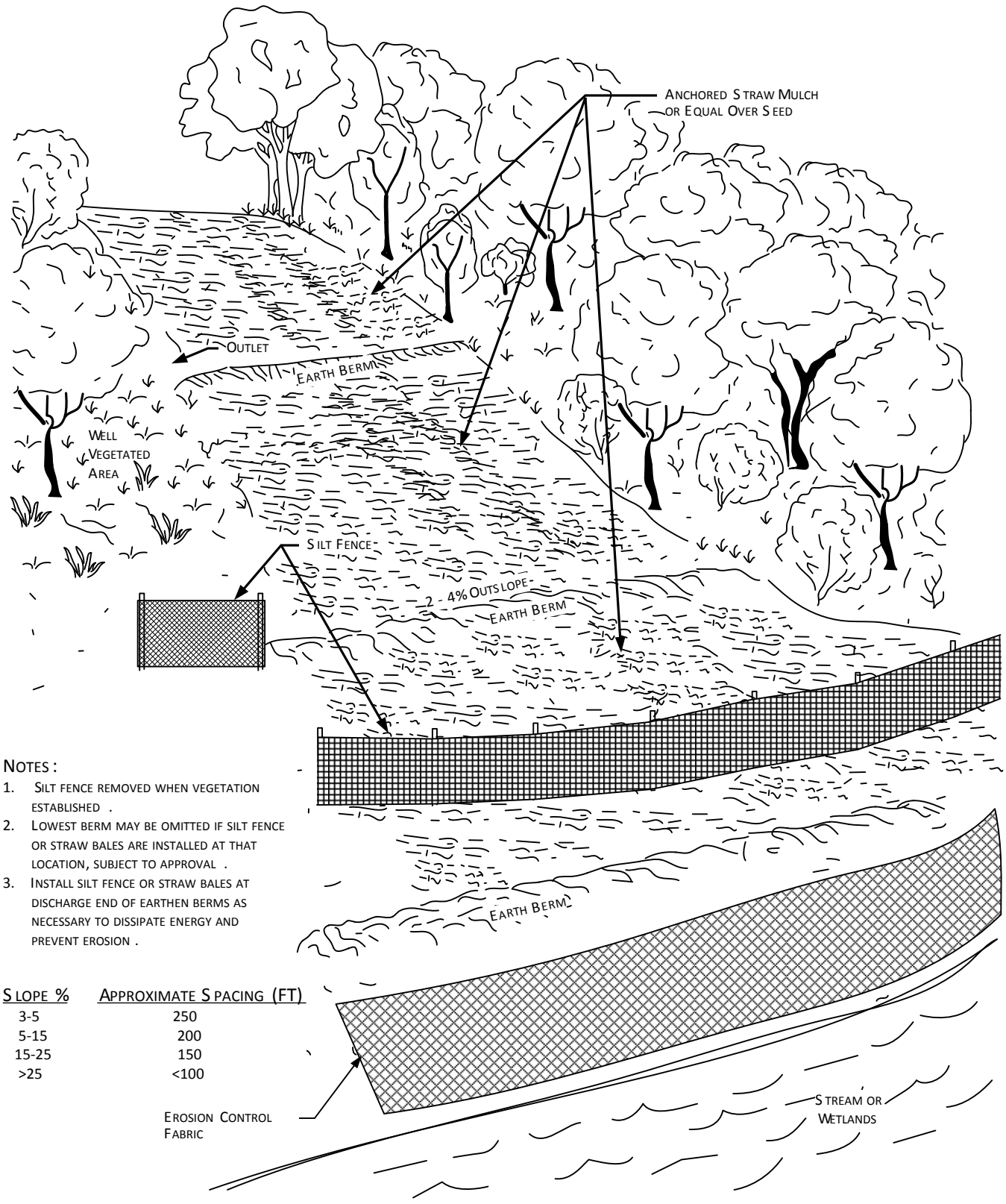
NOTES :

1. STOCKPILE TOPSOIL SEPARATELY FROM DITCH SPOIL AS SHOWN OR IN OTHER CONFIGURATIONS APPROVED BY CALIBER.

CALIBER MIDSTREAM

Figure 3
Topsoil Segregation-
Trench Line Only

ECS-3
SCALE: NTS
DATE: 5-18-2016
REVISION:



NOTES :

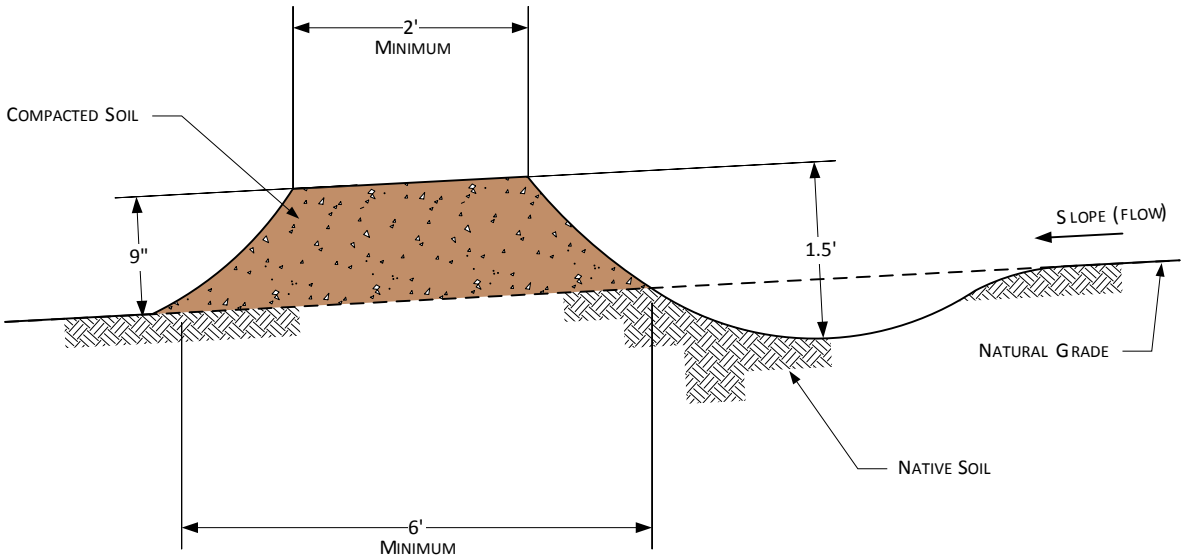
1. SILT FENCE REMOVED WHEN VEGETATION ESTABLISHED .
2. LOWEST BERM MAY BE OMITTED IF SILT FENCE OR STRAW BALES ARE INSTALLED AT THAT LOCATION, SUBJECT TO APPROVAL .
3. INSTALL SILT FENCE OR STRAW BALES AT DISCHARGE END OF EARTHEN BERMS AS NECESSARY TO DISSIPATE ENERGY AND PREVENT EROSION .

SLOPE %	APPROXIMATE SPACING (FT)
3-5	250
5-15	200
15-25	150
>25	<100

CALIBER MIDSTREAM

Figure 4
Temporary and Permanent Slope Breakers

ECS-4
SCALE: NTS
DATE: 5-18-2016
REVISION:



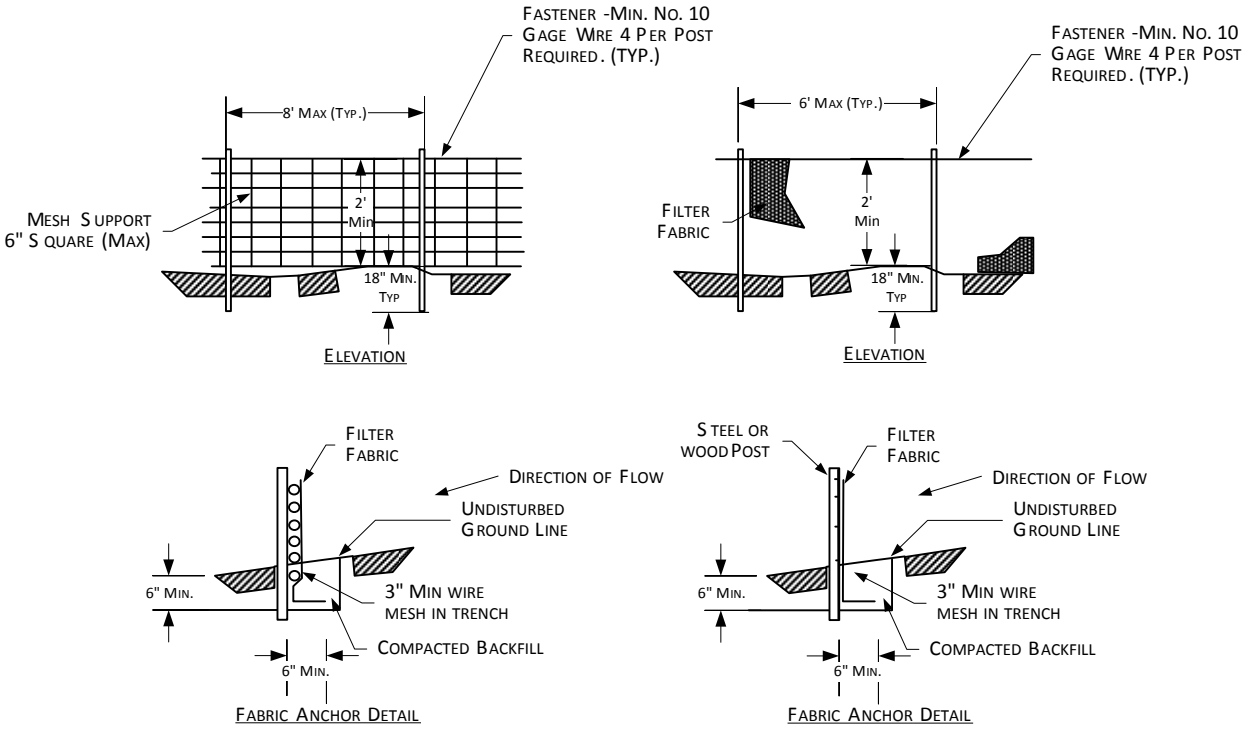
NOTES

1. BERMS SHALL BE CONSTRUCTED WITH 2 TO 4 PERCENT OUTSLOPE.
2. BERMS SHALL BE OUTLETED TO WELL VEGETATED STABLE AREAS
   SILT FENCES, STRAW BALES OR ROCK APRONS.
3. BERMS SHALL BE SPACED AS DESCRIBED IN CONSTRUCTION SPECIFICATIONS.
4. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS.

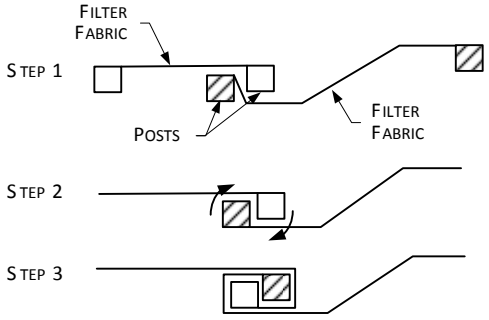
CALIBER MIDSTREAM

Figure 5
Temporary or Permanent Slope Breakers - Cross Section

ECS-5
SCALE: NTS
DATE: 5-18-2016
REVISION:



NOTES:
1. WIRES OF MESH SUPPORT SHALL BE MIN. GAGE NO. 12.
2. FILTER FABRIC SHALL MEET THE REQUIREMENTS OF THE SPECIFICATION WITH EQUIVALENT OPENING SIZE OF AT LEAST 30 FOR NONWOVEN AND 50 FOR WOVEN. (SIEVE NO.)
3. THE POSTS USED TO SUPPORT THE SILT FENCE SHOULD BE HARDWOOD MATERIAL WITH A MINIMUM CROSS SECTIONAL AREA OF 4 INCHES SQUARE AND 4 FEET LONG. METAL POSTS SHOULD BE USED IN AREAS THAT POND WATER.



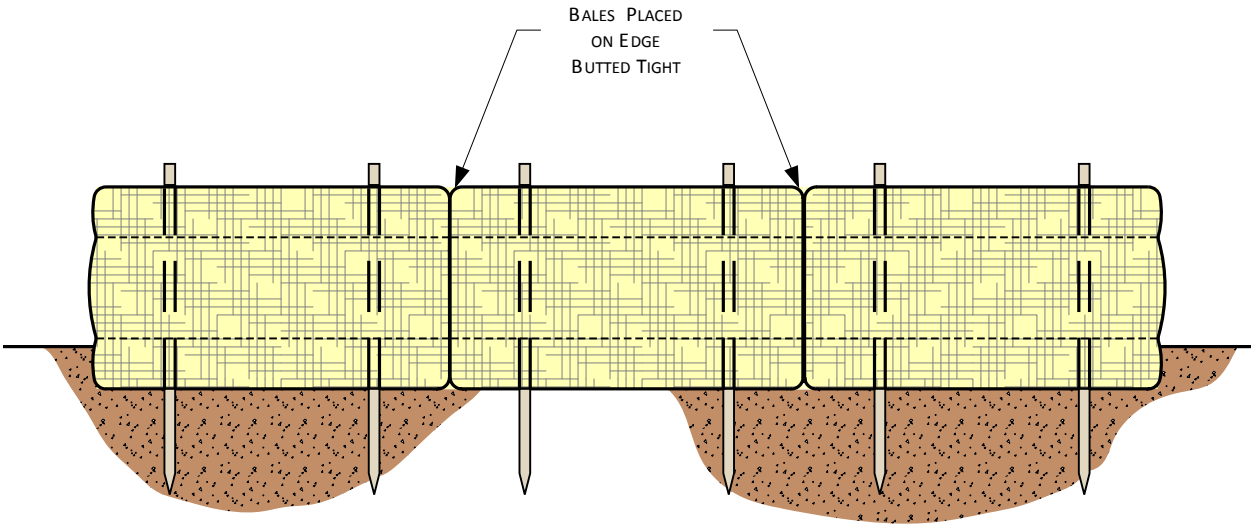
ATTACHING TWO SILT FENCES

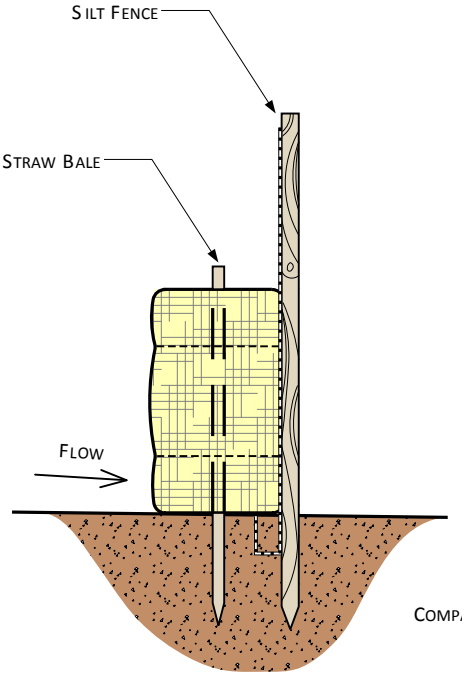
NOTES:
1. PLACE THE END POST OF THE SECOND FENCE INSIDE THE END POST OF THE FIRST FENCE.
2. ROTATE BOTH POSTS AT LEAST 180 DEGREES IN A CLOCKWISE DIRECTION TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL.
3. DRIVE BOTH POSTS A MINIMUM OF 18 INCHES IN THE GROUND AND BURY THE FLAP.

CALIBER MIDSTREAM

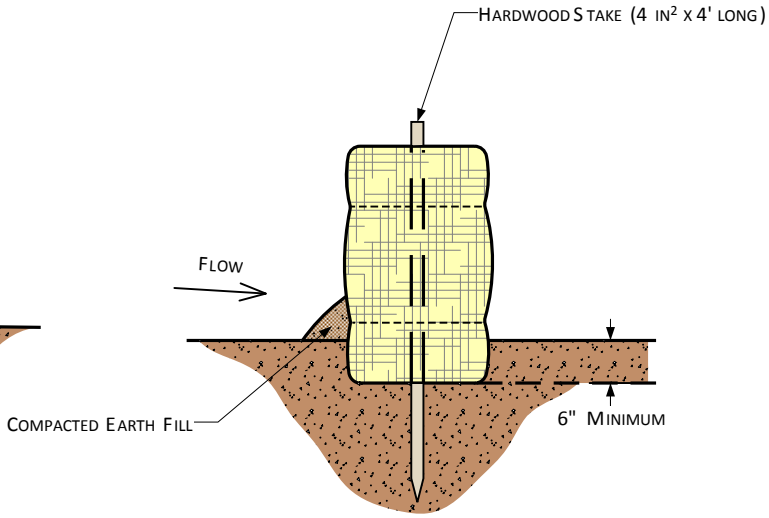
Figure 6
Silt Fence Installation

ECS-6
SCALE: NTS
DATE: 5-18-2016
REVISION:





STRAW BALES & SILT FENCE



STRAW BALES ONLY

CALIBER MIDSTREAM

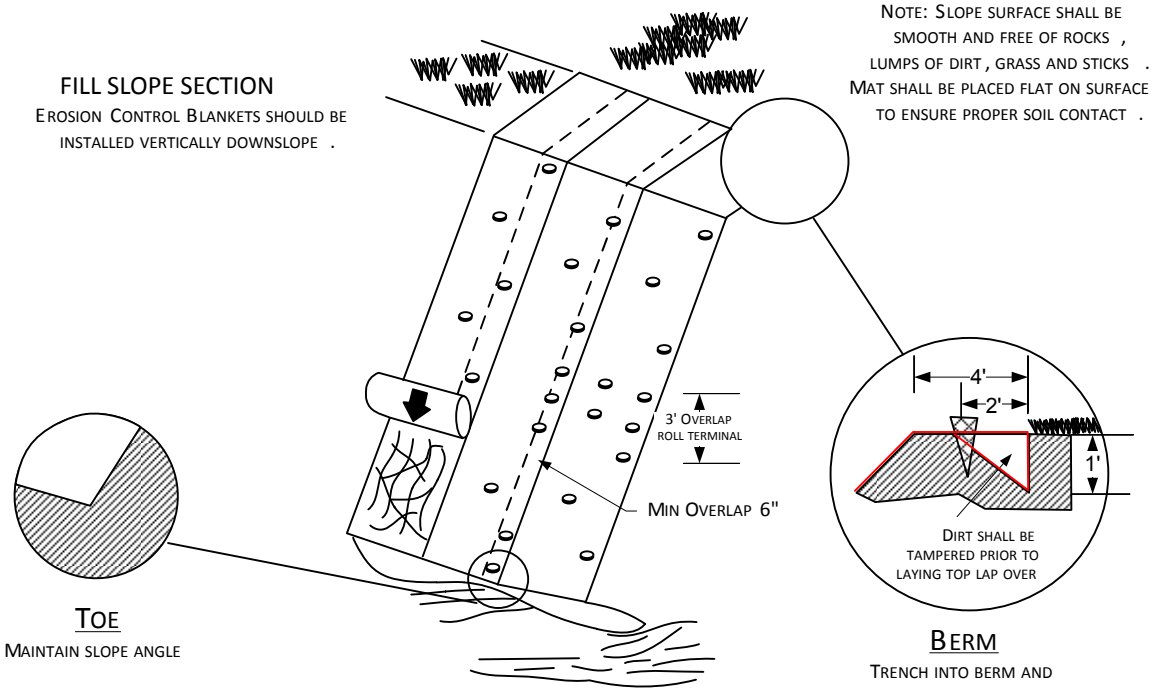
Figure 7
Straw Bale Installation

ECS-7
SCALE: NTS
DATE: 5-18-2016
REVISION:

FILL SLOPE SECTION

EROSION CONTROL BLANKETS SHOULD BE INSTALLED VERTICALLY DOWNSLOPE .

NOTE: SLOPE SURFACE SHALL BE SMOOTH AND FREE OF ROCKS , LUMPS OF DIRT , GRASS AND STICKS . MAT SHALL BE PLACED FLAT ON SURFACE TO ENSURE PROPER SOIL CONTACT .



TOE

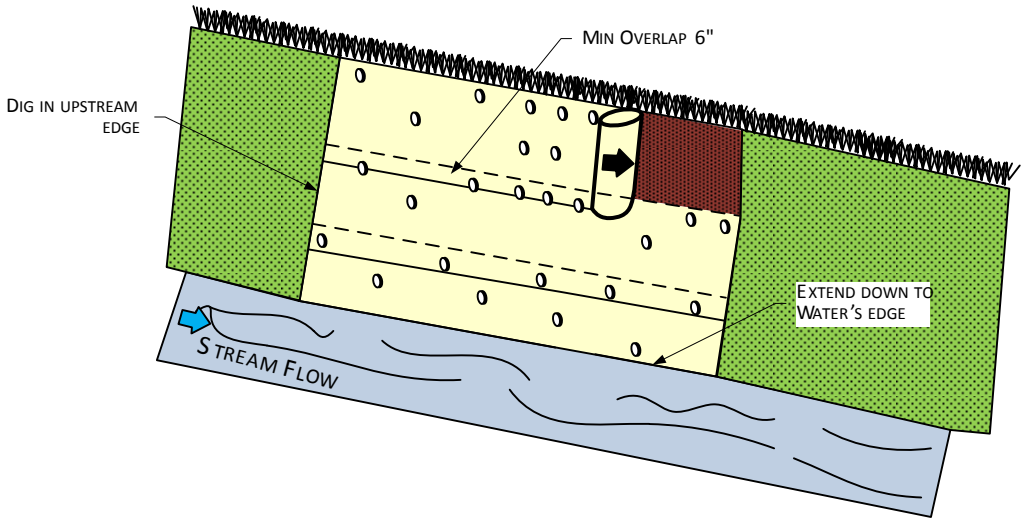
MAINTAIN SLOPE ANGLE

BERM

TRENCH INTO BERM AND PROGRESS DOWNSLOPE

STREAM CHANNEL

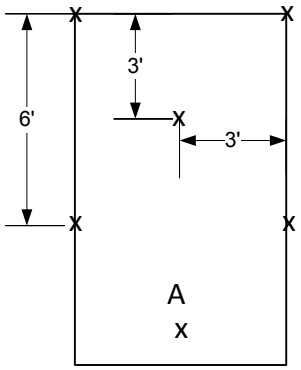
EROSION CONTROL BLANKETS SHOULD BE INSTALLED HORIZONTALLY WITH STREAM FLOW.



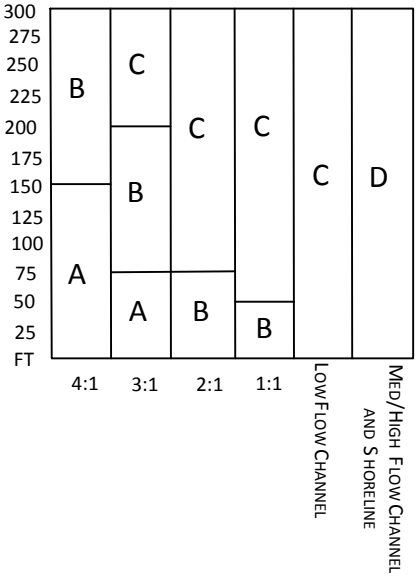
CALIBER MIDSTREAM

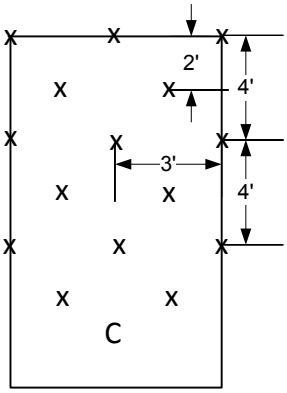
Figure 8
Erosion Control Blanket Installation

ECS-8
SCALE: NTS
DATE: 5-18-2016
REVISION:

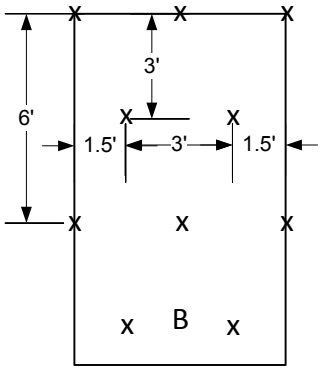


1 Staple Per Sq. Yd



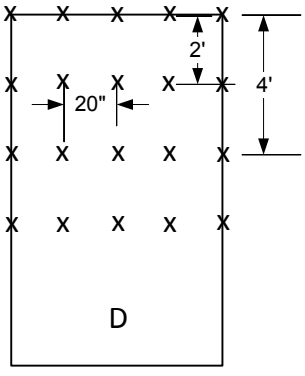


2 Staples Per Sq. Yd



1 ½ Staples Per Sq. Yd

For optimum results, these recommended staple pattern guides must be followed. Suggested anchoring methods vary according to the manufacturer. This chart shows how to slope lengths and how gradients affect sampling patterns.

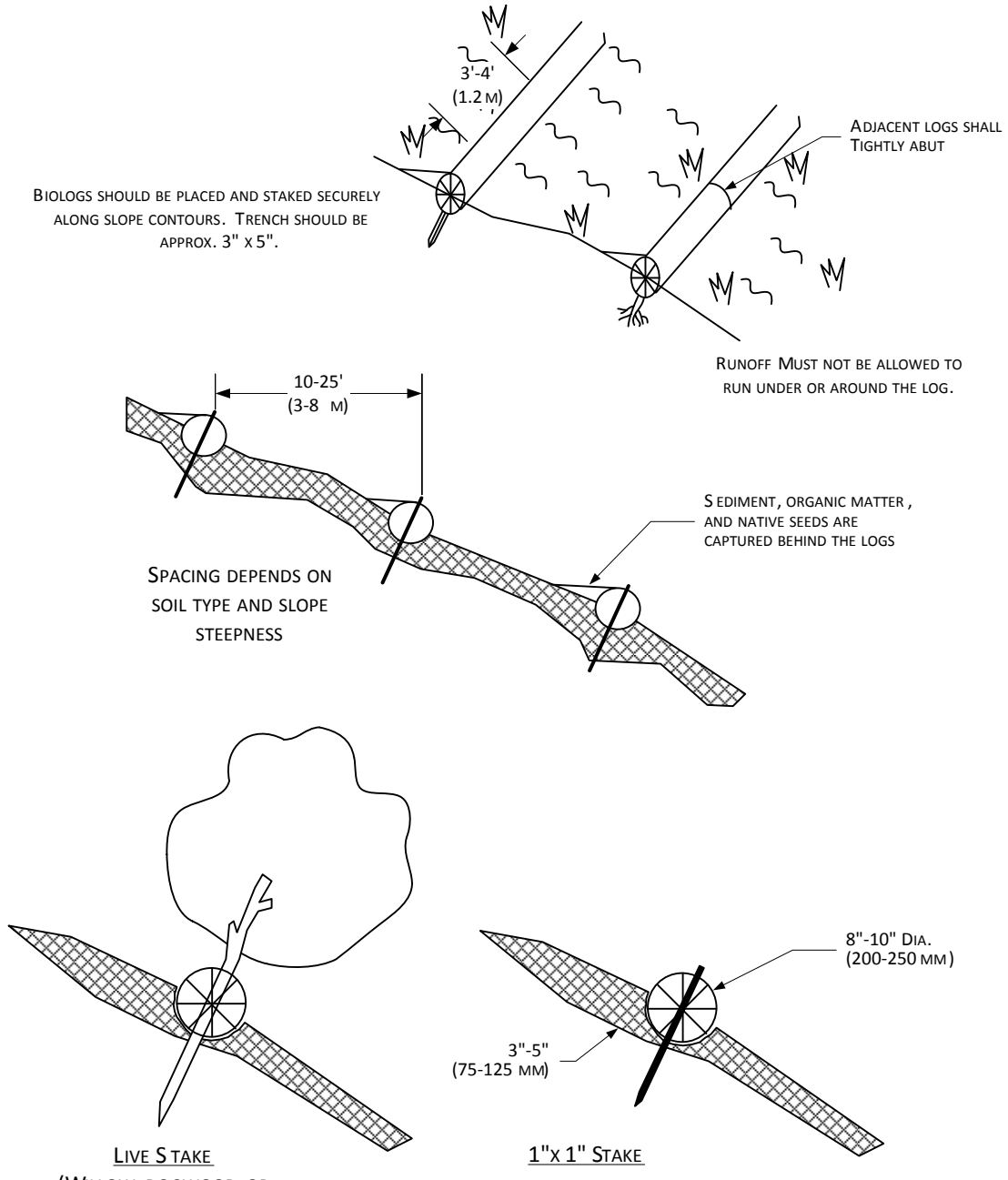


3 1/2 Staples Per Sq. Yd

CALIBER MIDSTREAM

Figure 9
Staple Pattern for Erosion Control Fabric

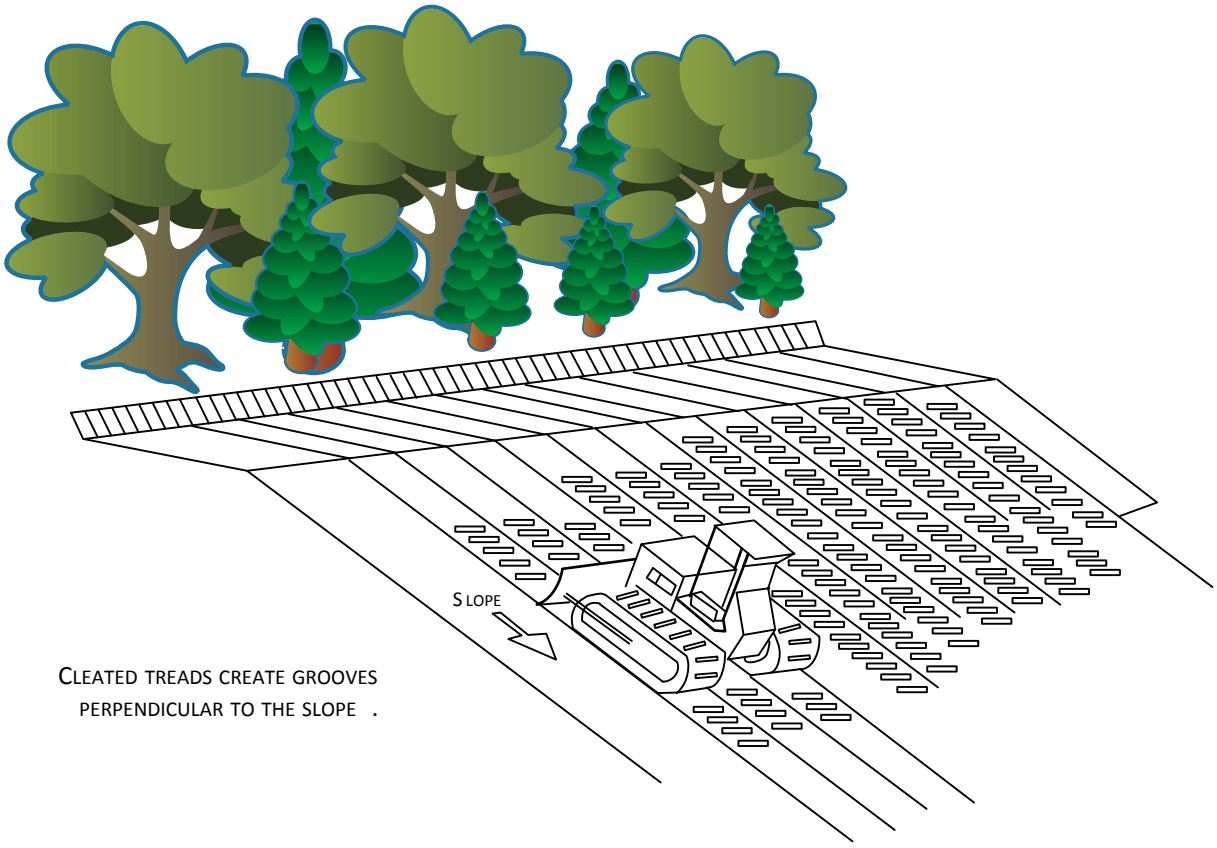
ECS-9
SCALE: NTS
DATE: 5-18-2016
REVISION:



CALIBER MIDSTREAM

Figure 10
Bio-Log Installation

ECS-10
SCALE: NTS
DATE: 5-18-2016
REVISION:

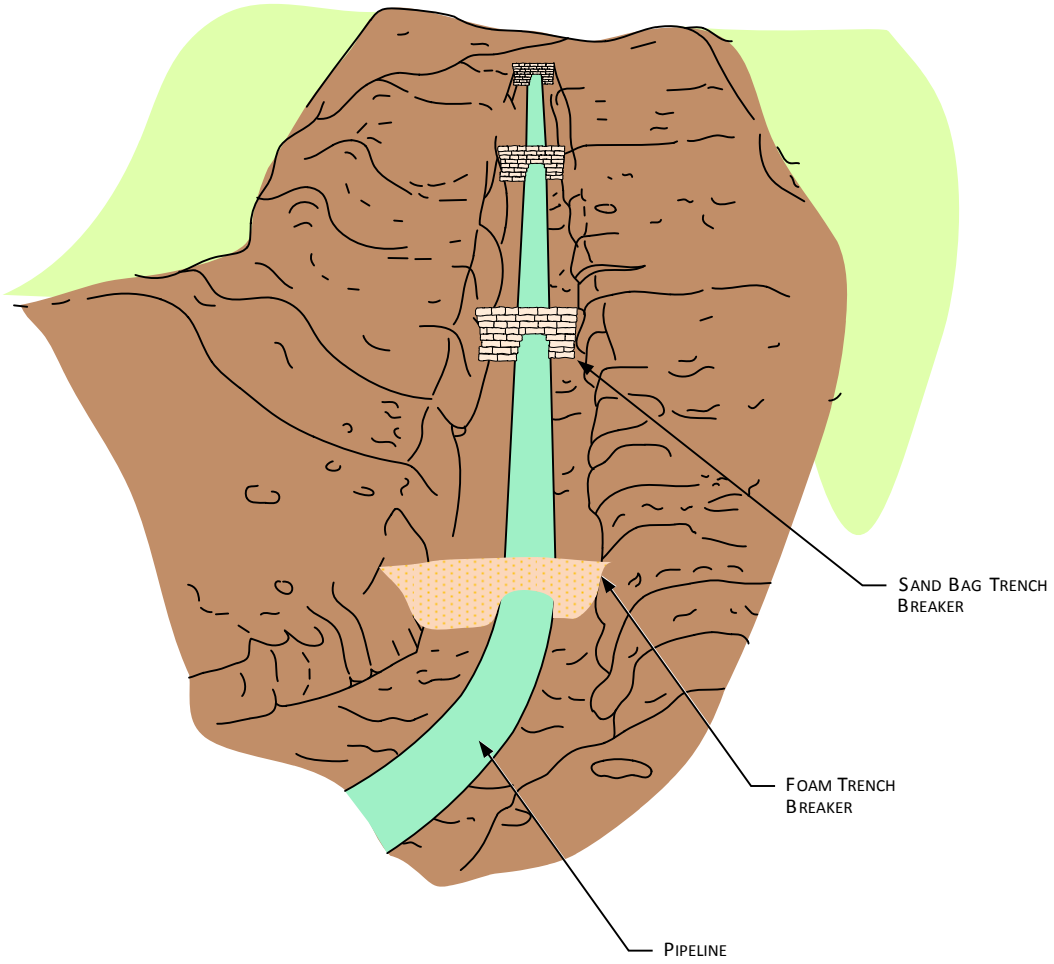


CLEATED TREADS CREATE GROOVES PERPENDICULAR TO THE SLOPE .

CALIBER MIDSTREAM

Figure 11
CAT Tracking

ECS-11
SCALE: NTS
DATE: 5-18-2016
REVISION:



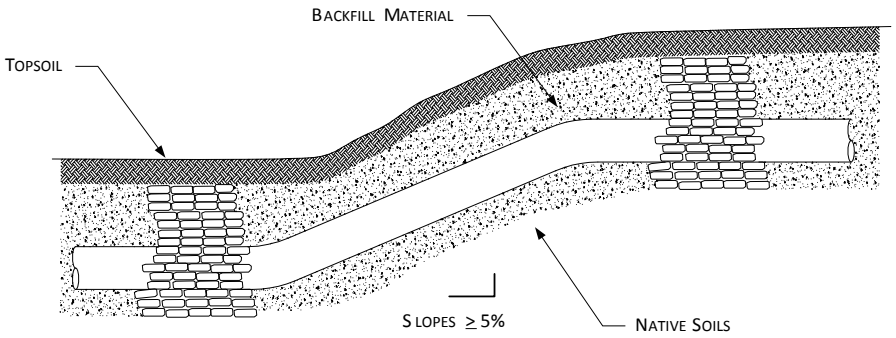
NOTES

1. BAGS WILL NOT BE FILLED WITH TOPSOIL.
2. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS.

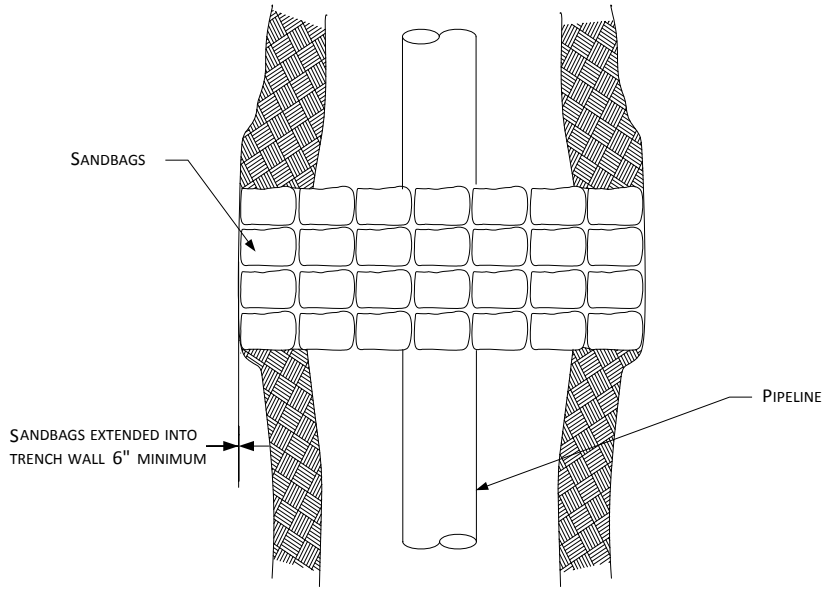
CALIBER MIDSTREAM

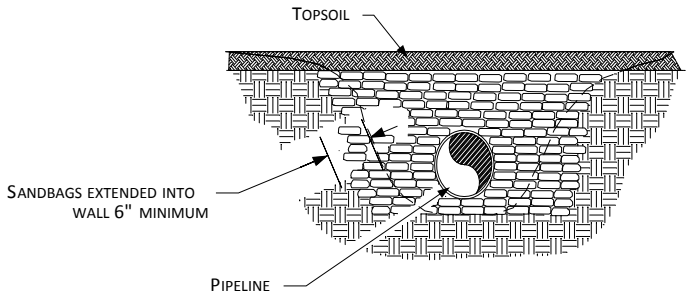
Figure 12
Trench Breakers

ECS-12
SCALE: NTS
DATE: 5-18-2016
REVISION:



PROFILE VIEW
(NOT TO SCALE)





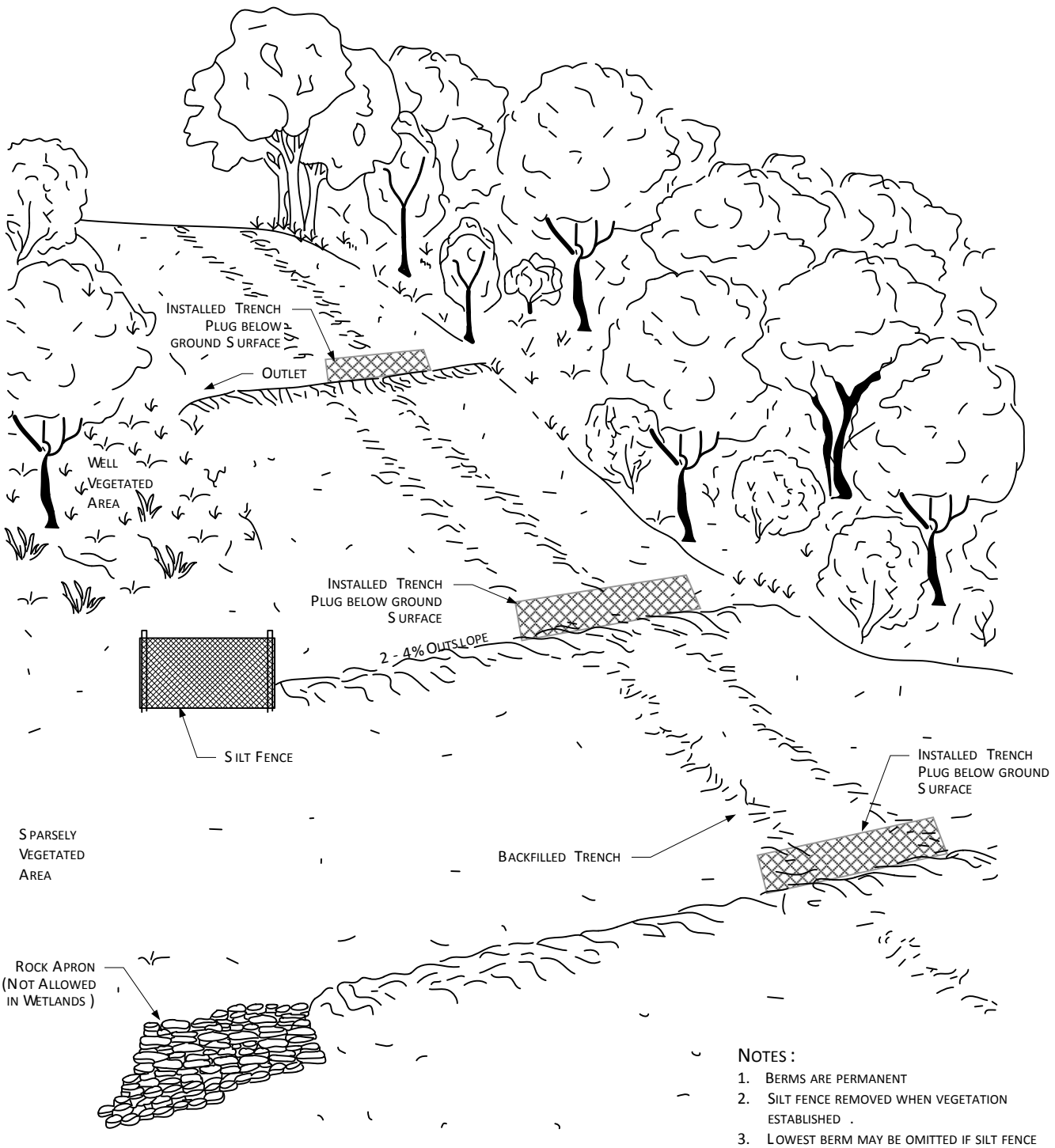
NOTES

1. BAGS WILL NOT BE FILLED WITH TOPSOIL
2. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS

CALIBER MIDSTREAM

Figure 13
Trench Breakers

ECS-13
SCALE: NTS
DATE: 5-18-2016
REVISION:



Slope %	Approximate Spacing (FT)
3-5	250
5-15	200
15-25	150
>25	<100

Notes :

1. Berms are permanent
2. Silt fence removed when vegetation established .
3. Lowest berm may be omitted if silt fence or straw bales are installed at that location, subject to approval .
4. Install silt fence or straw bales at discharge end of earthen berms as necessary to dissipate energy and prevent erosion .

CALIBER MIDSTREAM

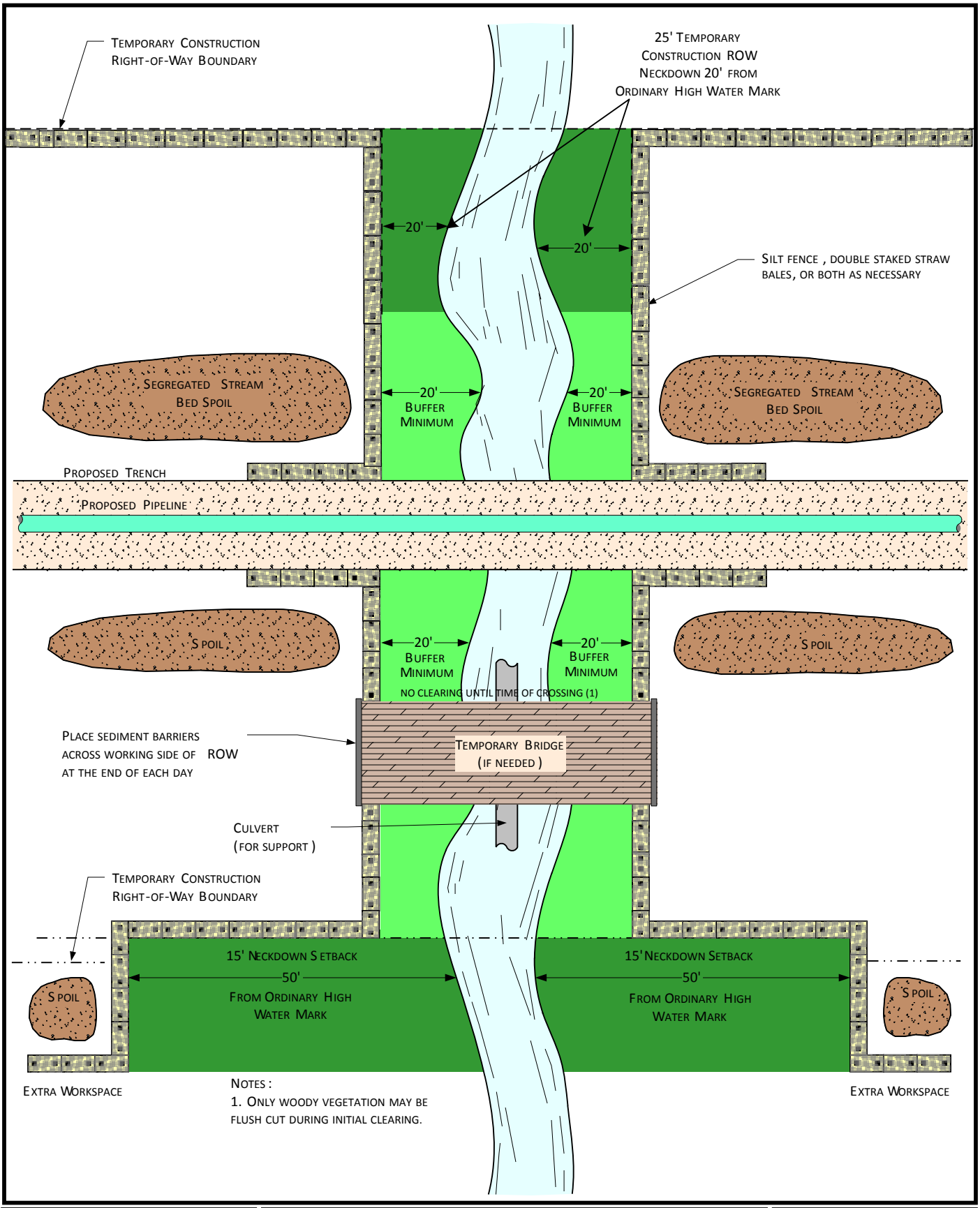
Figure 14
Permanent Slope Breakers

ECS-14

SCALE: NTS

DATE: 5-18-2016

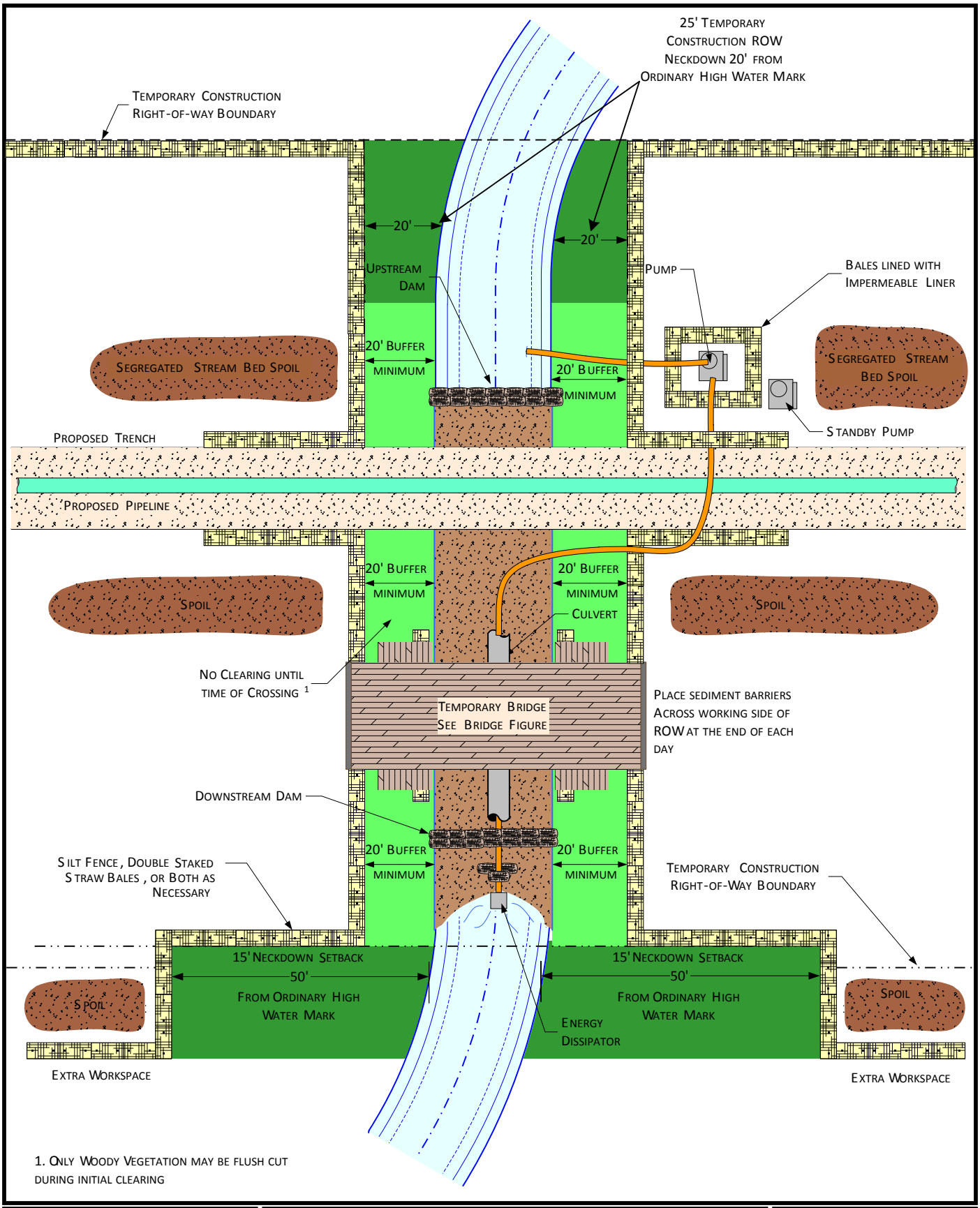
REVISION:



CALIBER MIDSTREAM

Figure 15
Waterbody Crossing-
Open Cut Method

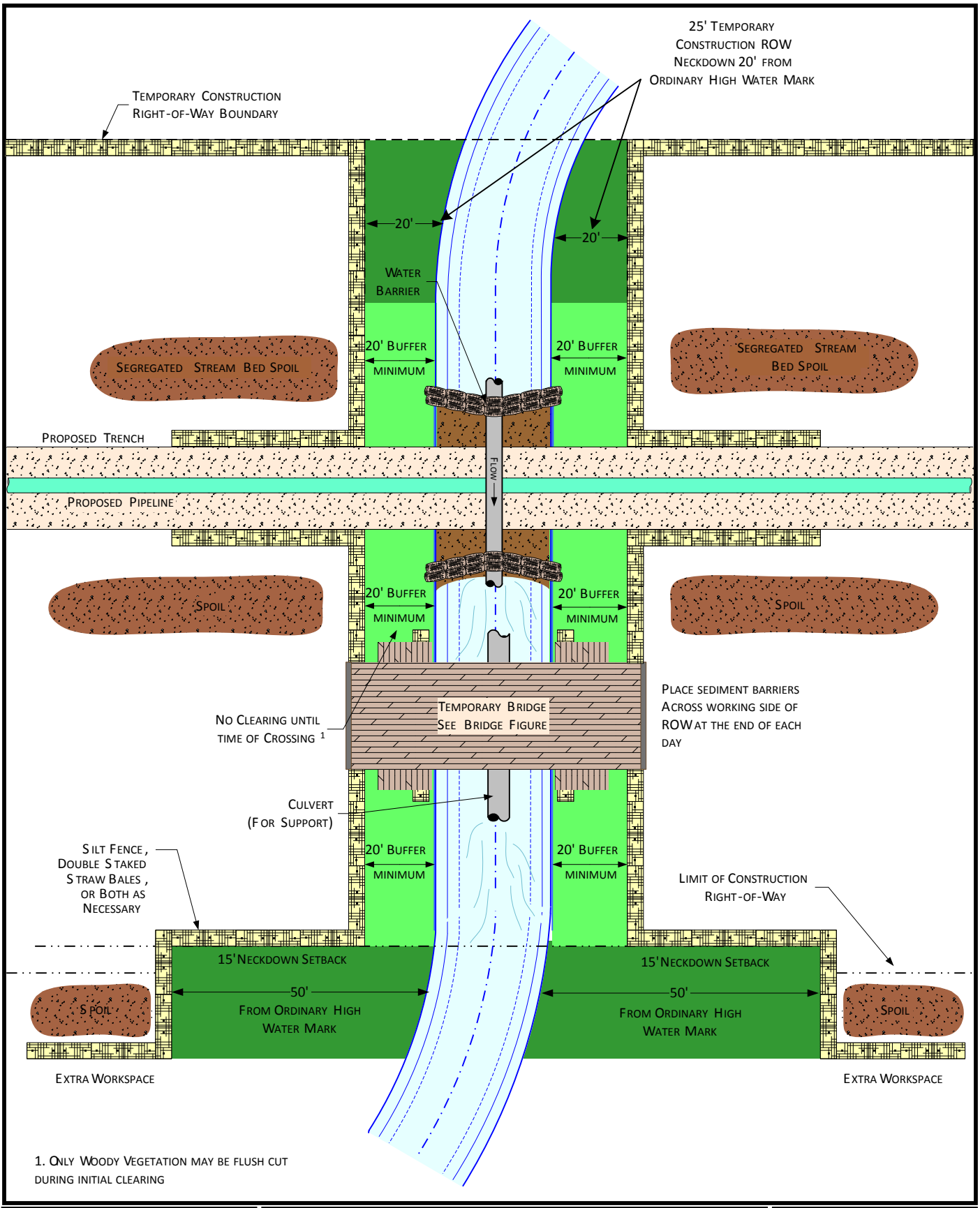
ECS-15
SCALE: NTS
DATE: 5-18-2016
REVISION:



CALIBER MIDSTREAM

Figure 16
Waterbody Crossing-
Dam and Pump Method

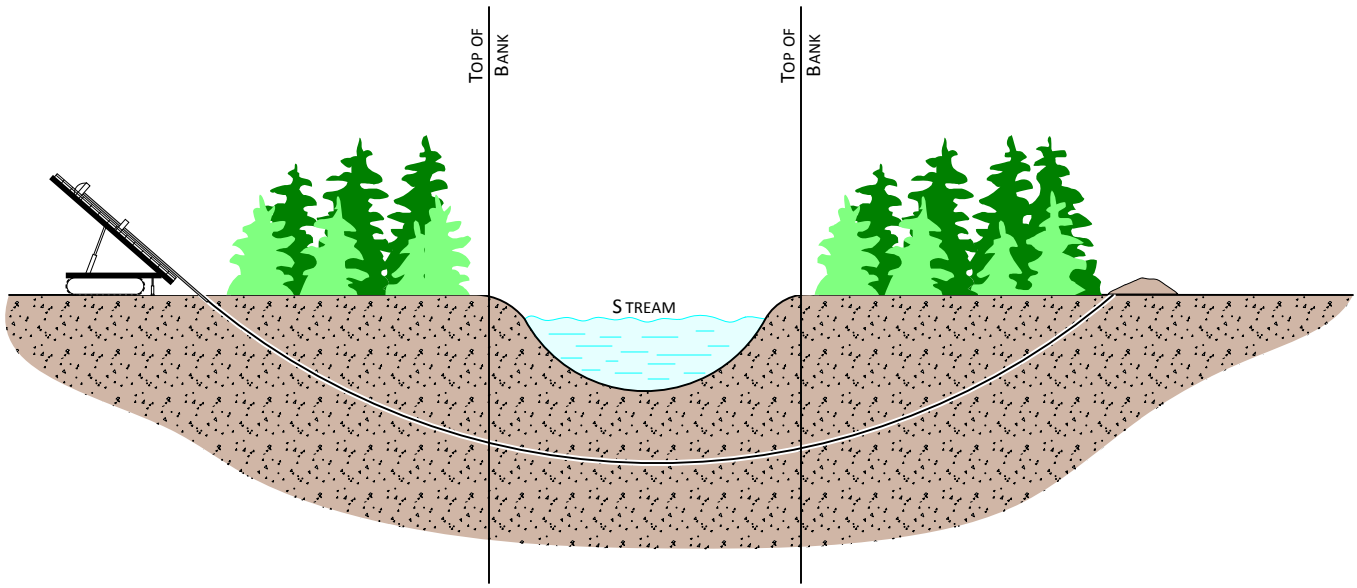
ECS-16
SCALE: NTS
DATE: 5-18-2016
REVISION:



CALIBER MIDSTREAM

Figure 17
Waterbody Crossing-Flume Method

ECS-17
SCALE: NTS
DATE: 5-18-2016
REVISION:

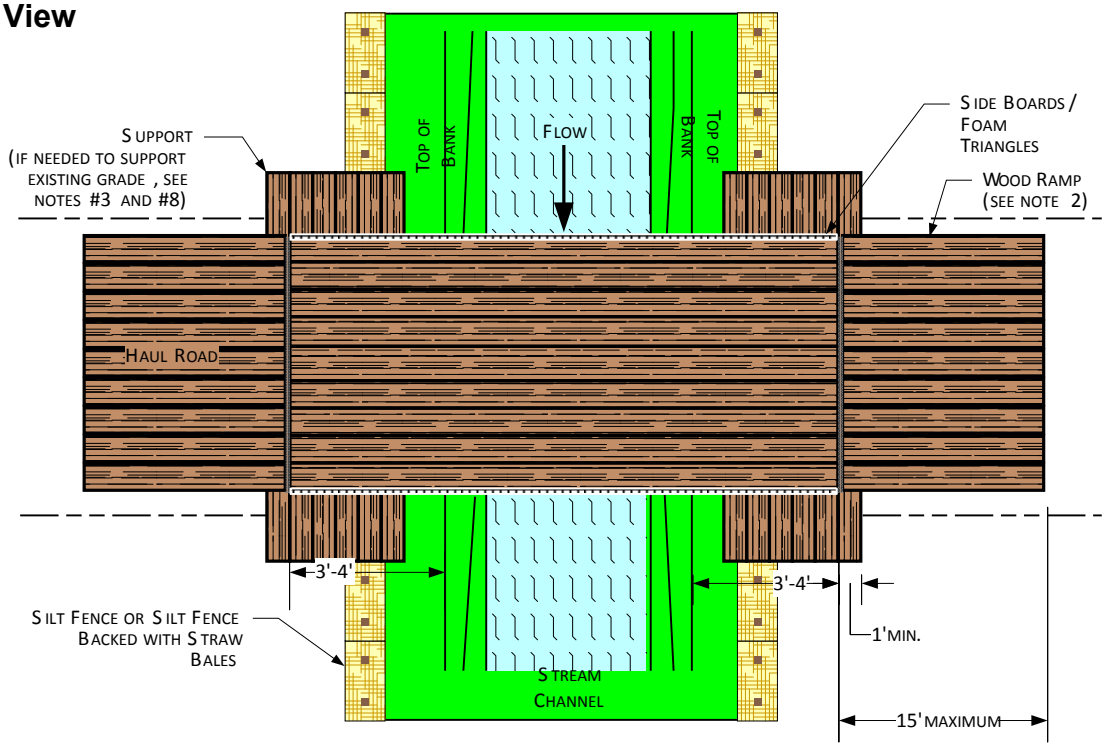


CALIBER MIDSTREAM

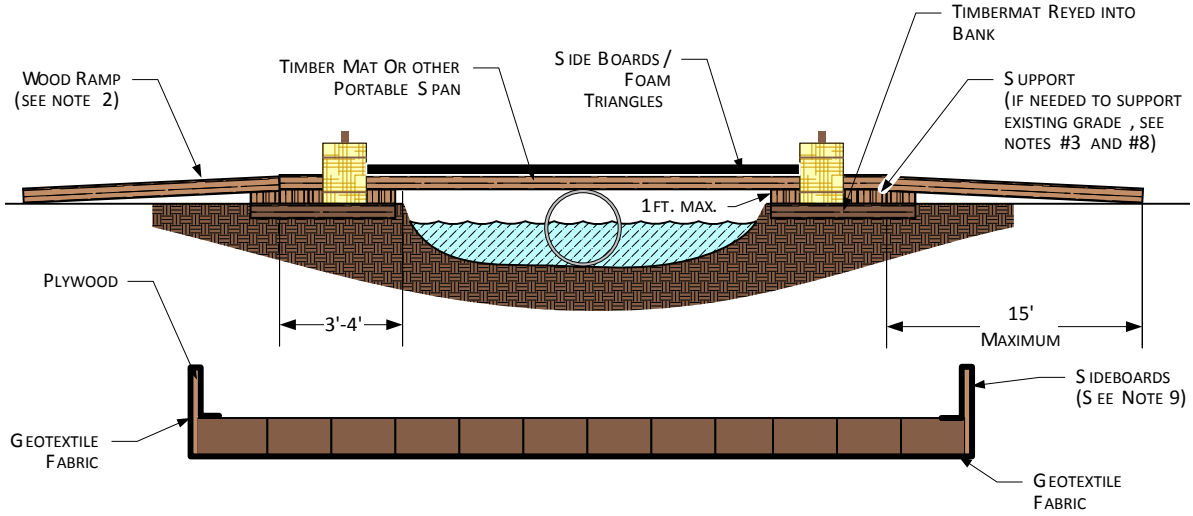
Figure 18
Waterbody Crossing- Horizontal Directional Drill (HDD)

ECS-18
SCALE: NTS
DATE: 5-18-2016
REVISION:

Plan View



Profile View



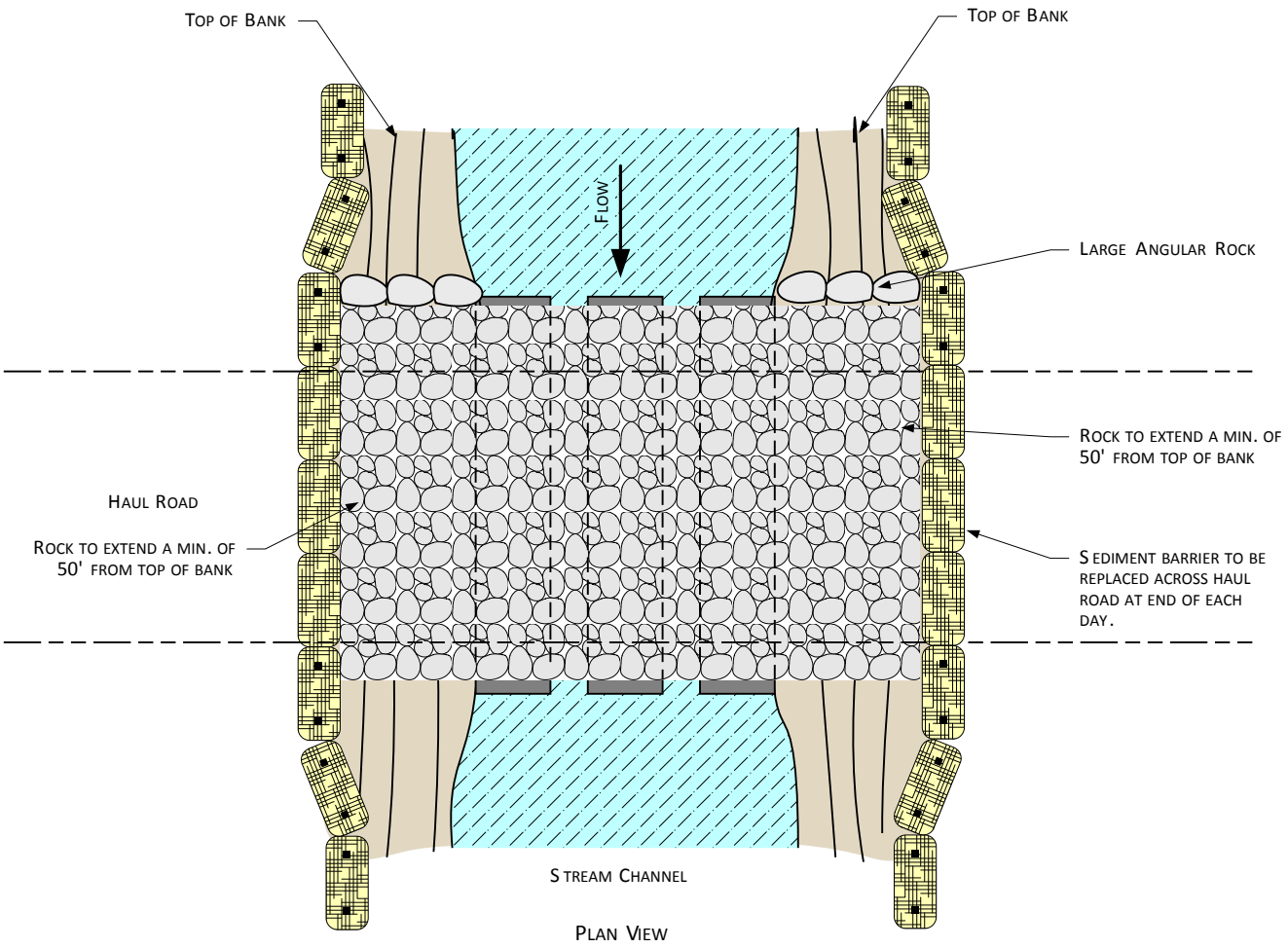
Notes:

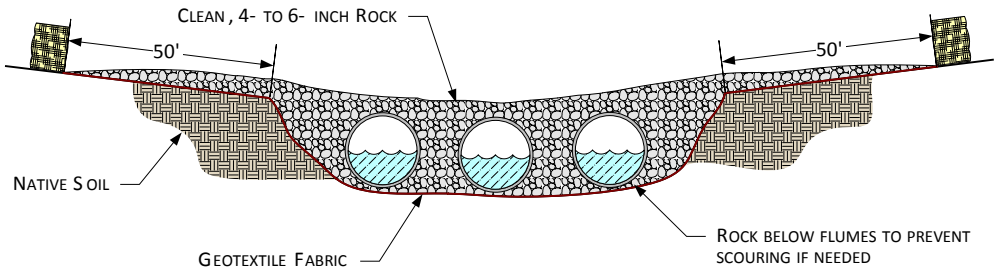
1. Inspect bridge opening periodically and following rainfalls of over ½". Remove any debris restricting flow and deposit it at an upland site outside of floodplain.
2. If physical circumstances prohibit wood or metal ramps, earthen ramps may be used as approved.
3. Inspect bridge elevation so bridge remains supported above high bank and does not sink into bank.
4. The culvert support must be anchored to the stream bottom and may not be supported with fill.
5. Earthen ramp cannot be taller than 1' and cannot extend for more than 15' on either side of the crossing.
6. The bridge must span from top of bank to top of bank.
7. Additional support must be added on top of bank and under span if initial support starts to settle.
8. Erosion and sedimentation control measures shall be inspected and maintained in accordance with the company's Environmental Mitigation Plan
9. Sideboards will be installed on temporary bridges to minimize the potential for sediment transport. Sideboards may be constructed out of plywood, or equivalent, and affixed to the outer sides of the bridge. Geo-textile fabric, or equivalent, must also be adequately secured to the underside of the bridge to prevent material from falling through the bridge deck. The geo-textile fabric or an equivalent should be secured to the bottom of the bridge and wrapped around the sideboards in a continuous fashion.

CALIBER MIDSTREAM

Figure 19
Span Type Bridge

ECS-19
SCALE: NTS
DATE: 5-18-2016
REVISION:





NOTES:

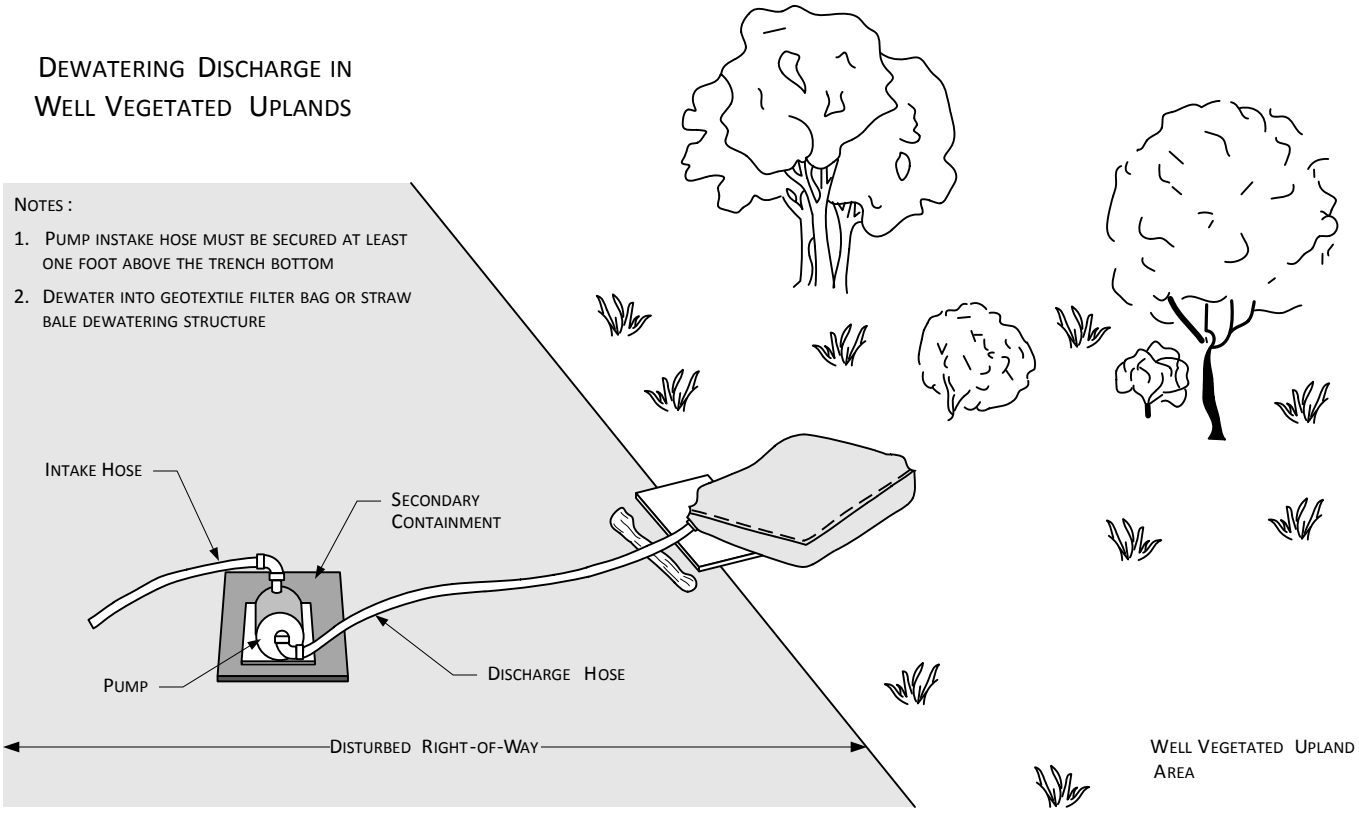
1. Steel flume pipe (s) sized to allow for stream flow and equipment load
2. Straw bales shall be placed across bridge entrance every night
3. Additional information included on other Drawings

CALIBER MIDSTREAM

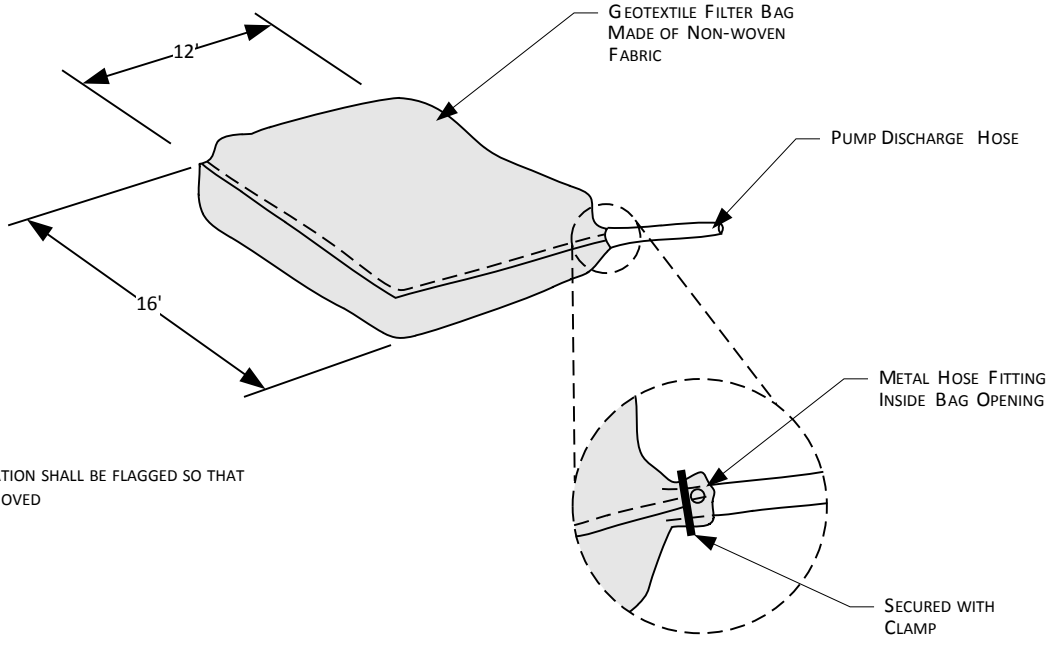
Figure 20
Rock Flume Bridge

ECS-20
SCALE: NTS
DATE: 5-18-2016
REVISION:

Dewatering Discharge in Well Vegetated Uplands



Geotextile Filter Bag



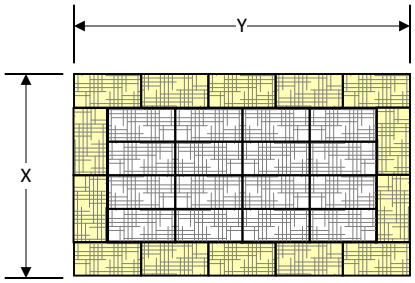
Note:

1. Filter bag location shall be flagged so that bag can be removed

CALIBER MIDSTREAM

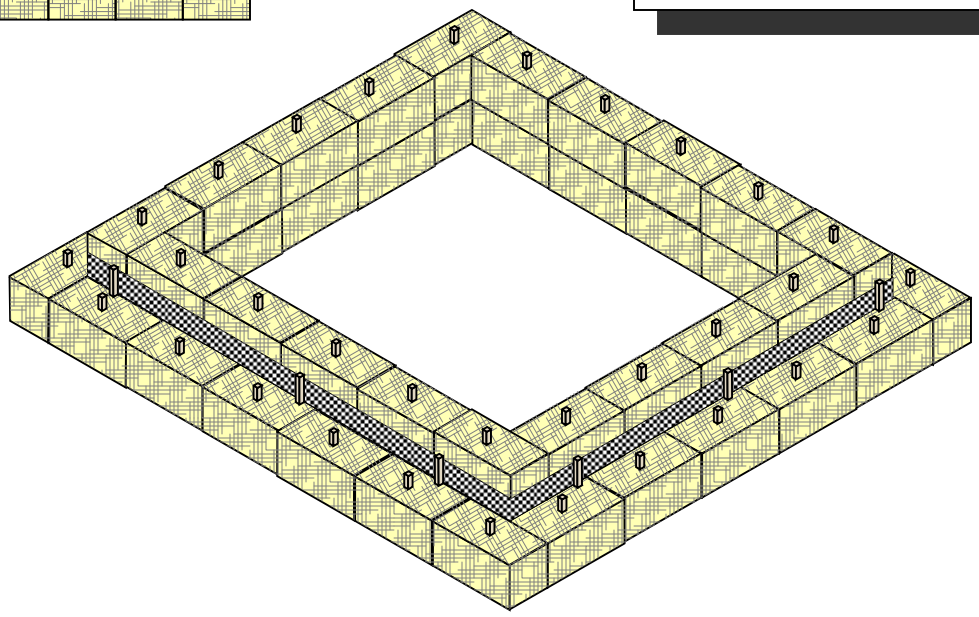
Figure 21
Dewatering Measures

ECS-21
SCALE: NTS
DATE: 5-18-2016
REVISION:

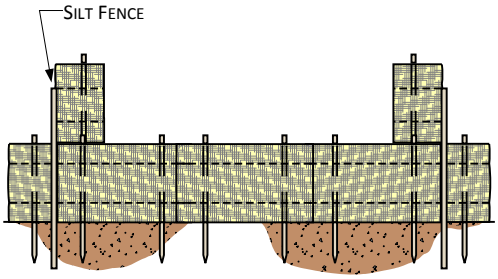


NOTES

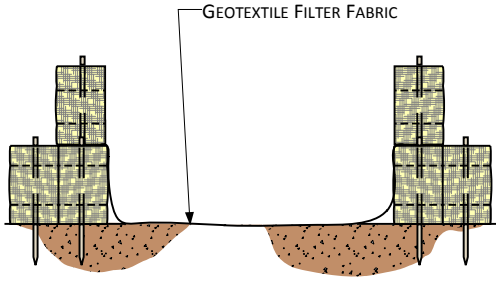
1. ARRANGE THE STRAW BALES TO THE X AND Y DIMENSIONS AS SPECIFICIED BELOW.
2. IF BOTTOM OF STRUCTURE IS NOT LINED WITH STRAW BALES (OPTION 1), LINE ENTIRE STRUCTURE WITH GEOTEXTILE FILTER FABRIC.



PERSPECTIVE VIEW



OPTION 1



OPTION 2

TYPICAL MINIMUM SUMP DIMENSIONS (FEET)		MAXIMUM PUMPING RATE
X	Y	GALLONS PER MINUTE
10	20	300
15	20	350
20	20	400
20	25	450
25	25	500
25	30	550
30	30	660

CALIBER MIDSTREAM

Figure 22

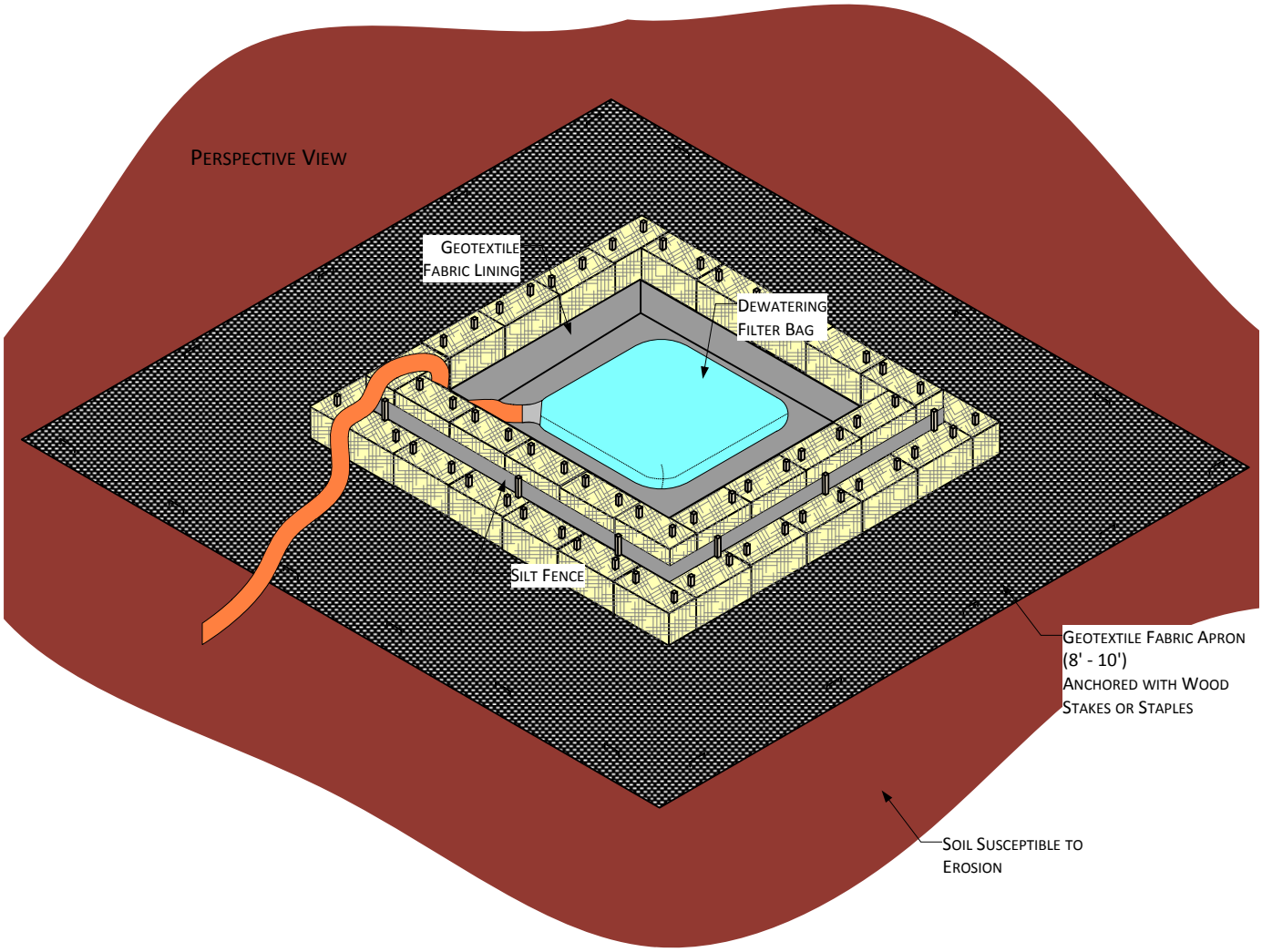
Straw Bale Dewatering Structure

ECS-22

SCALE: NTS

DATE: 5-18-2016

REVISION:



Construct Dewatering Structure to accommodate anticipated pumping rates. See example below.

Example Pumping rate = 200 g.p.m.
Storage volume (c.f.) = 16 x 200 g.p.m. = 3200 c.f.
Height of straw bale structure = 3 feet (2 bales stacked) (based on height of bales, not silt fence)
Inside dimensions of structure = 33 x 33 feet square

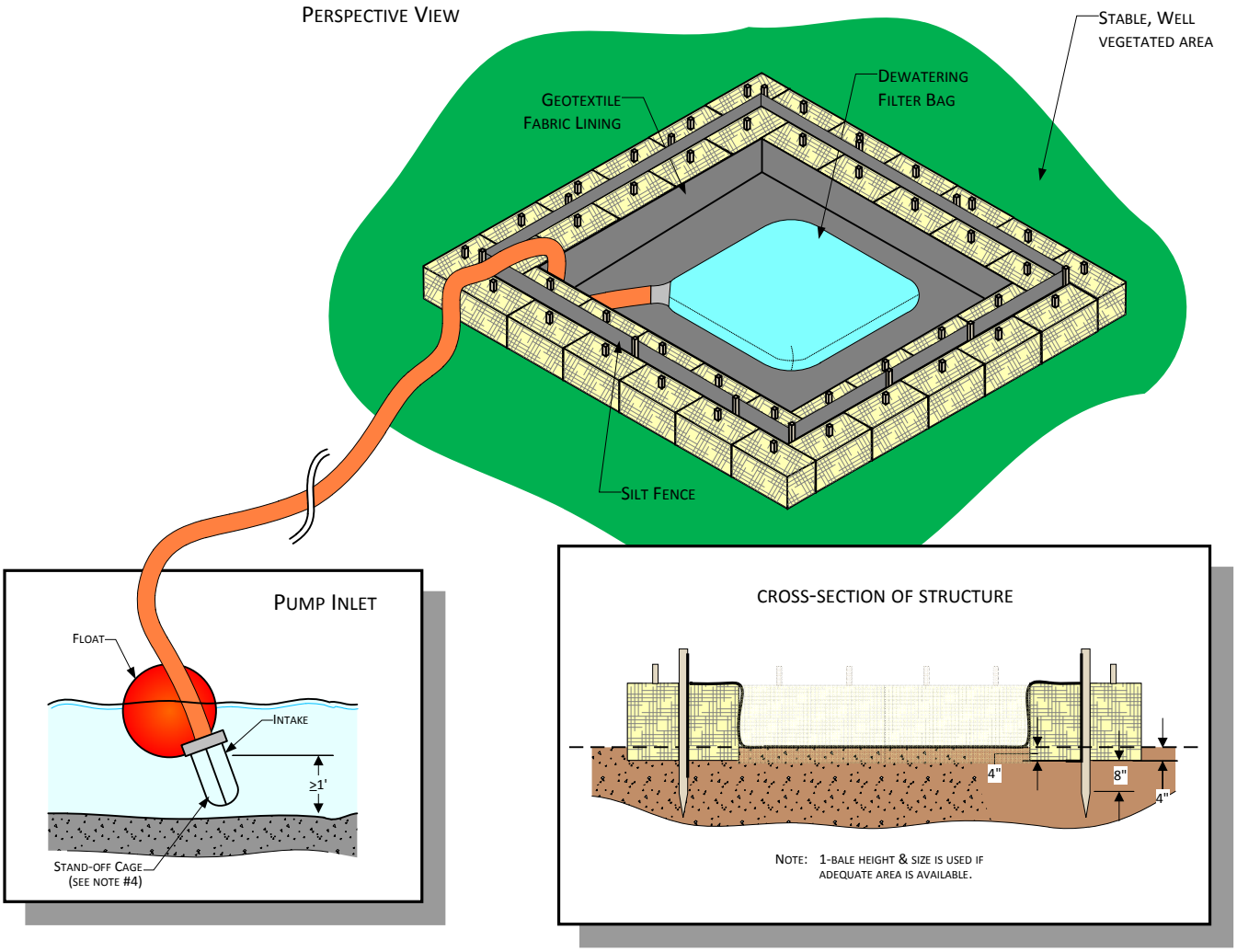
Notes:

1. Silt fence ends must be wrapped to join two sections.
2. Install silt fence 2 inches above top of straw bales, and anchor a minimum of 8 inches straight down.
3. Silt fence post staking must be 4 feet or less.
4. Dewatering intake hose supported at least 1 foot from bottom of trench being dewatered.
5. Erosion and sedimentation control measures shall be inspected and maintained in accordance with the company's upland erosion control, revegetation, and maintenance plan.

CALIBER MIDSTREAM

Figure 23
Straw Bale Dewatering Structure

ECS-23
SCALE: NTS
DATE: 5-18-2016
REVISION:



CONSTRUCT DEWATERING STRUCTURE TO ACCOMMODATE ANTICIPATED PUMPING RATES. SEE EXAMPLE BELOW.

EXAMPLE PUMPING RATE = 200 G.P.M.
STORAGE VOLUME (C.F.) = 16 X 200 G.P.M. = 3200 C.F.
HEIGHT OF STRAW BALE STRUCTURE = 1.5 FEET (1 BALE) (BASED ON HEIGHT OF BALES, NOT SILT FENCE)
INSIDE DIMENSIONS OF STRUCTURE = 46 X 46 FEET SQUARE

NOTES:

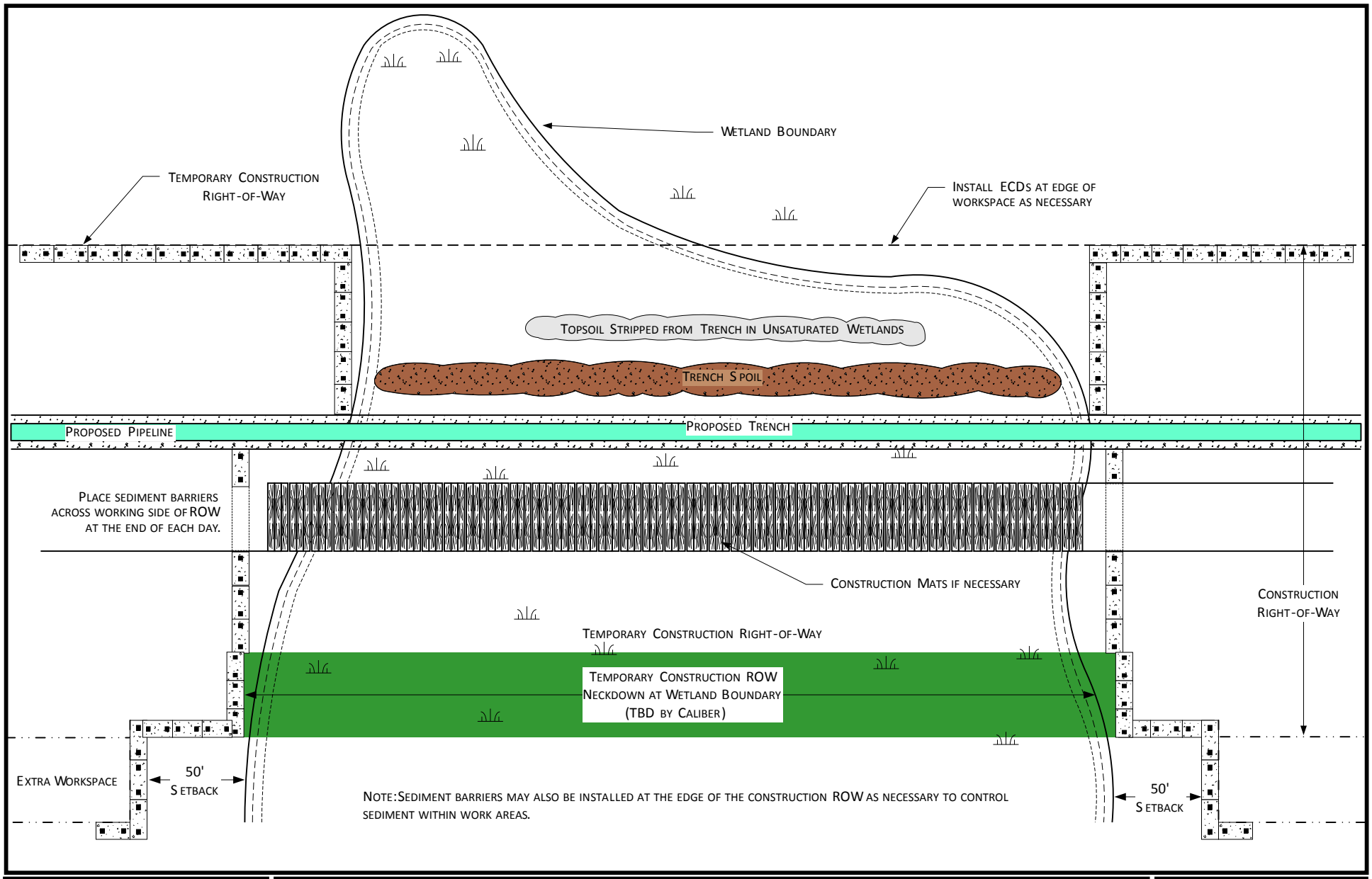
1. SILT FENCE ENDS MUST BE WRAPPED TO JOIN TWO SECTIONS.
2. INSTALL SILT FENCE 2 INCHES ABOVE TOP OF STRAW BALE, AND ANCHOR A MINIMUM OF 8 INCHES STRAIGHT DOWN.
3. SILT FENCE POST STAKING MUST BE 4 FEET OR LESS.
4. DEWATERING INTAKE HOSE SUPPORTED AT LEAST 1 FOOT FROM BOTTOM OF TRENCH BEING DEWATERED.
5. USE A FILTER BAG AT THE DISCHARGE HOSE END.
6. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE COMPANY'S UPLAND EROSION CONTROL, REVEGETATION, AND MAINTENANCE PLAN.

CALIBER MIDSTREAM

Figure 24
Straw Bale Dewatering Structure

ECS-24

SCALE: NTS
DATE: 5-18-2016
REVISION:

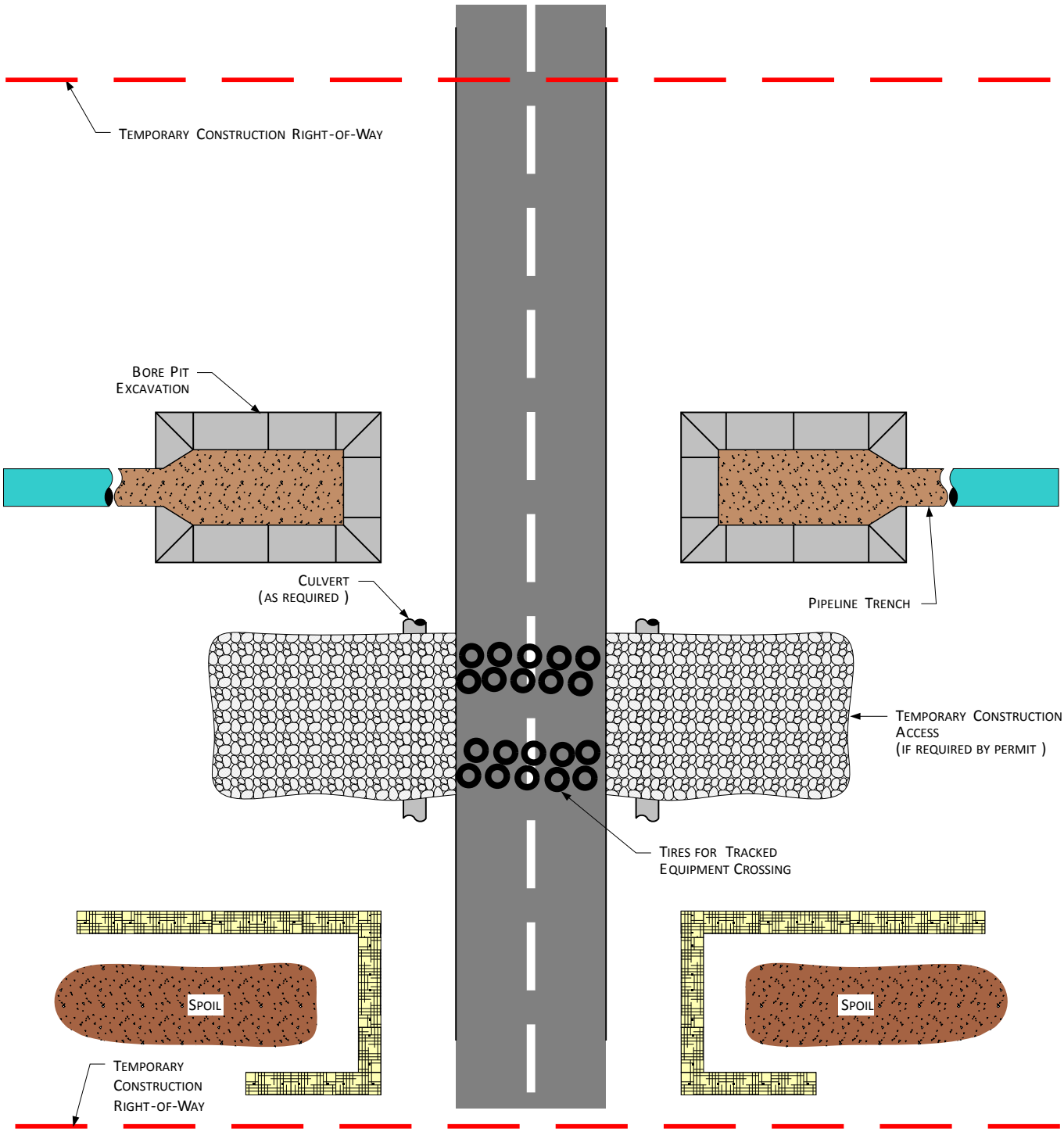


CALIBER MIDSTREAM

Figure 25

Wetland Crossing Method

ECS-25
SCALE: NTS
DATE: 5-18-2016
REVISION:



Notes

1. Procedures shown in this drawing apply to improved and county roads, and section lines.
2. Roads must be cleaned after equipment crosses and dirt placed in spoil containment areas.
3. Temporary access materials must be removed upon project completion.
4. Additional information included on other drawings or permits.
5. Construction areas located outside road ROW.

CALIBER MIDSTREAM

Figure 26
Road and Section Line
Bore Crossing

ECS-26
SCALE: NTS
DATE: 5-18-2016
REVISION: