Listed Exhibit: 9

APPENDIX J
UNANTICIPATED DISCOVERIES PLAN
CULTURAL RESOURCES, HUMAN REMAINS, PALEONTOLOGICAL RESOURCES & CONTAMINATED MEDIA

Dakota Access Pipeline Project (DAPL)

A. INTRODUCTION

Dakota Access, LLC is proposing to install approximately 1,100 miles of 12- to 30-inch pipeline from Stanley, North Dakota, crossing South Dakota and Iowa, to an existing tank hub near Patoka, Illinois crossing South Dakota and Iowa as well.

This document describes the procedures for dealing with unanticipated discoveries during the course of project construction. It is intended to:

- Maintain compliance with applicable Federal and State laws and regulations during construction of the Project;
- Describe to regulatory and review agencies the procedure the project or its representative will follow to prepare for and deal with unanticipated discoveries; and,
- Provide direction and guidance to project personnel as to the proper procedure to be followed should an unanticipated discovery occur.
- The plan will be implemented across all lands in the State of South Dakota regardless of ownership.

B. PROCEDURES FOR THE DISCOVERY OF CULTURAL RESOURCES

In the event that any member of the construction work force believes that a cultural resource discovery is encountered the following plan will be implemented:

1. All work within 100 feet both sides of the discovery will immediately stop and the Environmental Inspector (EI) will be notified. The area of work stoppage will be adequate to provide for the security, protection, and integrity of the materials. A cultural resource can be prehistoric or historic and could consist of, but not limited to, for example:
    - An accumulation of shell, burned rocks, or other subsistence related materials
    - An area of charcoal or very dark soil with artifacts
    - Stone tools, arrowheads, or dense concentrations of stone artifacts
    - A cluster of bones in association with shell, charcoal, burned rocks, or stone artifacts
    - A historic structure or assemblage of historic materials older than 50 years

Prior to construction, the EI staff across the Project will be part of a comprehensive training program with construction and environmental staff on how to identify cultural resources and the type of cultural resources that might be identified. The EI's are instructed to cordon off the area and to call a professional archaeologist within 24 hours of discovery.

2. If the EI believes that the discovery is a cultural resource, the EI will take appropriate steps to protect the discovery site, including the following:
    - Flag the buffer zone around the find spot
    - Keep workers, press, and curiosity seekers, away from the find spot
    - Tarp the find spot
    - Have an individual stay at the location to prevent further disturbance until a qualified archaeologist has arrived

    Upon discovery, the EI will notify the environmental Project Manager and/or Company Representative. Work in the immediate area will not resume until treatment of the discovery has been completed.

3. Dakota Access or its representative will arrange for discoveries on all lands to be evaluated by a qualified archaeologist in accordance with applicable regulations. A qualified archaeologist is an archaeologist who meets or exceeds the Secretary of Interior's Qualification and Standards, as outlined in 36 CFR, Part 61.

4. If the discovery is within an area of federal jurisdiction, the appropriate federal agency will be consulted. If the discovery is determined to have the potential for eligibility, the archaeologist and Dakota access will also consult with the SHPO on how best to avoid, minimize, or otherwise mitigate further impacts. Treatment measures may include mapping, photography, sample collection, or excavation safety.

5. The archaeologist will implement the appropriate treatment measure(s) and provide a report on its methods and results as required. The investigation and technical report will be performed in compliance with the Secretary of Interior's Standards and Guidelines for Archaeological Documentation (48 CFR 44734—44737); the Advisory County on Historic Preservation (ACHP) publication "Treatment of Archaeological Properties" (ACHP 1980); and follow the guidelines set forth by the South Dakota State Historic Preservation Office.

C. PROCEDURES FOR THE DISCOVERY OF HUMAN REMAINS

In the event that human remains or funerary objects are inadvertently discovered during either construction or maintenance activities, the following steps will be taken pursuant to South Dakota Codified Law Chapter 34-27-25, 34-27-28, 32-27-31:

1. The On-site manager/Contractor (EI) shall immediately halt construction activities within a 150 foot radius from the point of discovery and implement measures to protect the discovery from looting and vandalism. No digging, collecting, or moving human remains or other items shall occur after the

initial discovery. Protection measures may include the following:

- Flag the buffer zone around the find spot.
- Keep workers, press, and curiosity seekers, away from the find spot.
- Tarp the find spot.
- Prohibit photography of the find unless requested by the agency official.
- Have an individual stay at the location to prevent further disturbance until a law enforcement officer arrives.

2. The On-Site manager/Contractor (EI) shall notify law enforcement, the Federal/State Agency responsible for the project and the South Dakota State Archaeologist (State Archaeologist) within forty-eight (48) hours of the discovery.

3. The Federal/State Agency responsible for the project shall notify the South Dakota State Historic Preservation Office (SHPO), Indian tribes, and other consulting parties within forty-eight (48) hours of the discovery.

4. If local law enforcement determines that the remains are not associated with a crime, the Federal/State Agency responsible for the project shall determine if it is prudent and feasible to avoid disturbing the remains. If the Federal/State Agency in consultation with the Project Proponent/Applicant/Contractor determine that disturbance cannot be avoided, the Federal/State Agency shall consult with the State Archaeologist, SHPO, Indian tribes, and other consulting parties to determine acceptable procedures for the removal, treatment and disposition of the burial or remains. The Federal/State Agency shall ensure that the Project Proponent/Applicant/Contractor implements the plan for removal, treatment and disposition of the burial or remains as authorized by the South Dakota State Archaeologist.

5. The Federal/State Agency shall notify the Project Proponent/Applicant/Contractor that they may resume construction activities in the area of discovery upon completion of the plan authorized by the State Archaeologist.

D. PROCEDURES FOR THE DISCOVERY OF PALEONTOLOGICAL RESOURCES

In the event that any member of the construction work force believes that a paleontological resource discovery is encountered the following plan will be implemented:

1. All work within 100 feet both sides of the discovery will immediately stop and the EI will be notified. The area of work stoppage will be adequate to provide for the security, protection, and integrity of the materials. A paleontological resource would be expected to be in the form of fossils. In-situ fossils are usually found within layers of geologically old sediments and rocks where the creature lived, died, and became fossilized. However, through geologic, hydrologic, and marine activity, many fossils and parts of fossils have been carried into younger geologic areas.

2. If the EI believes that the discovery is a paleontological resource, the EI will take appropriate steps to protect the discovery site. This will include flagging the immediate area of discovery and stop work

or exclusion zone, as well as notifying the Environmental Project Manager and/or Company Representative. Work in the immediate area will not resume until treatment of the discovery has been completed.

3. The Project Environmental Manager will arrange for the discovery to be evaluated by a qualified geologist/paleontologist in accordance with applicable regulations. The geologist/paleontologist will evaluate the remains and provide recommendations for how to manage the resource.

4. If the find is on state land, the Project Environmental Manager will notify the land managing state agency and the South Dakota Geological Survey, pursuant to South Dakota's Codified Law 5-1-20, which addresses the need to obtain a permit to record, excavate, or collect paleontological resources on state land. If the find is on federal or municipal land, the Project Environmental Manager will inform the appropriate land managing agency of the find. Treatment measures may include mapping, photography, sample collection, or excavation activity. The geologist/paleontologist will implement the appropriate treatment measure(s) and provide a report on its methods and results as required.

E. PROCEDURES FOR THE DISCOVERY OF CONTAMINATED MEDIA

Indicators of possible contamination include, but are not limited to:

- Buried drums or containers, rusted or in otherwise poor condition
- Stained or otherwise discolored soil (in contrast to adjoining materials)
- Spoil material containing debris other than obvious construction material
- Chemical or hydrocarbon odors emanating from excavations
- Oily residues
- Visible sheen or other discoloration on groundwater
- Structures such as pipelines (concrete, PVC or steel) or underground storage tanks.

The EI and appropriate contractor personnel will be trained in hazard identification and worker protection and these topics will be discussed regularly in safety meetings. A desktop assessment for contaminated along the Project route indicated that contamination it not likely to be encountered during construction. In the unlikely event that contamination is encountered the following activities should take place:

1. Immediately cease construction activities within that area and notify the EI and Project Environmental Manager. Work in the immediate area will not resume until an assessment of the discovery has been completed and the Company has released the site. If safe to do so, the EI will take appropriate steps to mark (flag) off the area to identify the exclusion zone. Work in the immediate area will not resume until an assessment discovery has been completed.

2. If potentially contaminated groundwater or soil reaches (or has the potential to reach) surface waters, booms and/or absorbent materials shall be immediately deployed to contain and reduce downstream migration of the spilled material.

3. Upon notification, the Project Environmental Manager will perform or direct a hazard assessment to determine appropriate control measures to be implemented at the specific site. Activities may include sampling vapors, soil, sediments, groundwater, and/or wipe samples of materials.

4. If warranted by the assessment, the Project Environmental Manager will notify appropriate Federal, State and Local agencies.
5. Company or the designated person(s) will make appropriate notifications to regulating agencies as necessary. Upon evaluation of the sampling results, additional notifications may be made to coordinate a work plan for measures to be implemented in the contaminated area to resume activities in a safe, environmentally compliant, and effective manner. Measures may include additional personal protective equipment, segregation of contaminated media, treatment or off-site disposal of contaminated media.
6. All identification /characterization, handling, labeling, storage, manifesting, transportation, record keeping, and disposal of potentially contaminated materials shall be conducted in accordance with all applicable federal, state, and local regulations and guidance.

F. PROJECT CONTACTS

Environmental Inspector

Contact:	TBD Prior to Construction
Telephone	
Email:	
Address:	

Chief Inspector

Contact:	TBD Prior to Construction
Telephone	
Email:	
Address:	

DAPL Project Manager

Contact:	Joe Malucci
Telephone	(o) 713-989-7186 (c) 713-898-8222
Email:	Joe.Malucci@energytransfer.com
Address:	1300 Main Street, Houston, TX 77002

DAPL Project Environmental Manager

Contact:	Monica Howard
Telephone	(o) 713-989-7186 (c) 713-898-8222
Email:	Monica.howard@energytransfer.com
Address:	1300 Main Street, Houston, TX 77002

DAPL Retained Archeologist, Gray & Pape

Contact: Beth McCord
Telephone: (o) 317-541-8200
E-mail: bmccord@graypape.com
Address: 5807 North Post Road, Indianapolis, IN 46216

South Dakota State Historical Society

Contact: James K. Haug, State Archaeologist
Telephone: (605) 394-2936
E-mail: Jim.Haug@state.sd.us
Address: South Dakota State Historical Society
Archaeological Research Center
P.O. Box 1257
Rapid City, SD 57709

Contact: Katie Lamie, Repository Manager
Telephone: (605) 394-1936
E-mail: Katie.Lamie@state.sd.us
Address: South Dakota Historical Society
Archaeological Research Center
P.O. Box 1257
Rapid City, SD 57709

Contact: Paige Olson, Review and Compliance Coordinator
Telephone: (605) 773-3458
E-mail: Paige.Olson@state.sd.us
Address: South Dakota State Historical Society
State Historic Preservation Office
900 Governors Drive
Pierre, SD 57501

Contact: Amy Rubingh, Review and Compliance Archaeologist
Telephone: (605) 773-3548
E-mail: Amy.Rubingh@state.sd.us
Address: South Dakota State Historical Society
State Historic Preservation Office
900 Governors Drive
Pierre, SD 57501

South Dakota Geological Survey

Contact: Derric Iles, State Geologist
Telephone: (605) 677-5227
Email: diles@usd.edu
Address: Akeley-Lawrence Science Center
414 East Clark Street, Vermillion SD 57069

County Sherriff Department Contacts

County	Sherriff	Address	Phone	Fax
Campbell	Lacey Perman	P.O. Box 161, Mound City, SD 57646	605-955-335	605-955-3308
McPherson	David Ackerman	P.O. Box 158 Leola, SD 57456	605-439-3400	605-439-3632
Edmunds	Todd Holtz	P.O. Box Ipswich, SD 57451	605-426-6262	605-426-6257
Faulk	Kurt Hall	924 Lafoon Ave Faulton, SD 57438	605-598-6229	605-598-6620
Spink	Kevin Schurch	210 E 7th Ave, Suite 1 Redfield, SD 57469	605-472-4595	605-472-4599
Beadle	Doug Solem	455 4th St SW, Rm #100 Huron, SD 57350	605-353-8424	605-353-8427
Kingsbury	Kevin Scotting	P.O. Box 136 De Smet, SD 57231	605-854-3339	605-854-9307
Miner	Lanny Klinkhammer	P.O. Box 366 Howard, SD 57349	605-772-4501	605-772-4148
Lake	Tim Walburg	200 E Center St Madison, SD 57042	605-256-7615	605-256-7617
McCook	Mark Norris	P.O. Box 58 Salem, SD 57058	605-425-2761	605-425-3144
Minnehaha	Mike Milstead	320 W 4th St Sioux Falls, SD 57104	605-367-4300	605-367-7319
Turner	Byron Nogelmeier	P.O. Box 580 Parker, SD 57053	605-297-3225	605-297-3871
Lincoln	Dennis Johnson	128 N Main St, Suite 200 Canton, SD 57013	605-764-5651	605-764-2767

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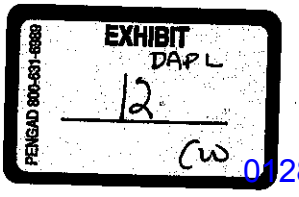


SOUTH DAKOTA
STATE HISTORICAL SOCIETY
DEPARTMENT OF TOURISM

September 8, 2015

Ms. Abby Peyton
Perennial Environmental Services, LLC
13100 Northwest Freeway, Suite 160
Houston, TX 77040

PRELIMINARY PROJECT CONSULTATION
Project: 140627002S – Dakota Access Pipeline Project in South Dakota
Location: Multiple Counties

Dear Ms. Peyton:

Thank you for the opportunity to comment on the above referenced project. The South Dakota Office of the State Historic Preservation Officer (SD SHPO) would like to provide the following comments.

On June 15, 2015, we received the five-volume report entitled "Level III Intensive Cultural Resources Survey for Dakota Access Pipeline Project for Campbell, McPherson, Edmunds, Faulk, Spink Beadle, Kingsbury, Miner, Lake, McCook, Minnehaha, Turner, and Lincoln Counties, South Dakota, June 11, 2015," prepared by Gray & Pape, Inc. The report was revised by Gray & Pape, Inc. to reflect comments made by my office. The revised five-volume report dated August 4, 2015, was received by my office on August 7, 2015. An addendum report prepared by Gray and Pape, Inc. entitled "Addendum 1: Level III Intensive Cultural Resources Survey for Dakota Access Pipeline Project for Campbell, McPherson, Edmunds, Faulk, Spink Beadle, Kingsbury, Miner, Lake, McCook, Minnehaha, Turner, and Lincoln Counties, South Dakota, August 6, 2015," was also received on August 7, 2015.

Based on the information provided, it is unclear if the proposed project is a federal undertaking as defined by 36 CFR part 800.16(y), the implementing regulations for Section 106 of the National Historic Preservation Act of 1966 (as amended), or if the project is subject to South Dakota Codified Law 1-19A-11.1.

According to the Gray & Pape, Inc. reports, the current mainline corridor does not contain any properties that are listed on the State or National Register of Historic Places (NRHP). However,

900 GOVERNORS DR • PIERRE • SD 57501 • P [605 • 773 • 3458] F [605 • 773 • 6041] • HISTORY.SD.GOV
DEPARTMENT OF TOURISM [TOURISM.SD.GOV]

a number of properties were identified during the survey. Therefore, we concur with the following recommendations.

- Properties 39CA0281, 39CA0282, 39CA0292, 39CA0293, 39CA0295, 39CA0296, 39CA0297, 39CA0298, 39CA0299, 39CA0300, 39CA2017, 39ED2007, 39SP2003, 39SP2007, 39BE0029, 39BE0090, 39BE0095, 39BE0094, 39BE0120, BE00000180, 39KB2003, 39MH2003, 39LN0021, 39LN2007 should be considered eligible for listing in the National Register of Historic Places (NRHP).

- Properties 39CA0220, 39CA0294, 39CA0301, MP00000105, 39ED0060, 39ED0061, 39ED0062, 39ED0063, 39FK0109, 39FK0110, 39FK0111, 39FK0112, 39FK0113, 39FK0114, 39FK0115, FK00000080, 39SP0277, SP00000380, 39BE0171, 39BE0172, 39BE0173, 39BE0174, 39BE0175, 39BE0176, 39BE0177, 39BE0178, 39BE0179, 39BE0180, 39BE0181, 39BE0182, BE10600001-4, 39KB0039, 39KB0040, 39KB0041, 39KB0042, 39KB0043, 39KB0044, 39KB0045, 39KB0046, 39MN0026, 39MN0027, 39MN0028, 39MN0029, MN00400001-3, 39LK0077, 39LK0078, 39LK0079, 39LK0080, 39LK0081, 39MH0323, 39MH0324, 39MH0325, 39MH0326, 39MH0327, and 39MH0328 should be considered not eligible for listing in the NRHP.

- Properties 39CA0085, 39ED0053 and 39BE0085 should be considered unevaluated for listing in the NRHP.

This letter does not relieve federal agencies of their statutory obligations to fulfill the requirement of Section 106, including consultation with Indian tribes. More information concerning Section 106 and the National Historic Preservation Act is available on the Advisory Council on Historic Preservation's website at www.achp.gov or at history.sd.gov/Preservation.

Should you require any additional information, please do not hesitate to contact Paige Olson at Paige.Olson@state.sd.us or (605) 773-6004.

Sincerely,

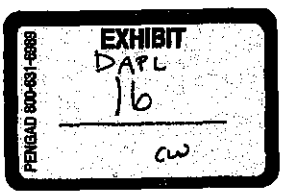
Jay D. Vogt
State Historic Preservation Officer

P. Olson

Paige Olson
Review and Compliance Coordinator
cc: Monica Howard, Energy Transfer

Darren Kearney, South Dakota Public Utility Commission
Jane Watts, Archaeological Research Center

Listed Exhibit: 16



Abby Peyton

From: Olson, Paige <Paige.Olson@state.sd.us>
Sent: Friday, June 05, 2015 2:14 PM
To: 'Beth McCord'
Cc: Abby Peyton; Haug, Jim; Fosha, Mike
Subject: RE: Areas with buried site potential

Thank you for the opportunity to review the proposed methods for identifying deeply buried deposits. I have no concerns with the proposed methods provided that the trenching matches or exceeds the depth of the pipeline.

Thank you,

Paige Olson
Review and Compliance Coordinator
South Dakota State Historical Society
900 Governors Drive
Pierre, SD 57501
(605) 773-6004

From: Beth McCord [mailto:bmccord@graypape.com]
Sent: Wednesday, June 03, 2015 2:23 PM
To: Olson, Paige
Cc: Abby Peyton
Subject: RE: Areas with buried site potential

Paige,

Attached is the plan for your review. Please let me know if you need any additional information or have questions.

Thanks,

Beth McCord
Senior Principal Investigator, Archaeology
Indiana Branch Manager

From: Olson, Paige [mailto:Paige.Olson@state.sd.us]
Sent: Wednesday, June 03, 2015 9:37 AM
To: Beth McCord
Subject: RE: Areas with buried site potential

Hi Beth,

It really depends on when you submit the methods. I will be out of the office next Tuesday – Friday. But in general the review would probably take a day or two.

Thanks,
Paige

From: Beth McCord [mailto:bmccord@graypape.com]
Sent: Tuesday, June 02, 2015 3:28 PM
To: Olson, Paige
Subject: Areas with buried site potential

Paige,

As we mentioned in the management summary for the DAPL project we have a couple of stream crossings that have low energy deposition and have the potential for buried cultural deposits. Currently, the streams will not be avoided by HDD. In the scope of work for the Level III survey we submitted to you in August, we had noted that we would submit a work plan to conduct the geoarchaeological assessment for your review. We believe the best method to identify cultural deposits will be a few backhoe trenches at each location. I was wondering when we submit our methods how long it would take you to review the plan. Could you let me know?

Thanks,

Beth McCord
Senior Principal Investigator, Archaeology
Indiana Branch Manager

GRAY & PAPE, INC.

5807 North Post Road
Indianapolis, IN 46216
Phone: 317.541.8200
Cell: 513.484.8156

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION OF DAKOTA ACCESS, LLC FOR AN ENERGY FACILITY PERMIT TO CONSTRUCT THE DAKOTA ACCESS PIPELINE PROJECT	))))))	HP14-002

DIRECT TESTIMONY OF

JOEY MAHMOUD

ON BEHALF OF

DAKOTA ACCESS, LLC

DAKOTA ACCESS EXHIBIT 2

July 6, 2015

Q. Please state your name, present position and business address.

A. My name is Joey Mahmoud. I am the Vice President of Engineering of Dakota Access, LLC ("Dakota Access"), the Applicant in this proceeding, and Senior Vice President of Engineering of Energy Transfer Partners, L.P. ("ETP"). My business address is 1300 Main Street, Houston, Texas, 77002.

Q. What are your duties and responsibilities as Vice President of Engineering of Dakota Access and Senior Vice President of Engineering of ETP?

A. For Dakota Access, I am responsible for the overall technical development and execution of the Dakota Access Pipeline Project (the "Project") as it relates to non-commercial items and I am ultimately responsible for the installation and preparation of the Project to go into operations. This includes the day-to-day management of the technical professionals and experts to accurately and timely execute the Project from concept to design to construction and ultimately to operations of the facilities.

As Senior Vice President of Engineering for ETP, my role is similar in scope, but broader in concept. My responsibilities include the non-commercial development and execution of ETP's larger or more complex projects from concept to operations.

Q. Please describe your educational and professional background.

A. I received a Bachelors of Science in Animal Science from Texas A&M University in 1993 and a Masters of Agriculture in Rangeland Ecology and Management (Ecosystem Management) with an emphasis in Rangeland and Wetland Ecology Management from Texas A&M University in 1996. My professional experience is centered on the transportation and logistics of moving energy related products across the United States and project management. Throughout my career, my emphasis has been in project management and execution, and

leadership of projects for successful execution and deployment of development capital into energy infrastructure projects.

When I first began at Energy Transfer, I was Vice President of Regulated Projects, then Vice President of Engineering and now Sr. Vice President of Engineering Major Projects. In each of these positions, my responsibilities were for the development and execution of capital projects from concept or inception to operations.

Prior to Dakota Access and Energy Transfer, I worked for an engineering and environmental consulting firm called PBS&J where my responsibilities included the routing and siting of energy infrastructure facilities and projects and the permitting and construction of those facilities and running a business unit within the consulting firm titled the "Energy Division." My tasks were to manage, develop, and execute the energy related projects the firm had been hired to execute.

Following PBS&J, I worked at Cheniere Energy where I was the Vice President of Regulatory and Government Affairs. I was the corporate officer responsible for the day to day execution of the company's regulatory and environmental programs, compliance and project oversight and execution. Part of my responsibilities also included execution of the company's special projects and philanthropy program.

Q. Have you previously submitted or prepared testimony in this proceeding in South Dakota?

A. No.

Q. What is the purpose of your direct testimony?

A. I am testifying in support of Dakota Access's request for a permit pursuant to Energy Conversion and Transmission Facility Act authorizing Dakota Access to construct, install,

operate, and maintain the South Dakota portion of the Dakota Access Pipeline, to be comprised of approximately 274.5 miles of new 30-inch outside diameter crude oil pipeline from a point near Herreid, South Dakota, and extending southeasterly for approximately 274.5 miles through the state of South Dakota to ultimately terminate at Patoka, Illinois, where the pipeline will connect with several of the existing tank farms located near Patoka, Illinois.

My testimony will include (i) a description of the corporate organization of Dakota Access and its affiliates; and (ii) Dakota Access's request for authority to construct the Project under SDCL 49-41B and ARSD 20:10:22 which includes, without limitation the purpose of the facility, the estimated cost of the facility, demand for the facility, and to provide general information regarding the proposed site and the process we went through to select the site. In addition, I will testify regarding the potential impact this facility will have on the state and communities through which it passes.

Q. **Can you provide a description of the corporate organization of Dakota Access and its affiliates?**

A. Dakota Access, LLC is a Delaware limited liability company with its principal offices at 3738 Oak Lawn Avenue, Dallas, Texas 75219. The membership interest of Dakota Access, LLC is owned 75 percent by Dakota Access Holdings, LLC and 25 percent by Phillips 66 DAPL Holdings LLC.

Dakota Access Holdings, LLC is owned 100 percent by Energy Transfer Partners, L.P. ("ETP"), a master limited partnership publicly traded on the New York Stock Exchange ("NYSE"). Energy Transfer Equity, L.P. ("ETE"), also a master limited partnership publicly traded on the NYSE, indirectly owns the general partner of ETP and certain of that partnership's limited partner units. ETP owns the general partner of Sunoco Logistics Partners,

L.P. ("SXL") and certain of its limited partner units. (ETE and ETP are together referred to herein as "Energy Transfer"). Energy Transfer maintains its corporate headquarters at 3738 Oak Lawn Avenue, Dallas, Texas 75219.

ETP and SXL have reached an agreement in principle for the transfer to SXL of an indirect 30 percent interest in Dakota Access, LLC.

Phillips 66 DAPL Holdings LLC is owned 20 percent each by Phillips 66 DE Holdings 20A LLC, Phillips 66 DE Holdings 20B LLC, Phillips 66 DE Holdings 20C LLC, Phillips 66 DE Holdings 20D LLC, and Phillips 66 DE Holdings Primary LLC. The five Phillips 66 entities are owned 100 percent by Phillips 66 Project Development Inc. Phillips 66 Project Development Inc. is 100 percent owned by Phillips 66 Company. Phillips 66 Company is 100 percent owned by Phillips 66, a Delaware corporation. Phillips 66 maintains its corporate headquarters at 3010 Briarpark Drive, Houston, Texas 77042.

Q. Will the pipeline be operated by Dakota Access, LLC?

A. The proposed pipeline project will be owned by Dakota Access, LLC and operated by DAPL-ETCO Operations Management, LLC; and ultimately will be operated day-to-day under an operating agreement by our crude oil pipeline affiliate Sunoco Logistics. Sunoco Logistics currently operates the majority of the Energy Transfer family of assets crude oil pipelines. This arrangement has been made to take advantage of and maximize our ability to seamlessly integrate this new asset into our company umbrella to maximize the pipeline safety considerations, operational consistency and overall cost efficiency. Dakota Access will rely upon Sunoco's existing crude oil operating infrastructure such as the back-end accounting systems, control room, operating integrity programs as well as rely upon Sunoco's experience and overall policies and procedures.

Q. Please give us an overview of the proposed pipeline.

A. Dakota Access, LLC (Dakota Access), is proposing to construct the Dakota Access Pipeline Project (Project). DAPL-ETCO Operations Management, LLC will operate the Project. Sunoco Pipeline L. P. has been appointed as operator of the Dakota Access Pipeline on behalf of DAPL-ETCO Operations Management, LLC. The overall proposed Project is a 1,172.53-mile-long, 12-inch to 30-inch diameter pipeline that will connect the rapidly expanding Bakken and Three Forks production areas in North Dakota to existing crude infrastructure in Illinois. The project originates in the northwest portion of North Dakota and traverses southeast through South Dakota, Iowa, and Illinois and terminates at the existing Patoka, Illinois hub. The pipeline is proposed to transport approximately 450,000 barrels per day (bpd) initially, with an anticipated capacity of 570,000 bpd or more. The Project's purpose is to move an economical abundant reliable domestic supply of crude oil from the Bakken and Three Forks production area in North Dakota to a crude oil market hub located near Patoka, Illinois. From the Patoka hub, the crude oil will be transported by other pipelines to refineries located in the Midwest and the Gulf Coast via existing and proposed pipeline infrastructure to further the U.S. goal of energy independence. Approximately 274.5 miles of the 1,172.53-mile-long pipeline will be constructed within South Dakota, crossing 13 counties in the eastern half of the state. The Project enters South Dakota in Campbell County approximately 17 miles east of the Missouri River, and continues southeast through McPherson, Edmunds, Faulk, Spink, Beadle, Kingsbury, Miner, Lake, McCook, Minnehaha, Turner, and Lincoln counties. The Project crosses the Big Sioux River approximately 14 miles south of Sioux Falls, and continues in a southeast direction through Iowa. One pump station is located within South Dakota, approximately seven miles southeast of Redfield in Spink County.

Q. What is the estimated cost of the facility?

A. The cost of constructing the entire 1,172.53-mile-long pipeline beginning in North Dakota, going through South Dakota and Iowa, and terminating in Illinois is estimated to be approximately $3.8 billion. Construction of the 274.5-miles of pipeline and facilities within South Dakota will cost approximately $820 million.

Q. Can you describe for us the demand for the facility?

A. Dakota Access has secured binding long-term transportation and deficiency contracts from multiple committed shippers to support development of the Dakota Access Pipeline with a crude oil transportation capacity of approximately 450,000 bpd, with ninety percent (90%) of the transportation capacity subscribed by those committed shippers and the remaining ten percent (10%) of the transportation capacity reserved for walk-up shippers. Transportation service on the Dakota Access Pipeline shall be provided by Dakota Access pursuant to the Interstate Commerce Act and in accordance with the rules and regulations of the Federal Energy Regulatory Commission for common carrier crude oil pipeline transportation service thereunder. Subscriptions from committed shippers were obtained by Dakota Access in connection with an initial open season that ran from March 12 to May 23, 2014, and an expansion open season that commenced on September 23, 2014, and concluded in mid-December of 2014.

Q. Where in South Dakota is the pipeline expected to be developed?

A. The Project originates in North Dakota and enters South Dakota in Campbell County approximately 17 miles east of the Missouri River. A summary of the Project facilities in South Dakota is outlined in Table 11.0-1. The Project exits South Dakota as it crosses the Big Sioux River approximately 14 miles south of Sioux Falls, and continues in a southeast direction through Iowa. Approximately 274.5 miles of the 1,172.53-mile-long pipeline and one pump

station will be constructed within South Dakota. Additionally, Dakota Access will construct aboveground appurtenances including 40 mainline valves (MLVs) and three pig launcher and receiver (L/R) facilities. Contractor/staging yard (s) will also be required for the project.

Pipeline Crossing Length (miles) / Pump Station Impact Area (acres)	**County**
29.17	Campbell
6.64	McPherson
36.17	Edmunds
27.88	Faulk
36.06	*Spink
30.35	Beadle
21.97	Kingsbury
14.26	Miner
18.61	Lake
1.72	McCook
26.16	Minnehaha
2.15	Turner
23.51	Lincoln
36.06	Spink

Construction of the new pipeline will require a typical construction ROW width of 125 feet in uplands, 100 feet in non-forested wetlands, 85 feet in forested areas (wetlands and uplands), and up to 150 feet in agricultural areas. Following construction, a 50-foot wide permanent easement will be retained along the pipeline.

Where necessary, Dakota Access will utilize additional temporary workspace (ATWS) outside of the construction ROW to facilitate specialized construction procedures, such as horizontal directional drills (HDDs); railroad, road, wetland, waterbody, and foreign utility line crossings; tie-ins with existing pipeline facilities; areas with steep side slopes; and pipeline crossovers. These ATWS will be allowed to revert to pre-existing conditions following construction activities, so there will be no permanent impacts on these areas.

Dakota Access will utilize existing public and private roads to access the pipeline ROW and aboveground facilities to the extent practicable. Existing roads utilized will include paved, gravel, or pasture roads, and other conveyances. Some roads will require modification or improvement to facilitate safe access for construction equipment and personnel. The Project may require construction of new temporary and permanent roads to provide access to the new pipeline both during construction and for future pipeline maintenance activities. Access roads have not been thoroughly defined during this early design phase. Dakota Access will seek and enter into road use agreements with all affected units of government.

Q. How was the site for the pipeline selected?

A. Dakota Access utilized a sophisticated and proprietary Geographic Information System (GIS) based routing program to determine the preferred pipeline route based on multiple publicly available and purchased datasets. Datasets utilized during the Project routing analysis included engineering (e.g., existing pipelines, railroads, karst, and power lines, etc.), environmental (e.g., critical habitat, fault lines, state parks, national forests, brownfields, national registry of historic places, etc.), and land (e.g., dams, airports, cemeteries, schools, mining, and military installations, etc.). Each of these datasets were weighted based on the desire to co-locate with certain features (low values) and the risk of crossing, or desire to avoid others (higher the risk,

the higher the value), while minimizing overall length of the route. The GIS program utilized the weighted datasets to produce the preferred baseline route. For example, the existing pipelines dataset was assigned the lowest value so that the routing tool followed existing pipelines to the extent possible to minimize potential impacts. An example of a high weighted feature is the national parks dataset; therefore the GIS routing program excluded any national parks from the preferred pipeline route to avoid impacts to these federal lands.

The baseline centerline route was the output of the GIS routing analysis that was completed during the fatal flaws phase of the Project, and the basis of further investigation. As the Project moved into the design phase, coordination with agencies within states crossed by the Project advanced, survey data collection commenced, landowners were engaged, and additional datasets were collected. These more focused datasets were then utilized to incorporate reroutes as needed to optimize the route.

The proposed pipeline route has been modified in multiple locations for constructability issues and various other reasons including avoidance of Well Head Protection/HCAs, U.S. Fish and Wildlife Service (USFWS) easements, environmental features such as wetlands and waterbodies, cultural resource sites, incompatible land uses (e.g., recently expanded quarries), home/farm sites, buildings, irrigation systems, power poles/towers and other structures, trees planted for windbreaks, and property corners. Route modifications were made through a process that included detailed review of recent aerial imagery, actual site visits, the existing datasets, and helicopter reconnaissance as warranted.

Q. How does the project categorize route modification?

There are three basic categories of route modifications including, realignments, minor reroutes, and major reroutes.

Realignments are small changes in the pipeline route resulting in a change in centerline location of less than 150 feet. Realignments are fully within the 400-foot environmental/cultural survey corridor and do not require additional survey efforts if surveys were already complete at the time of realignment. To date, there have been a total of 92 realignments constituting a total length of 35.6 miles of route modification.

Minor reroutes are changes in the pipeline route of greater than 150 feet from the original centerline and therefore require some additional environmental/cultural survey coverage if surveys were completed prior to development of the reroute. Minor reroutes are relatively short and typically do not involve new landowners. There have been a total of 37 minor reroutes with a total length of 28.0 miles.

Major reroutes are more extensive route modifications over many miles and involving multiple new landowners. Major reroutes typically require additional environmental/cultural survey coverage. Presently, there has been three major reroutes with a total length of 55.1 miles. The two most recent reroutes, due to identification late in the route development process are depicted in the maps and tables, but are not incorporated into the Project MPs. The Spink County reroute is identified with an "A" before the MPs, while the Turner and Lincoln counties reroute is identified with a "B". At this point in time, all reroutes depicted in Exhibit A are considered the proposed route.

Q. How would you describe your assessment of the proposed route?

A. The currently proposed route most closely meets the objectives of the Project, while minimizing potential impacts to the environment and maintaining the health and safety of the public. Additional route modifications will continue through permitting and land acquisition processes to further reduce environmental impacts and reduce the need for eminent domain.

Q. Have you assessed the potential impacts of the facility on the community?

A. Yes. The following information identifies the effects of construction and operation of the Project on the community, taxes, agriculture, population, transportation, and cultural resources. The following discussion includes potential impacts on commercial and industrial sectors, housing, land values, labor market, health facilities, energy, sewage and water, solid waste management facilities, fire protection, law enforcement, recreational facilities, schools, transportation facilities, and other community and government facilities or services.

Q. What are the expected impacts to the commercial and industrial sectors?

A. The local economies are anticipated to benefit from temporary hiring of local employees and from the influx of non-local construction workers. The South Dakota portion of the Project area is anticipated to cost $820 million, approximately $486 million of this total (59 percent) will result in direct spending in the South Dakota economy. Economic benefits to local commercial businesses are anticipated to increase through the sales of food, lodging, services, and goods that will be generated by the temporary non-local work force. Dakota Access will purchase goods, including construction materials and other supplies for the Project from local businesses. Local purchases for construction will include consumables, fuel, equipment maintenance, equipment rental, space leasing, miscellaneous construction-related materials such as office supplies, and some medical/dental needs. The direct spending within the state will cause indirect and induced spending of $168 million and $186 million. The total impact on the South Dakota economy will be $836 million increase in production and sales.

The Project will not result in operation impacts to the commercial sector. Construction and operation impacts to the industrial sector are not anticipated.

Q. What is the expected impact to the housing market?

A. It is expected that most non-local Project workers will use temporary housing, such as rental units, hotels, motels, campgrounds, and recreational vehicle parks. In the South Dakota counties that the pipeline corridor crosses, there are approximately 2,500 available rental units, 4,700 motel rooms, and 1,900 campground/recreational vehicle spaces. These accommodations are all within approximately 10 to 40 miles of the pipeline corridor. During the construction months between February and August 2016, it is estimated that up to approximately 1,448 pipeline construction personnel will be in South Dakota. It is anticipated that most of the temporary workers will seek housing in the more populated, service-oriented towns located within a reasonable commuting distance to the work site.

Q. Will Dakota Access use local labor?

A. It is anticipated that 10-12 permanent employees will be hired in South Dakota. Approximately 724 construction personnel (Dakota Access employees, contractor employees, construction inspection staff, and environmental inspection staff) are anticipated to be associated with each construction spread. The current construction plan involves two large construction spreads in 2016 in South Dakota, for a total of 1,448 construction personnel. Project construction will result in more than 7,100 additional job-years of employment with an approximate $303 million increase in labor income. Dakota Access expects that its construction contractors will hire temporary construction personnel from the local communities where possible. It is estimated that up to 50 percent of the total construction work force could be hired locally, with the remaining portion consisting of non-local personnel.

The net economic effect on local communities should be positive for the duration of the construction period. Construction of the Project will result in short-term benefits to the local communities.

Q. What do you anticipate the impacts will be to health facilities?

A. Local healthcare facilities will provide healthcare services to Dakota Access workers during the construction and operation phases of the Project. Dakota Access' health and safety policies and procedures should limit the utilization of local health facilities during the temporary influx of non-local construction workers during Project construction. Due to the limited number of permanent employees required for operations, no effect on health services and facilities are anticipated during operation of the Project.

Q. What will be the impact on local energy facilities?

A. Existing (hotels, offices, etc.) and portable facilities (along the ROW) and the local communities should not see any impact on their public utilities as a result of the Project. No significant effects from operation of the Project are anticipated.

Q. What will be the impact on local sewage and water facilities?

A. Construction of the Project will generate non-hazardous pipeline construction wastes including human waste, trash, pipe banding and spacers, waste from coating products, welding rods, timber skids, cleared vegetation, stumps, rock and all other miscellaneous construction debris. All waste, which contains (or at any time contained) oil, grease, solvents, or other petroleum products will be segregated for handling and disposed of in accordance with federal and state regulations.

Q. Does the project anticipate impacts to solid waste management facilities?

A. All trash will be removed from the construction ROW on a daily basis unless otherwise approved or directed by Dakota Access. Minor vegetation, rock and other natural debris will be removed from the construction ROW by the completion of clean-up. All trash and wastes will be removed from every construction area when work is completed at each location. All waste

materials will be disposed at licensed waste disposal facilities.

All drill cuttings and drilling mud will be disposed at an approved location. Disposal options may include spreading over the construction ROW in an upland location approved by Dakota Access, hauling to an approved licensed landfill, or other site approved by Dakota Access and in accordance with applicable regulations. Human wastes will be handled and disposed of exclusively by means of portable self-contained toilets during all construction operations. Wastes from these units shall be collected by a licensed contractor for disposal only at licensed and approved facilities.

Due to the above reasons, significant impacts to solid waste management during construction are not anticipated. In addition, solid waste operational impacts associated with this Project are not anticipated.

Q. What are the expected impacts from construction and operation to fire protection and law enforcement?

A. Law enforcement agencies in the communities adjacent to the Project should not experience a significant impact from the pipeline workers. All employees and contractors must abide by all federal, state and local laws. If any infractions occur, the employees or contractors will be subject to termination.

Dakota Access will work with the local law enforcement, fire departments, and emergency medical services to coordinate effective emergency response.

Dakota Access will utilize employees and contractors as emergency responders within its initial response efforts in the event of a pipeline spill. Dakota Access will be consistent with industry practice and in compliance with applicable regulations relating to spill personnel. In the unlikely event of a spill, the usual role of local emergency responders is to notify community members,

direct people away from the hazard area, and address potential impacts to the community such as temporary road closings. Local emergency responders typically are trained and capable to execute the roles described above without any additional training or specialized equipment. Dakota Access will proactively work with emergency response agencies to provide pipeline awareness education and other support. Dakota Access will implement a comprehensive public awareness program, consistent with all company pipelines in the U.S. This program will commence in advance of the Project in-service date (estimated as October 2016). The purpose of the public awareness program is to inform key members of the public of the location of Dakota Access facilities and activities to protect the public from injury, what to do if an emergency occurred, protect or minimize effects on the environment, protect Dakota Access facilities from damage by the public, and provide an opportunity for on-going public awareness.

Dakota Access' public awareness program follows National Preparedness for Response Exercise Program Guidelines developed by the U.S. Coast Guard and adopted by the Pipeline and Hazardous Materials Safety Administration (PHMSA), the Bureau of Ocean Energy Management, Regulation and Enforcement, and the EPA. Participation in this program ensures that Dakota Access meets all federal requirements mandated by Oil Pollution Act of 1990.

Q. What will be the expected impacts to recreation from construction and operation?

A. South Dakota has extensive recreational opportunities including fishing, boating, hunting, hiking, camping, biking, and bird watching. The most heavily used areas will most likely occur where public access exists. The Project does not cross any federal or state owned wildlife lands; however, construction of the Project may temporarily limit access to certain private areas used for recreation. Construction of the Project may limit access to these walk-in areas and private lands. In addition, hunting opportunities may be interrupted within the vicinity of construction

activities; however, possible access and hunting opportunity impacts will be temporary. No impacts associated with the operation of the Project are anticipated. Hunting is compatible with normal operation of the pipeline.

No impacts or limited access to any fishing or boating areas are anticipated as result of construction or operation of the Project. In the unlikely event an impact should occur, it will be short-term and infrequent, therefore impacts to fishing and boating is not anticipated.

Q. Please describe for us the expected effect on transportation in the areas of construction and operation?

A. Transportation routes to be utilized during construction will be established through consultation with state and local highway agencies as necessary. Those contacts will begin soon and continue through construction. Dakota Access expects to enter into road use agreements with all affected state and local highway agencies.

Dakota Access will seek to have the Commission set a road bond in accordance with SDCL 49-41B-38.

The Department of Commerce and Regulation, Division of Highway Patrol has jurisdiction over the federal and state highway system in South Dakota, and is responsible for issuing transportation-related permits to accommodate construction vehicles and traffic. Dakota Access has initiated contacts with local permitting authorities for the purpose of establishing timelines for road permit approvals.

During construction, traffic on highways and secondary roads will be increased due to the construction activities and due to the influx of construction workers. Hauling of line pipe and most construction equipment will be within state road and bridge weight limits. There will be isolated hauling of equipment that will require special permits for weight and/or width. There

may be an increased temporary demand for permits for vehicle load and width limits. The primary impact will be deterioration of gravel or stone surfaced roads requiring grading and/or replenishment of the surface materials. Dakota Access expects to be responsible for repairing damage to roads and restoring them to pre-construction condition or as agreements with the affected agencies dictate.

Q. Please describe for us your expectations in terms of taxes due the state and local governments?

A. SDCL Chapters 10-13 requires that the Department of Revenue annually determine the assessed value of the pipeline for ad valorem property tax purposes. Assessed value must be determined using the cost, market, and income approaches to appraisal per SDCL Chapter 10-37-9.1.

The increased economic activity that results during construction of the pipeline will generate additional sales, use, gross receipts, and lodging taxes of approximately $36 million for state government, plus $3 million for local governments. Once the pipeline goes into operation South Dakota State and local governments will realize ongoing annual sales, use, and gross receipts of about $197,000. Also, during the first full year of operation the pipeline will generate an estimated $14 million in new property taxes for local governments.

Q. Can you describe for us the forecast of the pipeline's impacts on agricultural?

A. Impacts to pastureland and rangeland areas will result from temporarily clearing vegetation in the ROW. These areas are anticipated to recover in one to three growing seasons after construction is complete. Long-term or permanent impacts are not anticipated, except at aboveground facility locations that will be fenced in and removed from current use. Rangeland may be affected during construction by restrictions on livestock movement across

construction areas. Once construction is complete and the ROW has been restored, grazing and livestock movement over the permanent ROW may resume. Landowners will be compensated for the temporary loss of land use. Grazing practices should return to normal after vegetation is re-established, therefore permanent impacts are not anticipated.

Access to and work on pastureland and rangeland will be in accordance with all easement agreements and applicable permits and regulations.

Permanent impacts on agricultural production are not anticipated since the pipeline will be buried deep enough to allow continued use of the land. Agricultural production across the permanent ROW will be allowed to resume following final clean-up of pipeline construction. Dakota Access will restore all lands equivalent to adjacent off-ROW lands and will provide compensation for crop loss, diminished productivity, and other damages to farmland.

Reclamation and revegetation of croplands impacted by Project construction will be in accordance with applicable easement agreements. Land will be recontoured to pre-existing conditions as practical and disturbed structures, ditches, bridges, culverts, fences, and slopes will be restored. Measures within the AIMP (Exhibit D) will be implemented to minimize potential impacts to agricultural areas.

Access to and work on croplands will be in accordance with all applicable permits and regulations.

Q. Please describe your forecast of the impacts on South Dakota's population?

A. Approximately 1,448 construction personnel at peak construction are anticipated for the pipeline construction spreads in South Dakota. The Project construction period will be relatively short in any given area and most non-local workers will not be accompanied by their families during their employment, therefore should not have impact on local population.

During construction of the Project, there is likely to be a positive impact on income with an estimated $303 million increase in labor income. Once the pipeline has been built, the yearly operations and maintenance spending will add 12 permanent jobs, approximately $2 million in labor income, and approximately $4 million in additional production and sales to the South Dakota economy.

During operations, the small number of potential permanent jobs suggests that the Project will not have long-term impact on income, occupational distribution, or cohesion of the local communities.

Q. Please describe your thoughts on pipeline decommissioning.

A. Sections 20:10:22:33.01 and 20:10:22:33.02 are not applicable to this Project application. However, if/when decommissioning is necessary it will be done pursuant to applicable federal and state laws at the time of decommissioning.

Q. Does this conclude your testimony?

A. Yes.

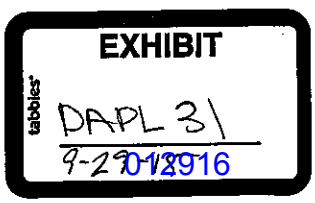
Dated this _____ day of July, 2015

_____

Joey Mahmoud

Chuck Frey

Direct Testimony



BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION OF DAKOTA ACCESS, LLC FOR AN ENERGY FACILITY PERMIT TO CONSTRUCT THE DAKOTA ACCESS PIPELINE PROJECT	))))))	HP14-002

DIRECT TESTIMONY OF

CHUCK FREY

ON BEHALF OF

DAKOTA ACCESS, LLC

DAKOTA ACCESS EXHIBIT 4

July 6, 2015

Q. Please state your name and business address for the record.

A. My name is Chuck Frey. I am employed by Energy Transfer Partners and my business address is 1300 Main St, Houston, TX. 77002.

Q. What is your position with Dakota Access, LLC ("Dakota Access")?

A. I am the Vice President of Engineering.

Q. Please briefly describe your educational experience.

A. I have a Bachelor of Science Degree in Civil Engineering from Texas Tech University.

Q. Please describe your duties with Dakota Access.

A. I am responsible for the engineering and engineering related work activities for Dakota Access.

Q. Which sections of the application are you responsible for?

A. I am responsible for sections: 10. Demand for the facility; 11. General Site Description; 37. Standards of Construction; 38. Line Description; 38.1. Design Capacity; 38.3. Technical Specifications; 38.4.Compressor Stations; and, 38.5. Storage Facilities.

Q. Describe the demand for the facility.

A. Dakota Access has secured binding long-term transportation and deficiency contracts from multiple committed shippers to support development of the Dakota Access Pipeline with a crude oil transportation capacity of approximately 450,000 bpd, with ninety percent (90%) of the transportation capacity subscribed by those committed shippers and the remaining ten percent (10%) of the transportation capacity reserved for walk-up shippers. Dakota Access Pipeline's crude oil transportation capacity can be expanded to approximately 570,000 bpd if transportation demand increases. Transportation service on the Dakota Access Pipeline shall be provided by Dakota Access pursuant to the Interstate Commerce Act and in accordance with the rules and

regulations of the Federal Energy Regulatory Commission for common carrier crude oil pipeline transportation service thereunder. Subscriptions from committed shippers were obtained by Dakota Access in connection with an initial open season that ran from March 12 to May 23, 2014, and an expansion open season that commenced on September 23, 2014, and concluded in mid-December of 2014.

Q. Provide a general description of where the facility is located in South Dakota.

A. The Project originates in North Dakota and enters South Dakota in Campbell County approximately 17 miles east of the Missouri River. A summary of the Project facilities in South Dakota is outlined in Table 11.0-1 below. The Project exits South Dakota as it crosses the Big Sioux River approximately 14 miles south of Sioux Falls, and continues in a southeast direction through Iowa. Approximately 274.65 miles of the 1,169-mile-long pipeline and one pump station will be constructed within South Dakota. Additionally, Dakota Access will construct aboveground appurtenances including 40 mainline valves (MLVs) and three pig launcher and receiver (L/R) facilities.

Pipeline Crossing Length (miles) / Pump Station Impact Area (acres)	**County**
29.17	Campbell
6.64	McPherson
36.17	Edmunds
27.88	Faulk
36.06	*Spink
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18.61	Lake	40
1.72	McCook	41
26.16	Minnehaha	42
2.15	Turner	43
23.51	Lincoln	44
36.06	Spink	45
		46

47 **Q. Describe all above ground facility present along the pipeline route.**

48 A. There are three types of above ground facilities:

49 Pump Station: The pump station is an above ground facility. The pump station is planned to be
50 located in southwestern Spink County, approximately seven miles southeast Redfield, South
51 Dakota. The pump station will be fenced and contain three pumps driven by electric motors, an
52 electrical and controls building, electrical substation, a surge tank with a secondary containment
53 dike, a communications tower, and parking area for station personnel. Design and construction of
54 the pump station will meet the requirements of the National Electric Code and American
55 Petroleum Institute (API) 500 and USDOT regulations at 49 CFR Part 195. Dakota Access will
56 purchase electricity for the pump station from the incumbent provider. The pump station will be
57 fully designed for remote, unmanned operation via the Pipeline Control Center or local
58 operation.

59 The pipe entering and exiting the pump station will be located underground; however, some of
60 the piping within the pump station yard (after entering and prior to exiting the pump station

facilities) will be aboveground.

Main Line Valves (MLV's): Dakota Access plans to install 40 MLVs along the route in South Dakota. Approximate locations for these valves are shown in the route mapping presented in Exhibits A2, A3, and A4. The MLVs will be constructed within the 50-foot permanently maintained ROW, and be approximately 75-feet-long and 50-feet-wide. These valve sites will be located within an easement obtained from landowners. The spacing intervals between the MLVs along the ROW are based upon the location of the high consequence areas (HCAs), DOT requirements and permit requirements. All valves will have remote actuators so that in the unlikely event of an emergency, these valves can be quickly activated from the Pipeline Control Center to isolate sections of the pipeline to minimize environmental impacts. The valves will also be designed to allow for local operation.

Launcher/Receivers: All pipeline segments will allow the passage of internal inspection devices, which are capable of detecting internal and external anomalies in the pipe such as corrosion, dents, and gouges. Internal inspection of pipelines has been largely responsible for reducing pipeline incident frequencies over the past decade. Pig L/Rs are designed to launch and receive these internal inspection devices.

All pig L/Rs and MLVs will be above-ground fabricated settings which will have a design factor of 0.5 and a pipe wall thickness of 0.625 inch (X-70). The L/Rs will be located along the Project as identified in Exhibits A2, A3, and A4.

Q. What is the design and construction standard by which Dakota Access will be built?

A. The Project is being designed according to USDOT regulations at 49 CFR Part 195, Transportation of Hazardous Liquids by Pipeline; the final design and construction will meet or exceed all applicable standards.

The entire pipeline will have a design factor of 0.72. The pipeline will have a nominal 30-inch diameter. Pipe material grade will be X-70 and comply with API 5L-PSL2. Pipe wall thickness will be 0.429 inch (X-70) or 0.625 inch (X-70). To protect against corrosion, Dakota Access will apply an external FBE coating to the pipeline and an impressed cathodic protection system will be used. All material will be manufactured, constructed, and operated in accordance with applicable regulations.

Q. Have you applied for any waivers from PHMSA?

A. No.

Q. As proposed, does the project meet or exceed all federal and state standards?

A. Yes.

Q. What is the design capacity and design pressure?

A. A process flow diagram for the South Dakota segment of the Project can be found within Exhibit B. The design of the pipeline system is based on a maximum operating pressure of the entire pipeline of 1,440 psig to allow a consistent maximum discharge pressure from the Project pump station, optimized for efficiency at various flow rates up to system capacity. Some sections will be exposed to lower pressures due to the combined pump station discharge pressure, friction pressure loss and hydrostatic head gain or loss for pipe segments located at elevations that differ from pump station elevation.

Q. Does the Project include compressor stations?

A. No.

Q. Does the Project include storage facilities?

A. No.

Q. In addition, are you sponsoring any Exhibits to the Application?

A. Yes, Exhibit B and Exhibit C to Application.

Q. Does this conclude your testimony?

A. Yes.

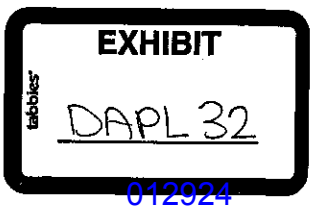
Dated this ____ day of July, 2015

_____

Chuck Frey

Jack Edwards

Direct Testimony



BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION OF DAKOTA ACCESS, LLC FOR AN ENERGY FACILITY PERMIT TO CONSTRUCT THE DAKOTA ACCESS PIPELINE PROJECT	))))))	HP14-002

DIRECT TESTIMONY OF
(Revised)

JOHN H. "JACK" EDWARDS

ON BEHALF OF

DAKOTA ACCESS, LLC

DAKOTA ACCESS EXHIBIT 5

Sept 28, 2015

TABLE OF CONTENTS

Q. Please state your name and business address for the record.

A. John H. "Jack" Edwards, 4401 S. Technology Dr., South Suite, Sioux Falls, South Dakota, 57106

Q. Can you briefly describe your education and experience?

A. I graduated High School, with college engineering courses. I have over 35 years of work experience in the pipeline industry and held positions in both operations/maintenance and new pipeline and facility construction. Some of the positions I held are Construction Manager, on maintenance and new pipeline construction projects and Project Manager, on new pipeline projects.

Q. Did you attached a resume or CV.

A. Yes.

Q. Which sections of the application are you responsible for?

A. I am responsible for construction related sections of the application included in sections: 19. Local Land Use Controls; 22. Time Schedule; 23.5. Forecast of Impact on Transportation; 24. Employment Estimates; 25. Future Additions and Modifications;

Q. Can you briefly describe construction of the pipeline facilities?

A. Construction of the new pipeline will require a typical construction ROW width of 125 feet in uplands, 100 feet in non-forested wetlands, 85 feet in forested areas (wetlands and uplands), and up to 150 feet in agricultural areas. Following construction, a 50-foot wide permanent easement will be retained along the pipeline. There will be one full Pipeline Spread in South Dakota and two partial Spreads. Each pipeline construction Spread will have approximately 900 personnel including sub-contractors and approximately 100 Inspection staff which includes Right of Way representatives and administration staff. The typical pipeline

construction sequence is: (i) Survey and staking of workspace; (ii) Clearing and Grading, construction crews will clear trees, install temporary bridges to cross small water bodies, and install temporary gates in existing fences; (iii) Right of Way grading, workspace will be leveled to make a safe work area, top soils will be separated as per DAPL Agricultural Impact Mitigation Plan; (iv) Stringing of pipe, pipe is trucked from the pipe storage yards and laid adjacent to pipeline ditch area; (v) Bending of pipe, using a bending machine pipe is bent so pipe can be installed at different elevation as required; (vi)Welding, pipe is welded into long sections; (vii) Non Destructive Examination (NDE), all welds are inspected to ensure their integrity; (viii) Trenching, pipe ditch is dug to required depth; (ix) Pipe Lowering, pipe is lowered into ditch in long sections; (x) Backfill, pipe ditch is backfilled; (xi) Rough Grade, the remaining subsoil and top soils are placed over workspace; (xii) Hydro Testing, pipe sections will be filled with water and pressure test to 1.25 times maximum operating pressure (MOP); (xiii) Final Clean-up, (xiv) Full Restoration, workspace is leveled to preconstruction condition, grasses planted, fences repaired, pipeline warning signs placed along easement.

Q. What is the construction and operating timeline?

A. Dakota Access anticipates starting construction within South Dakota in the Spring of 2016. Commissioning of the facilities should occur in November 2016 for in-service in December 2016. Restoration activities will continue as necessary to ensure proper restoration of the disturbed areas.

Q. Can you describe the typical drawings included in Exhibit B?

A. DAPL filed five Typical Right of Way Configurations for construction of the pipeline. During construction of the pipeline, the contractor will prepare work space following these Typical Right of Way Configurations. Each typical is designed to ensure topsoil is protected

from mixing with subsoil. These are typical drawings and may not be reflective of actual work based on other factors such as topography or landowner preference, to name two possibilities. As found in the AIMP, our contractors Key and Duraroot will be training operators on soil segregation. The AIMP specified 12 inches of topsoil segregation. My earlier written testimony saying 18 inches was incorrect.

Those five typical configurations are as follows:

1. Agricultural-Full top Soil Segregation w/ Drain Tiles (P12-54-SD) illustrates topsoil to be stripped and segregated for the entire width of work space, 125 feet wide, with an additional 25 feet for top soil storage. Also, illustrates pipeline being installed with 2 feet separation from drain tiles. Depth of topsoil segregation is maximum 12 inches or minimum actual depth.

2. Upland Construction Full Top Soil Segregation (P12-55-SD) illustrates top soil to be stripped and segregated for the entire width of work space, 125 feet wide, with an additional 25 feet for top soil storage. Topsoil could be stored on either side of the workspace. Depth of topsoil segregation is maximum 12 inches or minimum actual depth.

3. Upland Construction Ditch Line Only Soil Segregation (P12-56-SD) illustrates topsoil segregation ditch line and ditch spoils storage, 125 feet wide work area. Depth of top soil segregation is maximum 12 inches or minimum actual depth.

4. Heavily Forested and Forested Wetlands (P12-57-SD), illustrates topsoil to be stripped and segregated for ditch line and ditch spoil storage area, 85 feet work wide. Depth of topsoil segregation is maximum 12 inches or minimum actual depth.

5. Scrub Shrub Saturated Wetlands (P12-58_SD), illustrates topsoil segregation ditch line and ditch spoils storage, , 100 feet wide of work area. Although not illustrated on

typical drawing, the contractor may choose to place timber mat in working area instead of stripping top soil. Timber mat will allow equipment to travel work area without mixing of topsoil with subsoil.

Q. Are there plans for the valve sites?

A. Typical Piping and Plan Elevation, 30 inch Mainline Valve Pipeline (P12-48) illustrates the 50 feet by 75 feet area required for the Mainline Block Valves. Block Valves will be installed aboveground and the valve area will be fenced with a 6 feet chainlink fence.

Q. Are there pump station plans?

A. The Pump Station Site Typical illustrates the 9 plus acres purchased in fee by DAPL, with the pipeline launcher/receiver with pump station tie-in piping. Additionally, this Typical illustrates a basic pump station layout.

Q. Please describe the temporary workspace and additional temporary work space requirements of the pipeline?

A. Temporary work space (TWS) or construction right of way is required for the consruction activities of a spread. TWS allows space along the permanent pipeline right of way for the segregated storage of topsoil and spoil, and for the machinery and workers to perform their tasks. TWS is only required during construction. Where necessary, Dakota Access will utilize additional temporary workspace (ATWS) outside of the construction ROW to facilitate specialized construction procedures, such as horizontal directional drills (HDDs); railroad, road, wetland, waterbody, and foreign utility line crossings; tie-ins with existing pipeline facilities; areas with steep side slopes; and pipeline crossovers. These TWS and ATWS will be allowed to revert to pre-existing uses and conditions following construction activities, so there will be no permanent impacts on these areas. Dakota Access will restore these areas as necessary in

accordance with the Agricultural Mitigation Plan, landowner preferences and permit requirements.

Q. Will restoration be required?

A. Yes. Final restoration of pipeline easement and temporary work space shall be completed once pipeline is installed. All restoration shall be completed in accordance with the Agricultural Mitigation Plan, landowner preferences and Permit requirements.

Q. Where will the project store pipe and other equipment necessary for construction?

A. During construction of the pipeline, the contractor will require off ROW areas for the storage of pipe and equipment necessary for the construction of the Project facilities. These staging/contractor yards will be located near the Project at locations with convenient and safe access to the Project areas. Efforts will be made to select contractor yards that have been previously disturbed by human activity but do not have an ongoing land use that will preclude Project usage. These areas will also be restored to preconstruction conditions or as otherwise directed by the landowner.

Q. How will the project access work space to construct the pipeline?

A. Dakota Access will utilize existing public and private roads to access the pipeline ROW and aboveground facilities to the extent practicable. Existing roads utilized will include paved, gravel, or pasture roads, and other conveyances. Some roads will require modification or improvement to facilitate safe access for construction equipment and personnel. The Project may require construction of new temporary and permanent roads to provide access to the new pipeline both during construction and for future pipeline maintenance activities. Access roads have not been thoroughly defined during this early design phase. Dakota Access will seek and enter into road use agreements with all affected units of government and private landowners

Q. Will the pipeline require the use of water during construction?

A. Yes, there are two types of water uses required for the construction of the pipeline. Water is necessary for horizontal directional drilling (HDD) and hydrostatic testing the pipeline to insure the integrity of the pipeline.

Water for the HDD operation is used to mix with bentonite for drilling operation lubrication, hole stability and to remove drill cuttings from the hole.

Water required for hydrostatic testing is only temporarily used. Hydrostatic testing shall be conducted to verify the integrity of the newly installed pipeline, and will be conducted in accordance with the requirements of PHMSA pipeline safety regulations (49 Code of Federal Regulations [CFR] Part 195), Dakota Access testing specifications, and applicable permits. Dakota Access will develop a hydrostatic test plan, following completion of survey and design, and in coordination with the selected contractor.

All applicable laws, rules and permits will be followed throughout this process.

Q. Will water be discharged after its use?

A. Yes, water will be discharged as a result. HDD mud will be disposed of in accordance with applicable rules and regulations. Hydrostatic testing discharge water is filtered through straw bales and discharged back to water sources in accordance with Landowner preferences and permit requirements, utilizing applicable BMPs (SWPPP, Exhibit D to the Application) to reduce the rate of water flow and prevent scouring from runoff. Based on the implementation of these measures, no impacts to local hydrology are anticipated and all applicable laws, rules and permits to do so will be obtained and followed.

Q. How else will hydrology be affected?

A. In addition, trench dewatering will likely occur on an intermittent basis along the Project

ROW dependent on site conditions and weather during the construction period. During construction, open trenches may accumulate water from groundwater seepage or precipitation. Under these circumstances, trench dewatering will be used to pump accumulated water from the trench, away from nearby waterbodies, and into vegetated upland areas. Water pumped out of trenches will be discharged in strict compliance with DAPL Agricultural Impact Mitigation Plan and Landowner preferences and requirements, utilizing applicable BMPs to reduce the rate of water flow and prevent scouring from runoff.

Q. Will the pipeline utilize deep well injection?

A. Dakota Access does not anticipate utilization of deep well injection for this Project.

Q. Are any homes displaced along the project route?

A. The Project does not displace any homes. At its nearest point, the project comes within approximately 200' of a home, which is not atypical for such a project.

Q. What effects are anticipated on surrounding land from operation or construction of the pipeline?

A. Permanent effects on surrounding land uses are not anticipated since the pipeline is primarily a below ground structure with little land use conversion. There are very few limitations beyond not erecting permanent structures or planting trees over the pipeline. All normal agricultural activities are compatible with the pipeline.

Q. Did the project prepare an agricultural impact mitigation document?

A. Yes. It was attached as Exhibit D. It was revised in 2015 after data requests from the Public Utilities Commission staff asked for clarification and revisions.

Q. Please describe the agricultural impact mitigation document.

A. Construction activities will temporarily disturb the land uses within both the construction

and permanent ROW. Following construction, these areas will be re-contoured to previous conditions, reseeded and/or return to previous agricultural uses. Drainage systems such as roadway ditches or drainage tile crossed and disturbed by the pipeline during construction will be restored in accordance with permits and landowner agreements. Dakota Access will take appropriate measures, listed in the document, to protect land uses used for livestock production (pastureland/rangeland, undisturbed native prairie, row-crop agriculture) during construction. Project contractors will coordinate with landowners to provide passage for livestock and will provide temporary fencing and gates where required to protect livestock from construction-related hazards. Following construction, fences and gates are rebuilt to original conditions or better. Direct impacts to the public, and to commercial, and institutional land uses will be minimized through construction design measures.

Q. What are the impacts to roads?

A. Most roadways will be bored underneath during construction eliminating direct disturbance to the roadway and vegetation. Indirect impacts include temporary road closures or traffic delays, of approximately 5-15 minutes, during construction for equipment crossing. After construction, roadways will resume normal traffic conditions in the Project ROW. Potential traffic impacts are discussed further within Community Impact Section 23.1– Forecast of Impact on Community.

Q. What are the permanent impacts to land use?

A. There are a few locations where land doesn't go back to its prior use. Permanent impacts to land use will occur at the aboveground facilities associated with the Project. The frequency of aboveground facilities is low (40 MLVs, two L/Rs, and one pump station with L/R) and the majority of these sites are small in size; permanent impacts to the surrounding land use will be

minimal (0.2 percent of the Project footprint).

Q Does the project cross South Dakota Rural Water Systems?

A. Yes, see the chart below.

South Dakota Rural Water Systems Crossed by the Project	
Name	**Approximate Miles Crossed**
WEB	114.5
Mid Dakota	47.0
Kingbrook	50.0
Minnehaha	25.7
Lincoln	12.3
South Lincoln	12.8
Lewis and Clark	70.1
Source: South Dakota Rural Water Systems, 2014	

DAPL negotiated with all Rural Water Systems to lower any waterlines affected by the crude oil pipeline. All such agreements are in place with rural water systems, except Lewis and Clark, which was brought to our attention only very recently. We are working diligently with Lewis and Clark to resolve issues.

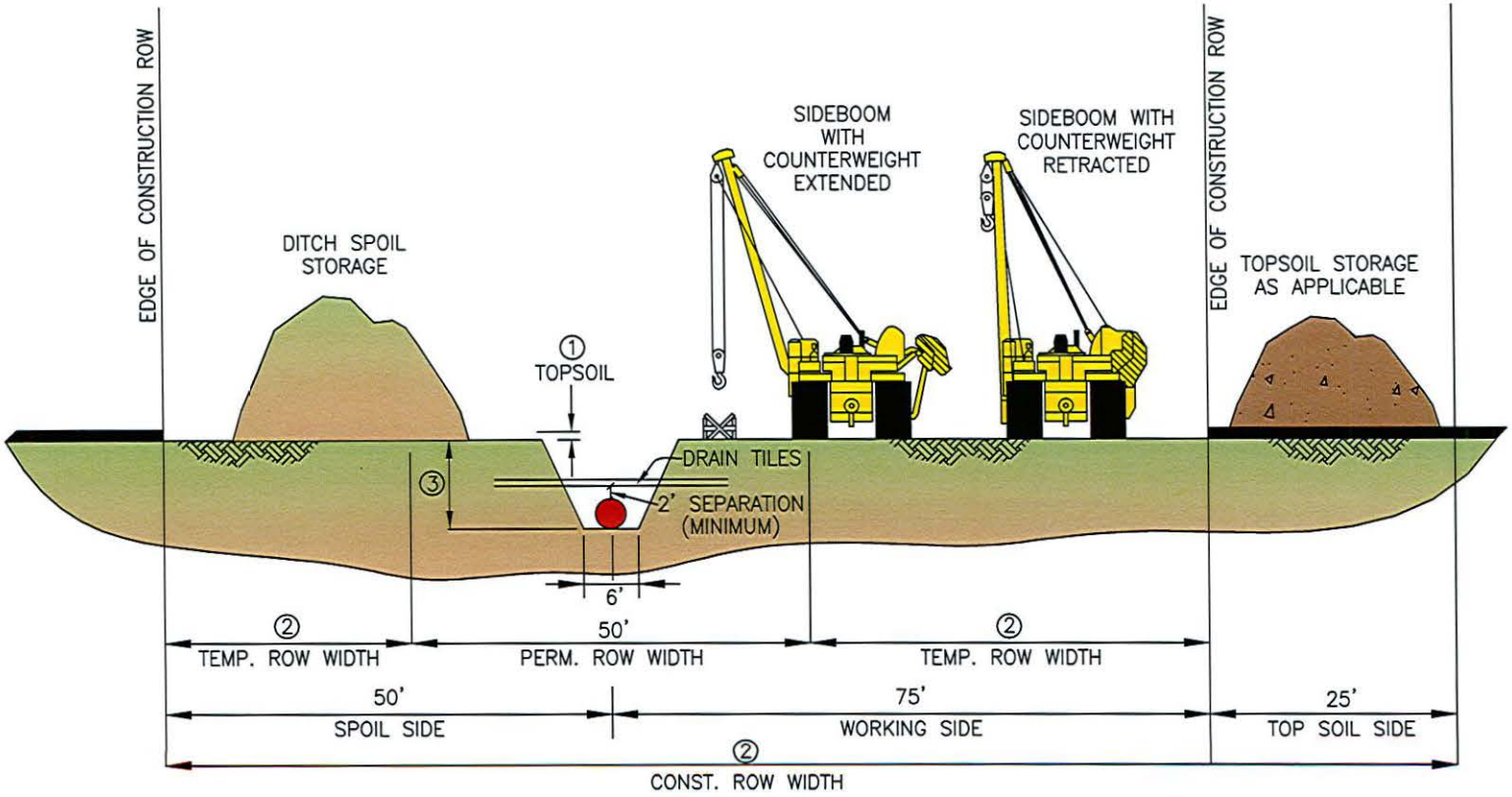
Q. How does Dakota Access address local land use controls?

A. DAPL will design, construct, operate, and maintain the pipeline, pump stations, and valve stations in compliance with applicable zoning and county permit requirements. DAPL may request variances and/or special use permits, as necessary. DAPL recognizes the existence of South Dakota Codified Law (SDCL) 49-41B-28, regarding local ordinances and their application

to the project, and reserves the right to request the Commission to invoke its provisions during the proceedings in this application should the need present itself.

Dated this 28 day of September, 2015

Jack Edwards



NOTES:

① DEPTH OF TOP SOIL SEGREGATED BASED UPON SITE–SPECIFIC CONDITIONS; MAX 12" INCHES, MIN–ACTUAL DEPTH OF TOP SOIL.

② ACTUAL WIDTH OF ROW WILL VARY DEPENDING UPON DEPTH OF TOP SOIL TO BE SEGREGATED.

③ DEPTH OF COVER BASED UPON LANDOWNER OR STATE SPECIFIC REQUIREMENTS.

REV.	DATE	BY	DESCRIPTION	CHK.
B	9/28/15	JL	ISSUED FOR REVIEW	
A	12/9/14	JL	ISSUED FOR REVIEW	

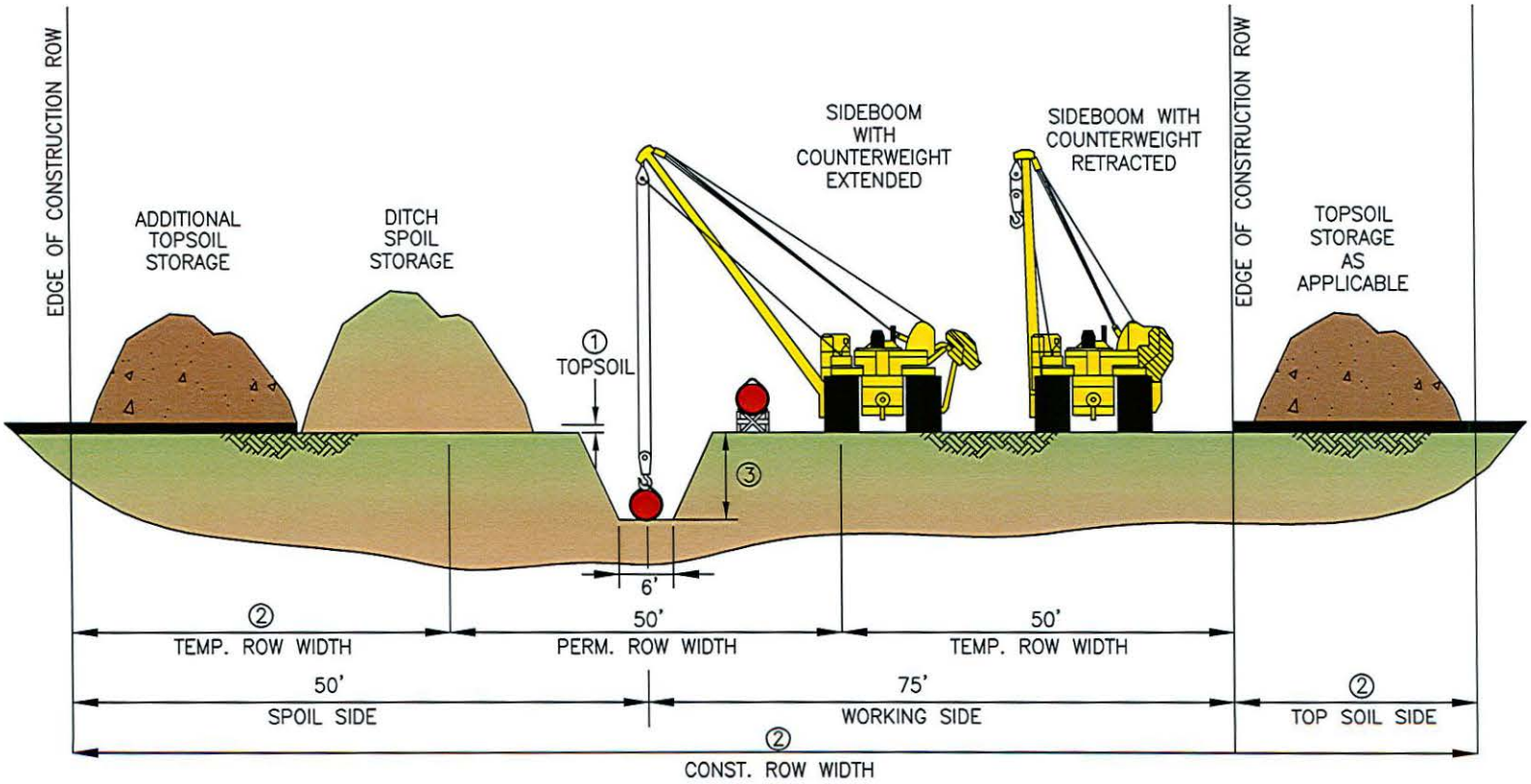
PROJECT NO. 10395700

TYPICAL RIGHT-OF-WAY CONFIGURATION FOR SOUTH DAKOTA

AGRICULTURAL– FULL TOP SOIL SEGREGATION W/DRAIN TILES

DRAWN BY: DAH	DATE: 08/18/14	DWG. NO. P12–54–SD	REV. B
CHECKED BY: DAH	DATE: 08/18/14		
SCALE: N.T.S.	APP.:		

012937



NOTES:

① DEPTH OF TOP SOIL SEGREGATED BASED UPON SITE-SPECIFIC CONDITIONS; MAX 12" INCHES, MIN-ACTUAL DEPTH OF TOP SOIL.

② ACTUAL WIDTH OF ROW WILL VARY DEPENDING UPON DEPTH OF TOP SOIL TO BE SEGREGATED.

③ DEPTH OF COVER BASED UPON LANDOWNER OR STATE SPECIFIC REQUIREMENTS.

REV.	DATE	BY	DESCRIPTION	CHK.
B	9/28/15	JL	ISSUED FOR REVIEW	
A	12/9/14	LBJ	ISSUED FOR REVIEW	

PROJECT NO. 10395700

TYPICAL RIGHT-OF-WAY CONFIGURATION FOR SOUTH DAKOTA

UPLAND CONSTRUCTION FULL TOP SOIL SEGREGATION

DRAWN BY: MR	DATE: 09/15/14	DWG. NO. P12-55-SD	REV. B
CHECKED BY: RL	DATE: 09/15/14		
SCALE: N.T.S.	APP.:		

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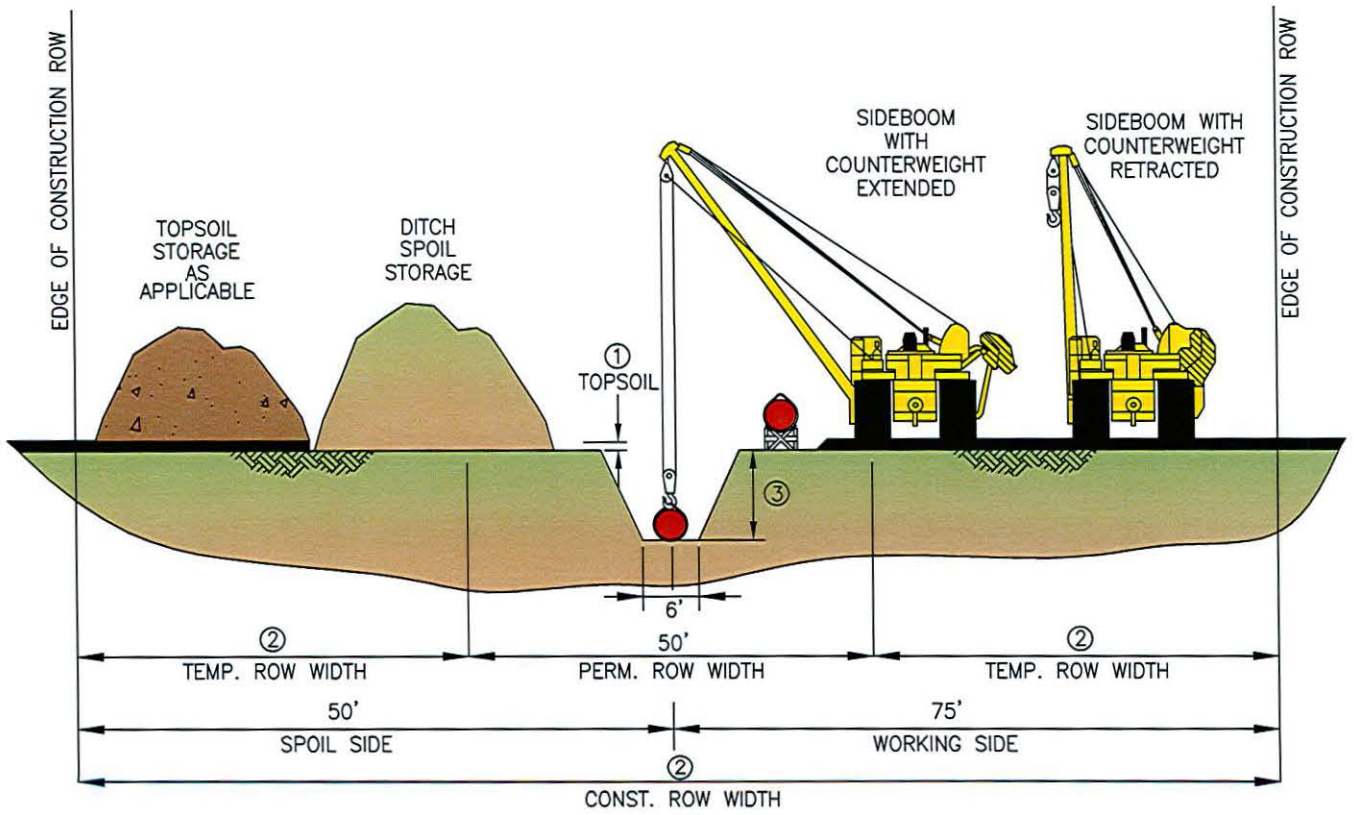

NOTES:

① DEPTH OF TOP SOIL SEGREGATED BASED UPON SITE–SPECIFIC CONDITIONS; MAX 12" INCHES, MIN–ACTUAL DEPTH OF TOP SOIL.

② ACTUAL WIDTH OF ROW WILL VARY DEPENDING UPON DEPTH OF TOP SOIL TO BE SEGREGATED.

③ DEPTH OF COVER BASED UPON LANDOWNER OR STATE SPECIFIC REQUIREMENTS.

REV.	DATE	BY	DESCRIPTION	CHK.
B	9/28/15	JL	ISSUED FOR REVIEW	
A	12/9/14	LBJ	ISSUED FOR REVIEW	

PROJECT NO. 10395700

TYPICAL RIGHT-OF-WAY CONFIGURATION FOR SOUTH DAKOTA

UPLAND CONSTRUCTION DITCH LINE ONLY TOP SOIL SEGREGATION

DRAWN BY: MR	DATE: 09/15/14	DWG. NO. P12–56–SD	REV. B
CHECKED BY: RL	DATE: 09/15/14		
SCALE: N.T.S.	APP.:		

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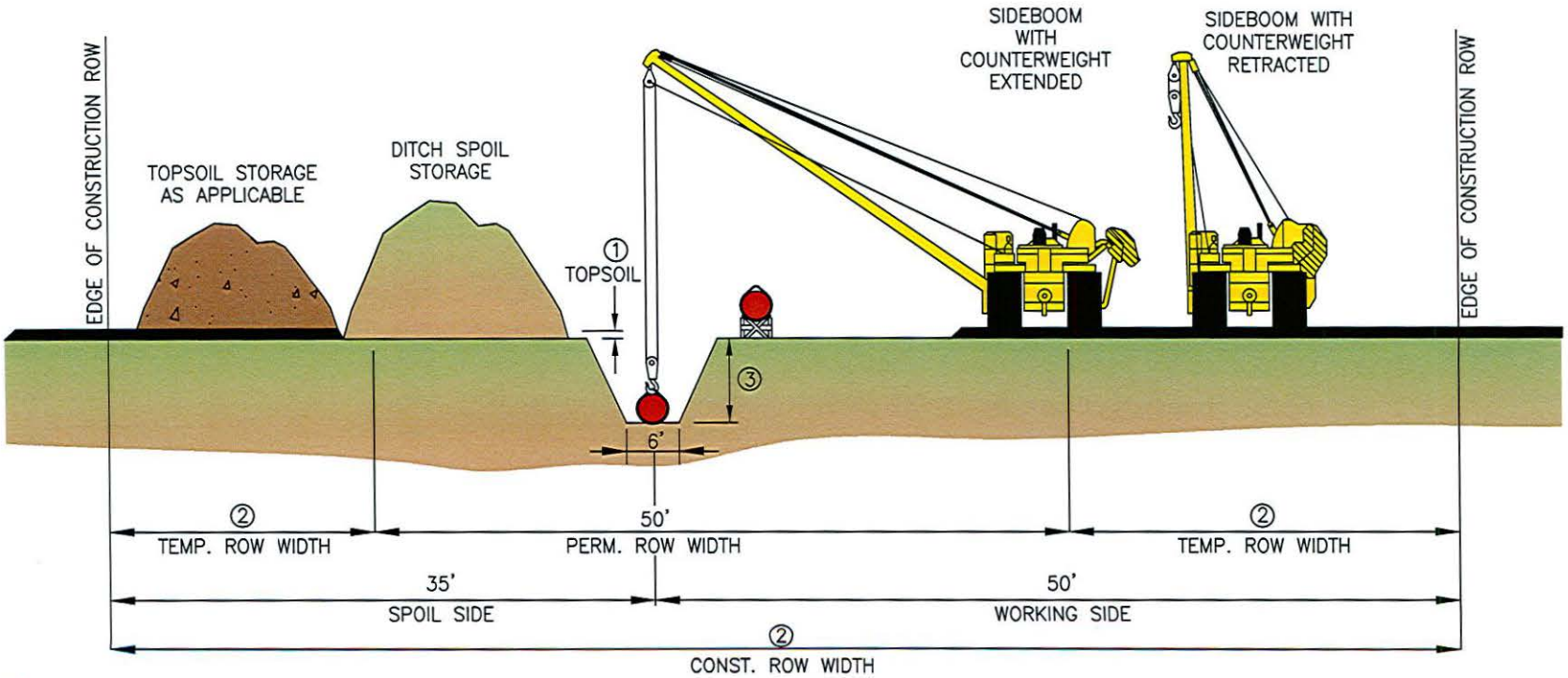

NOTES:

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② ACTUAL WIDTH OF ROW WILL VARY DEPENDING UPON DEPTH OF TOP SOIL TO BE SEGREGATED.

③ DEPTH OF COVER BASED UPON LANDOWNER OR STATE SPECIFIC REQUIREMENTS.

REV.	DATE	BY	DESCRIPTION	CHK.
B	9/28/15	JL	ISSUED FOR REVIEW	
A	12/9/14	LBJ	ISSUED FOR REVIEW	

PROJECT NO. 10395700

TYPICAL RIGHT-OF-WAY CONFIGURATION FOR SOUTH DAKOTA

HEAVILY FORESTED LANDS, WETLANDS AND UPLAND

DRAWN BY: JWH	DATE: 09/15/14	DWG. NO. P12-57-SD	REV. B
CHECKED BY: DAH	DATE: 09/19/14		
SCALE: N.T.S.	APP.:		

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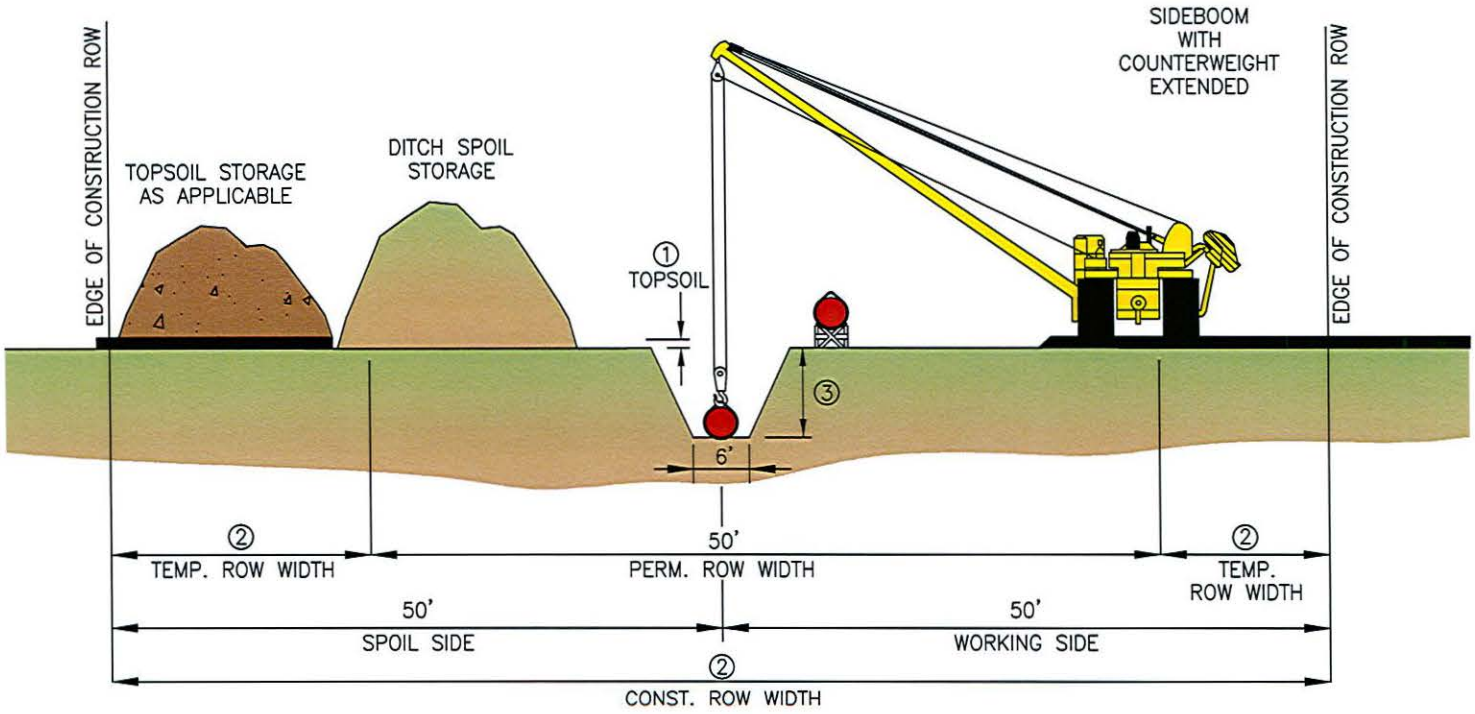

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② ACTUAL WIDTH OF ROW WILL VARY DEPENDING UPON DEPTH OF TOP SOIL TO BE SEGREGATED.

③ DEPTH OF COVER BASED UPON LANDOWNER OR STATE SPECIFIC REQUIREMENTS.

REV.	DATE	BY	DESCRIPTION	CHK.
B	9/28/15	JL	ISSUED FOR REVIEW	
A	12/9/14	LBJ	ISSUED FOR REVIEW	

PROJECT NO. 10395700

TYPICAL RIGHT-OF-WAY CONFIGURATION FOR SOUTH DAKOTA

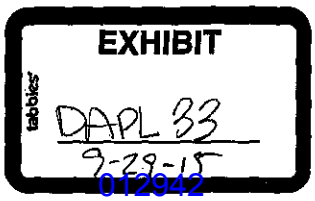
SCRUB SHRUB SATURATED WETLANDS

DRAWN BY: JWH	DATE: 09/15/14	DWG. NO. P12–58–SD	REV. B
CHECKED BY: DAH	DATE: 08/18/14		
SCALE: N.T.S.	APP.:		

012941

Monica Howard

Direct Testimony



BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION OF DAKOTA ACCESS, LLC FOR AN ENERGY FACILITY PERMIT TO CONSTRUCT THE DAKOTA ACCESS PIPELINE PROJECT	))))))	HP14-002

DIRECT TESTIMONY OF

MONICA HOWARD

ON BEHALF OF

DAKOTA ACCESS, LLC

DAKOTA ACCESS EXHIBIT 6

July 6, 2015

Q. Please state your name and business address for the record.

A. Monica Howard. 1300 Main Street, Houston, TX 77002.

Q. Can you briefly describe your education and experience?

A. I have a Bachelor's of Science in Reclamation, with a biological emphasis and minors in Earth Science and Horticulture. I have over 15 years of environmental experience supporting the energy industry. I am currently the Director of Environmental Sciences for Energy Transfer and the Environmental Project Manager for Dakota Access Pipeline Project.

Q. Which sections of the application are you responsible for?

A. I am responsible for sections: 12. Alternatives; 13. Environmental Information; 14. Effects on the Physical Environment; 15. Hyrdology; 16. Effects on Terrestrial Ecosystems; 17. Effects on Aquatic Ecosystems; 18. Land Use; 20 Water Quality; 21. Air Quality; and parts of 23. Community Impact.

Q. Please describe the permits in addition to the one sought in this application which will be required for construction and operation of the pipeline.

A. The table below lists the permits and clearances currently identified for the construction of the Project within South Dakota.

Permits/Consultation List and Status for South Dakota Segment of DAPL			
Agency	**Permit**	**Agency Action**	**Status as of June 2015**
Federal			
U.S. Army Corps of Engineers, Omaha District – South Dakota Regulatory Office	Sections 404/401 Clean Water Act Nationwide Permit 12	Authorization of discharge of fill material into waters of the U.S., including wetlands	Submitted in December 2014, updated Pre-Construction Notification areas were submitted in April 2015. USACE review is ongoing.
	Section 10 Rivers and Harbors Act	Authorization of pipeline crossings of navigable waters of the U.S.	
	Section 106 Archaeological Resources Protection Act	Section 106 consultation through the Nationwide Permit 12 process	

Permits/Consultation List and Status for South Dakota Segment of DAPL			
Agency	**Permit**	**Agency Action**	**Status as of June 2015**
U.S. Fish and Wildlife Service, South Dakota Ecological Services Field Office	Endangered Species Act Section 7 Consultation	Consider lead agency findings of impacts on federally listed; provide Biological Opinion if the Project is likely to adversely affect federally listed or proposed species or their habitats	Topeka shiner is the only protected species potentially affected at three streams. No effect due to HDD and compliance with Programmatic BO for NWP in SD.
U.S. Fish and Wildlife Service, Sand Lake National Wildlife Refuge Complex	Wetland and Grassland Easements– Special Use Permit	Issuance of a one-time use permit, valid for 5 years, for construction of pipeline through protected features within U.S. Fish and Wildlife Service easements	Draft Environmental Assessment for Special Use Permit and right-of-way easement submitted to the USFWS in April 2015, USFWS provided comments in May 2015, the revised draft Environmental Assessment was submitted to the USFWS in June 2015. USFWS review is ongoing.
	Wetland and Grassland Easements– Right-of-Way easement	Issuance of a 30-year-term right-of-way easement after construction, for long-term maintenance and management of pipeline	
Farm Service Agency/Natural Resources Conservation Service	Crop Reserve Program	Authorization of crossing areas enrolled in the Crop Reserve Program	Consultation with the Farm Service Agency on areas enrolled in the Crop Reserve Program is ongoing. No permit required. To date we have secured easements on 12 of the 17 CRP easements crossed by the Project.
Pipeline and Hazardous Materials Safety Administration	49 CFR Part 194 and 195	Integrity Management Plan and Emergency Response Plan	Plans to be submitted in September 2016. No permit required.
State			
South Dakota Department of Environment and Natural Resources	National Pollutant Discharge Elimination System General Permit for Discharges of Hydrostatic Test Water (SDG070000)	Consider issuance of General Permit for hydrostatic test water discharge to waters of the U.S., construction dewatering to waters of the state	Anticipate submitting in October 2015 upon completion of the hydrostatic test plan.
	Surface Water Withdrawal Permit	Consider issuance of surface water withdrawal permit for temporary use	
	South Dakota Codified Law Sec 34A-18 Oil Spill Response Plan	Oil Spill Response Plan	To be submitted in September 2016. No permit required.
South Dakota Game Fish and Parks	State Listed Threatened and Endangered Species	Consultation on natural resources	Agency stated they would comment through the PUC process and that no formal authorization is required.
South Dakota State Historical Society, State Historic Preservation Office	Section 106 of National Historic Preservation Act	Review and comment on activities regarding jurisdictional cultural resources	Class III report submitted in June 2015. Federal agencies will be consulting directly with the SHPO in relation to jurisdictional crossings.
South Dakota Department of Transportation	Crossing Permits	Consider issuance of permits for crossing state highways	Currently completing applications and have planning meetings scheduled.
Local			
County Road Departments	Crossing Permits	Issuance of permits for crossing of county roads	Currently completing applications and have planning meetings scheduled.

Permits/Consultation List and Status for South Dakota Segment of DAPL			
Agency	**Permit**	**Agency Action**	**Status as of June 2015**
County and Local Authorities	Floodplain, Conditional Use, and building permits where required	Review under county approval process	Evaluating the need for respective permits, applications will be submitted as required.

Q. Are there any other major industrial facilities that would contribute to cumulative impacts?

A. Dakota Access attempted to identify current and planned major industrial projects by reviewing South Dakota Public Utilities Commission and Federal Energy Regulatory Commission dockets as well as other publicly available online resources. To date, no major projects within the Project vicinity have been identified through these searches; therefore no adverse cumulative impacts are anticipated.

Q. How did Dakota Access categorize land found along the pipeline?

A. The PUC land use categories (*italic*) were defined as follows for the Project.

a. *Lands used primarily for row and non-row crops in rotation* are agricultural fields that may be tilled but not irrigated. Primary row crops include corn, soybeans, sunflowers, and cereal grains.

b. *Irrigated lands* are agricultural fields irrigated with center pivots, furrows, or flood irrigation received from lateral ditches.

c. *Pasturelands and rangelands* include lands that may have been plowed at some time in the past and replanted to pasture grasses. There is a high to moderate component of non-native grasses.

d. *Haylands* include lands that have grass and alfalfa crops with evidence to suggest hay production such as the presence of bales.

e. *Undisturbed native grasslands* are dominated by native grass species. Non-native plant

species may be present but are in low densities. It also includes restored grasslands dominated by native grass species.

f. *Existing and potential extractive nonrenewable resources* include coal, uranium lignite, and oil resources that are in the vicinity of the Project.

g. *Other major industries* include wind power development and energy transfer.

h. *Rural residences and farmsteads, family farms, and ranches* are individual farmsteads and outbuildings, as well as farmstead windbreaks and shelterbelts.

i. *Residential* includes suburban and urban residential areas.

j. *Public, commercial, and institutional use* includes county roads, highways, and railroad ROWs, commercial developments, schools, and churches. This category includes roadway borrow ditches that may be vegetated.

k. *Municipal water supply and water sources for organized rural water systems* include surface water reservoirs and groundwater wells that withdraw water for public water supplies.

Q. Were any PUC land uses not documented along the pipeline?

A. Four land use types were not documented along the proposed route, including existing and potential extractive nonrenewable resources; other major industries; municipal water supply and water sources for organized rural water systems; and noise sensitive land uses.

Q. What effects are anticipated on surrounding land from operation or construction of the pipeline?

A. Permanent effects on surrounding land uses are not anticipated since the pipeline is primarily a below ground structure with little land use conversion.

Q. Did the project analyze the effects of the Pipeline on land uses and if so, what are the impacts?

A. The primary land use types impacted by the proposed Project are lands used for agriculture. Predominant agricultural land uses within the Project area are as follows: row crop agriculture, pastureland /rangeland, hayland, and irrigated land. A secondary use for many of the land use types is hunting and recreation; this is discussed further within Community Impact Section 23.1– Forecast of Impact on Community. Once installed, the pipeline will be below the surface and will not affect normal agricultural or recreation activities.

The public, commercial, and institutional use are road and railroad ROWs, including the borrow ditches. These areas crossed by the Project total a small percentage of the overall Project land uses (2.2 percent), but occur frequently because of the section line road system in South Dakota

Q. Does the project cross any public properties?

A. The only public property crossed in South Dakota is a State School and Public Lands tract, which is crossed for 2,783 feet in Campbell County.

The Project does not cross any federal or state-owned parks, recreation areas, or wildlife management areas within South Dakota. An analysis of natural or scenic areas within the Project corridor included designated scenic outlooks, viewing areas, recreational trail areas, preserves, and byways. No designated natural or scenic areas were identified along the route.

Q. What are the regional land forms in the project area?

A. The state of South Dakota is generally equally divided east and west by the Missouri River, with the western half of the state having greater topography than the eastern half of the state. The project is located in the eastern half of the state where elevations can range from 1,000 feet to 2,000 feet. The portion of Project area located east of the Missouri River and west of the James River is within the Glaciated Missouri Plateau of the Great Plains physiographic province (U.S. Geological Survey [USGS], 2004a).

Q. Have you included a topographic map of the project area?

A. A topographic map of the Project area is included in Exhibit A2.

Q. What geological features are in the project area?

A. The Project is located in the Great Plains and Central Lowlands physiographic provinces (USGS, 2004a), and lies within the glaciated portion of South Dakota. Surficial deposits within this region are composed primarily of alluvium, eolian deposits, lacustrine sediments, moraine (till), and outwash (USGS, 2005).

The bedrock geology is composed of Cretaceous and Precambrian aged rocks that formed in marine environments (The Paleontology Portal, 2003).

Bedrock in the Project area crops out along the Missouri River bluffs, along many rivers and creeks, and other areas where the glacial sediment has been removed by erosion.

Q. Are any economic deposits found within the project area?

A. Of South Dakota's primary non-fuel resources, approximately 69 percent of the total non-fuel production value in 2011 originates from a combination of cement (portland), clays, feldspar, gemstones, gold, gypsum, iron ore, lime, mica, silver, and stone (dimension granite). Crushed stone amount to approximately 16 percent of the state's non-fuel production value, while the remaining 15 percent comes from construction sand and gravel.

Campbell, Edmunds, Kingsbury, Lake, Lincoln, McPherson, Spink, and Turner Counties contain construction sand and gravel. Minnehaha County contains construction sand and gravel, as well as crushed stone. The SDGS Sand, Gravel, and Construction Aggregate Mining Interactive Map did not identify industrial mining operations within one mile of the Project area; therefore, it is not anticipated that the Project will impact mineral resources (SDGS 2014).

Q. Please describe the soils found within the project area.

A. Maps depicting the limits of the soil map units within the Project area are provided in Exhibit A3. Exhibit C includes total crossing distance of each soil series unit, the acres impacted by construction of the aboveground pump station, and the characteristics of each of the soil map units within the Project area, including prime farmland, hydric properties, compaction potential, erosion, restrictive soil layers, shallow bedrock, and revegetation properties.

Q. Is there prime farmland located along the pipeline route?

A. The U.S. Department of Agriculture (USDA) defines prime farmland as "land best suited to food, feed, forage, fiber, and oilseed crops" (Natural Resources Conservation Service [NRCS], 2014).

Approximately 37 percent (99.9 miles) of the soils crossed by the pipelines are considered to be prime farmland, and approximately 44 percent (120.5 miles) of the route is identified as farmland of statewide importance.

The pump station in Spink County is located on 4.3 acres of prime farmland; however this location is not under active cultivation.

Q. Please describe the impacts to hydric soils from construction of the pipeline.

A. The majority of the soils within the Project area are classified as hydric in Exhibit C, some of which are prime farmland if drained. Soil compaction and rutting will likely result from the operation of heavy equipment along the Project. The extent of soil compaction will depend on the degree the soils are saturated, with the most severe compaction occurring where heavy equipment is operated on highly saturated soils. Dakota Access will minimize these impacts by implementing mitigation measures during construction such as the uses of timber mats or the use of low ground weight bearing equipment. Decompaction in the form of ripping/tilling will take place where needed during restoration.

Q. Please describe any measures which the project is taking with regard to erosion.

A. Soils with high erosion potential within the Project area were identified based on NRCS designations of land capability class and subclass. The majority of the soils within the Project area have low erosion potential. Various areas are characterized by steep slopes (slopes greater than 8 percent) and are indicated as such in Exhibit C. To minimize or avoid potential erosion impacts, Dakota Access will utilize erosion and sedimentation control devices as described in the Project-specific SWPPP (Exhibit D).

Environmental Inspectors will be retained throughout construction to oversee and report on construction compliance. The effectiveness of revegetation and permanent erosion control devices will be monitored by Dakota Access' operating personnel during the long-term operation and maintenance of the Project Facilities.

Q. Are there any restrictive soil layers or shallow bedrock found along the pipeline route?

A. No shallow bedrock was identified within the Project area; however shallow Natric was identified through desktop analysis and field surveys. Natric is a subsoil layer with a high concentration of sodium salts. Dakota Access has retained an agricultural consultant to develop specific mitigation measures for work in these areas.

Q. How will the project revegetate the construction areas?

A. Once the land contours are restored, a seed bed will be prepared in non-agricultural areas and reseeded with appropriate seed mixed based on the time of year, landowner agreements, and land managing agency recommendations. Additionally, any necessary additional erosion protection measures will be implemented/installed including water berms, mulch, erosion control mattiner, etc. Agricultural areas will be turned over to the farmer to resume agricultural

activities in agreement with the easements.

Q. Are seismic hazards present and mitigated in the project area?

A. Seismic hazards include earthquakes, surface faulting, and soil liquefaction. According to the USGS Seismic Hazards maps for the U.S., the Project is situated in an area of very low seismic probability; therefore no mitigation is proposed.

Q. Is there karst terrain along the pipeline?

A. Karst terrain results from the dissolution of highly soluble bedrock such as limestone and dolomite. Areas with karst terrain are more susceptible to subsidence events (Galloway et al., 2005). Karst occurs in approximately 47.5 miles of the Project ROW.

Q. Are there areas of expected slope instability along the pipeline route?

A. Slope instability occurs when unconsolidated soils and sediments located on steep slopes become saturated, usually from a flooding event. Only one geologic formation is known to be susceptible to landslides in the Project area, the Pierre Shale. Approximately 189 miles of the Project area is located in Pierre Shale

Q. Does the project expect construction constraints as a result of the land forms and geology along the route?

A. If shallow bedrock or boulders are encountered during construction that cannot be economically excavated from the ROW by an excavator or rock trencher, blasting may need to be utilized to assist in ditch excavation. In the unlikely event blasting is necessary; Dakota Access has developed a Blast Plan for the Project which outlines best management practices to minimize potential impacts due to blasting.

As outlined in Section 14.7– Seismic and Subsidence, desktop studies have identified a potential for karst geology along certain portions of the route. Dakota Access will conduct pre-

construction training to educate personnel on the identification of karst features during excavation. If karst features are identified along the route, Dakota Access will take steps to ensure the integrity and safety of the pipeline, which may include realignment or specialized construction techniques.

Q. Has the pipeline examined the impacts to hydrology from construction?

A. The following sections include information on the hydrology of the Project area including drainage patterns, water uses, and hydrostatic testing.

Q. Will the pipeline interfere with drainage patters along the route?

A. The pipeline is a below ground facility and therefore will not interrupt drainage patterns within the Project area.

Q. What are the sensitive area or water uses along the project route?

A. Consultation with the SDDENR during the Project fatal flaws analysis identified Zone A Wellhead Protection and Source Water areas within Minnehaha County. These areas define the boundaries in which the land area contributes water to a well. These protection areas are in place to protect the quality of local drinking water (SDDENR, 2014a). The baseline centerline crossed/clipped two of these areas; however, through the reroute process Dakota Access has successfully avoided crossing these protected areas.

The South Dakota Association of Rural Water Systems supports water uses including clean drinking water and water for local agriculture and industries. These water uses are managed throughout the state by districts based on region. The Project crosses seven rural water systems within South Dakota including WEB, Mid Dakota, Kingbrook, Minnehaha, Lincoln, South Lincoln, and the Lewis and Clark system which overlaps the majority of these water districts that are located on the eastern border of the state, and continues into Iowa. Dakota Access is in

discussions with the rural water systems regarding appropriate methods and measures for crossing their respective lines.

Q. Will the project use surface water and/or ground water in construction or operation?

A. Dakota Access will utilize surface waters as a water source for hydrostatic testing in agreement with the owners of the water rights and/or any state or federal permit. The exact locations of the hydrostatic testing and discharge sites will be determined in coordination with the selected contractor. Groundwater is not expected to be used during construction or operation.

Q. Are there impacts to aquifers expected along the pipeline route?

A. Groundwater is not currently proposed for use during construction and operation of the Project. The trench will need to be dewatered occasionally where the shallow groundwater or stormwater is pumped from the trench and discharged to a near-by upland to create a more suitable working environmental for installing the pipeline. This effect of this pump and discharge will be highly localized and is not anticipated to have impacts to the use of groundwater in the immediate or general project area.

Q. What water quality permits are expected for the project?

A. Dakota Access is permitting the Project through the USACE nationwide permit program for Section 404/10 of the Clean Water Act (CWA) impacts; specifically Nationwide Permit 12. The SDDENR has previously issued Section 401 water quality certification for projects that qualify for nationwide permit 12 coverage; Dakota will abide by all general and regional conditions of the permits.

Under Section 303(d) of the CWA, states are required to identify waterbodies that are not attaining their designated use(s) and develop total maximum daily loads (TMDLs), which

represent the maximum amount of a given pollutant that the a waterbody can assimilate and still meet its designated use(s). Three U.S. Environmental Protection Agency (EPA) 303(d) impaired waterbodies are crossed by the project: Turtle Creek, James River, and Big Sioux River. However all will crossed by HDD and additional impacts to these impaired waterbodies are not expected.

The general discharge permit for hydrostatic test water discharges will be sought as needed and conditions adhered too, direct discharges to waters are not proposed.

Q. Please describe the terrestrial setting of the project.

A. The Project area crosses the Great Plains Steppe Province and the Prairie Parkland (Temperate) Province ecoregions (USDA, 2014a). The western part of the Project area in South Dakota is located in the Great Plains Steppe Province and is characterized by rolling, flat plains. Elevations slope from approximately 2,500 feet from the west to 1,000 feet in the eastern section of this ecoregion. The majority of this region is made up of young glacial drifts and dissected till plains. Vegetation is mostly comprised of short and tallgrass prairie with not much woody vegetation. However, there are some scattered areas of eastern cottonwood (*Populus deltoids*) forested floodplains within this prairie dominated ecoregion (USDA, 2014b).

Q. What are the vegetation community types found along the project route?

A. The Project route crosses six terrestrial vegetation community types in South Dakota which largely mirror the PUC land use types and include pastureland/rangeland (18%), native grassland (<1%), hayland (7%), row-crop agriculture (71%), residences and farmsteads (<1%), and ROW corridors (2%). The predominant vegetation communities crossed are row-crop agriculture and pastureland/rangeland as depicted in the table below.

Vegetative Communities Crossed by the Project	
Counties	**Vegetation Communities (acres)**

Crossed (North to South)	Pastureland / Rangeland	Native Grassland	Hayland	Row-Crop Agriculture	Residences & Farmsteads	Right of Way Corridors
Campbell	222.3	30.1	102.4	189.0	1.5	15.5
McPherson	8.4	0.0	2.9	107.9	2.7	3.8
Edmunds	45.1	0.0	56.5	593.0	0.2	12.8
Faulk	73.4	0.0	47.2	420.2	4.0	12.7
Spink	182.5	0.0	42.7	461.7	2.1	19.3
Beadle	154.7	0.0	24.5	352.5	2.8	12.0
Kingsbury	73.4	0.0	29.7	303.0	1.2	9.3
Miner	23.2	0.0	0.7	242.0	9.3	6.9
Lake	59.6	0.0	26.3	268.0	1.0	6.8
McCook	2.6	0.0	4.3	19.6	0.1	0.7
Minnehaha	90.4	0.0	21.9	375.2	0.3	16.1
Turner	6.5	0.0	5.0	28.0	2.4	0.9
Lincoln	27.4	10.8	5.6	403.0	2.6	11.3
State Total	**969.3** **18 %**	**41.0** **< 1%**	**369.5** **7%**	**3763.1** **71%**	**30.0** **< 1%**	**128.1** **2 %**

Q. Please describe the pastureland/rangeland crossed in South Dakota.

A. The pastureland/rangeland vegetative community is primarily located in the northern portion of the Project in South Dakota and includes lands that may have been plowed at some time in the past and replanted to non-native pasture grasses. The primary land use is grazing by livestock. This plant community has a high to moderate percent cover of non-native grasses. Native grasses and forbs may be present but are not dominant and have low cover.

Q. Please describe for us the native grassland community.

A. The native grassland vegetative community includes grassland dominated by native mixed grass and tall grass species. Non-native plant species may be present but in low quantities. This land use includes undisturbed grasslands that may have been plowed at some time in the past. It also includes restored grasslands dominated by native grass species. Native grasslands were only identified in Campbell and Lincoln counties.

Q. Please describe the hayland plant community.

A. The hayland plant community is land that has been cropped for hay forage production.

Q. Please describe row-crop agriculture.

A. Row-crops are characterized by annual herbaceous vegetation planted for the production of human consumption, animal feed, biofuel, or other specific purposes. Row-crop agriculture accounts for the majority (71 percent) of the Project route.

Q. Please describe the vegetation in residences and farmsteads.

A. This vegetation community describes the rural residences and farmsteads, and suburban residential land uses and may include farmsteads and outbuildings (including abandoned farmsteads), farm windbreaks and shelterbelts, and maintained residential yards.

Q. Please describe the vegetation along existing right-of-way corridors.

A. These are road and railroad ROWs including the vegetated borrow ditches. Vegetation is typically non-native planted vegetation, some native species are present and tract noxious species can be present.

Q. What are the noxious weeds?

A. In addition to collecting data on the vegetative communities just described, Dakota Access identified and collected data on areas of noxious weeds encountered along the route. There are 7 noxious weeks published on the South Dakota state noxious weed list (South Dakota Weed - Chapter 38-22). South Dakota counties also have noxious weed lists for species that are locally problematic. Table 16.1-2 from the application lists the state and county listed noxious weeds in South Dakota and is presented below.

Table Error! No text of specified style in document.**-1**
2014 South Dakota State and County Noxious Weeds

Latin Name	Common Name	State	County
Acroptilon repens	Russian knapweed	X	
Arctium minus	*burdock		X

Table Error! No text of specified style in document.-1 **2014 South Dakota State and County Noxious Weeds**			
Latin Name	**Common Name**	**State**	**County**
Artemisia absinthium	*absinth wormwood		X
Cardaria draba	hoary cress / whitetop	X	
Carduus acanthoides	*plumeless thistle		X
Carduus nutans	*musk thistle		X
Centaurea diffusa	diffuse knapweed		X
Centaurea maculosa	spotted knapweed		X
Cichorium intybus	chicory		X
Cirsium arvense	*Canada thistle	X	
Cirsium vulgare	*bull thistle		X
Conium maculatum	*poison hemlock		X
Convolvulus arvensis	*field bindweed		X
Cynoglossum officinale	houndstongue		X
Euphorbia esula	*leafy spurge	X	
Hyoscyamus niger	black henbane		X
Hypericum perforatum	St. Johnswort		X
Leucanthemum vulgare	oxeye daisy		X
Linaria dalmatica	Dalmatian toadflax		X
Linaria vulgaris	*yellow toadflax		X
Lythrum spp.	purple loosestrife	X	
Onopordum acanthium	Scotch thistle		X
Phragmites australis	**Phragmites* / common reed		X
Polygonum sachalinese	giant knotweed		X
Potentilla recta	sulfur cinquefoil		X
Sonchus arvensis	*perennial sowthistle	X	
Tamarix spp.	saltcedar	X	
Tanacetum vulgare	common tansy		X
Tribulus terrestris	puncturevine		X
Verbascum thapsus	common mullein		X
Source: South Dakota Department of Agriculture, 2014 * Noxious weeds identified to date within the Project area.			

Dakota Access is collecting noxious weed species locations, and the size and percent canopy cover of infestations during field surveys along the Project route. To date, a total of 12 species of state and county noxious weeds were documented within the Project area (Table 16.1-2). The overall percentage of canopy cover was low (3.4 percent) within areas where noxious weeds were identified during field surveys. Canada thistle, field bindweed, and absinth wormwood

(*Atemisia absinthium*) are the common noxious weeds identified along the proposed route.

Q. Please briefly describe the impacts to vegetation and any mitigation measures which the project intends to adopt.

A. Both temporary and permanent impacts to vegetation may occur as a result of the Project. Row-crop agriculture and haylands will be temporarily disturbed and removed from production during construction. However, agricultural production will resume during the growing season following completion of the pipeline construction. Dakota Access will restore row-crop agriculture and haylands to preconstruction conditions as soon as practicable following construction in accordance with the Agricultural Impact Mitigation Plan (AIMP) (Exhibit D of the application) and landowner agreements. Landowners will be compensated for crop losses, short term reduced yields, and other damages resulting from the pipeline construction.

The proposed Project area includes limited areas of residences and farmsteads, including windbreaks. The 50-foot pipeline permanent ROW will be kept clear of trees, to allow for pipeline inspection and maintenance. Landowners will be compensated for loss to landscaping, timber, etc. on areas impacted by the project. Disturbed areas outside the permanent ROW will be revegetated with a recommended seed-mix and natural succession will allow the vegetation to revert to preconstruction types. Tree and shrub replanting is not proposed.

The route crosses grasslands and pastureland/rangeland that are primarily used for grazing. This grass-dominated land cover controls water runoff and sediment from directly entering groundwater, nearby lakes, rivers ponds and streams while contributing to wildlife habitat and livestock forage. Dakota Access will restore all grasslands as near to pre-construction conditions as practicable. Where conservation programs are in place, Dakota Access will work in accordance with the Natural Resource Conservation Service and Farm Service Agency regarding

reseeding and reclamation.

Dakota Access will incorporate topsoil segregation within agriculture, improved pasture, and residential areas during construction. A maximum depth of 12 inches or to the depth of top soil if less than 12 inches, or as agreed upon with the landowner, will be segregated. Unless otherwise requested, topsoil will be stripped from over the pipeline trench and the adjacent subsoil storage area. Segregated topsoil will be returned following backfilling of the subsoil, ensuring preservation of topsoil within the construction area. This practice preserves the seed bank within the topsoil and encourages revegation within the ROW.

Reclamation and revegetation of grasslands and pastureland/rangeland may include soil conditioning such as de-compaction when reseeding as necessary to improve vegetative re-growth. Seed mixes will be developed based on data from pre-disturbance field surveys and with input from the local NRCS.

Revegetation success will be monitored along the pipeline ROW in accordance with applicable requirements.

Q. What will be done regarding noxious weeks along the project?

A. To mitigate the spread of any noxious weeds, BMPs and weed control practices during construction and operation may be implemented; common measures include:

- Treating known noxious weed infestations prior to ground disturbance.
- Immediately reseeding following construction.
- Using weed-free seed in reclamation activities.
- Using weed-free erosion control materials.

Routine mowing of the permanent right-of-way can assist in week control. Operation and maintenance excavation activities should not exacerbate noxious weed conditions since

disturbances will be infrequent and isolated.

Q. What types of terrestrial wildlife may be found along the pipeline route?

A. The Project area provides foraging and sheltering habitat for many species of mammals, raptors, and songbirds.

Q. What impacts to wildlife are expected and what mitigation measures will be adopted?

A. Construction will be short-term and result in temporary and permanent impacts to wildlife. Given the large percentage of agricultural development along the Project ROW, species that may utilize the Project area are used to seasonal vegetation impacts. Displacement of more mobile species from the corridor to adjacent similar habitat could occur during increased human and equipment presence during the construction period. Causality to less mobile species may take place during the clearing and grading phases of construction.

The Project area will be returned to pre-construction contours, land uses, and vegetation cover after pipeline construction. There are very few trees along the project ROW, and where impacts occur, they are typically associated with residences and shelterbelts; many of which are comprised of fast growing non-native tree species.

Q. Are there terrestrial sensitive, threatened and endangered species wildlife found along the pipeline corridor?

A. A comprehensive list of federal and state listed species within the counties crossed by the Project, including habitat assessments and determinations of impact or effect on the species was performed. Early coordination and informal consultation with the USFWS, the South Dakota Natural Heritage Program (SDNHP), and South Dakota Game, Fish and Parks (SDGFP) was initiated. Species occurrence records and designated critical habitat were obtained.

Q. What impacts and mitigation measures if any, can be anticipated for sensitive, threatened and endangered species?

A. Based on completed survey data and assessment, no effect to protected terrestrial species is anticipated. Dakota Access is continuing to consult with the resource agencies to obtain concurrence with this determination prior to initiating construction.

Q. Approximately how many waterbody crossings have been identified?

A. Dakota Access has identified 279 waterbody crossings located within the Project footprint. Of these, 10 are perennial, 105 are intermittent, 139 are ephemeral streams, and 25 are ponds (open water). The MP, waterbody name, state water classification, and flow regime for surface waters crossed or otherwise impacted by the Project can be found in Exhibit C. The Project does not cross any waterbodies categorized as high-quality fisheries within South Dakota. A total of three waterbodies crossed by the Project are categorized as low-quality, and have warmwater fishery classifications: Turtle Creek (warmwater marginal), James River (warmwater semipermanent), and Big Sioux River (warmwater semipermanent) (ARSD 74:51:01, 2014); all of which will be crossed via HDD.

Q. What impacts to aquatic ecosystems are expected and what mitigation measures will be implemented?

A. Impacts to waterbodies that are open-cut will be limited to general crossing area during the construction phase and include: increased sedimentation and turbidity; introduction of water pollutants; or entrainment of fish. To reduce the possibility of potential impacts from a potential release, Dakota Access will implement the Spill Prevention, Containment, and Countermeasures Plan. No permanent long-term effects on water quality or fish communities are anticipated to occur as a result of the construction or operation of the pipeline.

Dakota Access will minimize potential impacts to open-cut waterbodies by implementing best management practices, where necessary.

Maintenance activities within the Project area will likely be infrequent, short-term, isolated, and will not affect aquatic biota or their habitat

The pipeline trench will be excavated immediately prior to pipe installation to limit the duration of construction will be expedited to minimize impacts. Excavated materials will be stored no less than 10 feet from the edge of the waterbody and temporary erosion control devices will be utilized to prevent the sediment from reentering the waterbody. Additional temporary workspace will be set back a minimum of 30 feet from the waterbody where conditions allow and vegetation will remain in place along the banks for as long as practical prior to crossing to further filter sediment from entering the waterbody. Bridges will be installed to allow for maximum flow of the waterbodies, and down stream flow will be maintained throughout construction actvities

The HDD crossing method will be utilized at all waterbody crossings greater than 100 feet wide, where required to avoid impacts to sensitive resources, and as needed for other constructability concerns. The HDD method allows for pipeline installation without excavating a trench. A HDD Contingency Plan has been prepared for construction. HDD crossings of wetlands and waterbodies are listed in the table below.

Wetland and Waterbody Horizontal Directional Drill Locations		
County	**Waterbody Name**	**HDD Length**
Faulk	Wetland	1,270
Spink	Turtle Creek	1,500
Spink	Wetland	1,650
Beadle	James River	3,227
Beadle	Wetland	1,194
Lincoln	Big Sioux River	2,350

Q. What wetland vegetation types are found along the pipeline route?

A. Wetlands are limited in extent to depression features (e.g., prairie potholes) and riparian

areas. Palustrine emergent (PEM) wetlands are the dominant wetland type throughout the Project area; there is one shrub scrub wetland and no forested wetlands.

Table 17.2-1 below summarizes all wetlands within the Project area; this includes USACE jurisdictional wetlands and non-jurisdictional wetlands.

Summary of Wetlands Crossed by the Dakota Access Project by County			
County	**PEM (acres)**	**PSS (acres)**	**Total (acres)**
Beadle County	4.4	0	**4.4**
Campbell County	2.7	0	**2.7**
Edmunds County	8.3	0	**8.3**
Faulk County	7.0	0	**7.0**
Kingsbury County	5.0	0	**5.0**
Lake County	5.1	0	**5.1**
Lincoln County	1.4	0	**1.4**
McCook County	3.5	0	**3.5**
McPherson County	2.5	0	**2.5**
Miner County	2.5	0	**2.5**
Minnehaha County	5.0	0.6	**5.6**
Spink County	20.9	0	**20.9**
Turner County	0.2	0	**0.2**
Total	**68.5**	**0.6**	**69.1**

Q. What impacts to wetlands are expected and how did Dakota Access work to minimize impacts?

A. Dakota Access has designed the Project to avoid permanent fill in wetlands. Aboveground facilities have been sited within upland areas resulting in no permanent loss of wetlands. As wetland features were surveyed, minor route adjustments were made where practicable to avoid or minimize the impact. Some wetland impacts will be avoided by implementation of an HDD.

Temporary impacts to wetlands that will be open cut will be limited to the construction phase and include disturbance of vegetation, potential for sedimentation, temporarily increased turbidity and related secondary effects.

Q. What best management practice will be implemented to protect and restore them?

A. Where impacts to wetlands are unavoidable, Dakota Access will implement BMPs to ensure that the wetland is restored post-construction in accordance with appliable regulations and permits. These BMPs include the following:

- Wetland boundaries will be clearly defined and marked prior to initiating construction in the area.
- The minimum construction equipment necessary for pipeline installation will be utilized within wetlands.
- If standing water or saturated soil conditions are present, or if construction equipment will cause ruts or mixing of the topsoil and subsoil, construction equipment operating in wetland areas would be limited to the use of low ground pressure equipment or normal equipment operating from timber equipment mats.
- Limit tree stump removal and grading within wetlands to the area directly over the pipeline, unless required for safe installation.
- Segregate topsoil from the area directly over the trench line in unsaturated soils.
- Use of trench plugs/breakers at wetland boundaries ensures that wetland hydrology is restored following construction.
- Pre-construction contours will be restored along the pipeline ROW, allowing wetlands to naturally revegetate.

Q. What sensitive, threatened and endangered aquatic species might be found along the route?

A. A comprehensive list of all federal and state listed species within the counties crossed by the Project, including habitat assessments and determinations of impact or effect on the species

was completed.

The USFWS South Dakota Ecological Field Office identified eight waterbodies crossed by the Project that have Topeka shiner occurrences; including the James River, Shue Creek, Pearl Creek, Middle Pearl Creek, Redstone Creek, Rock Creek, East Fork Vermillion River, and Big Sioux River. An additional waterbody, the West Fork Vermillion River, was also identified for occurrence; however, the project crosses in its headwaters where it is an emergent wetland with no perennial flowing water and therefore not suitable habitat for the species. Some of these will be crossed via HDD and avoid impacts to the species. All open cut crossing will take place in accordance with the *Programmatic Biological Opinion for the Issuance of Selected Nationwide Permits Impacting the Topeka Shiner in South Dakota* (October 2014) and result in no likely adverse effects.

The northern river otter and whooping crane have SDNHP species occurrence records within one mile of the Project. The northern river otter has been documented in the James and Big Sioux Rivers (SDNHP, 2014 and SDGFP, 2014c) within the Project area; however, both of these rivers will be crossed via HDD so potential impacts to the northern river otter will be avoided. The Project area is within the migratory range of the whooping crane; however, this stop-over species is highly mobile and would likely avoid construction areas for the vast similar and suitable habitat throughout the area and region, therefore no effect on this species is anticipated.

No other aquatic threatened, or endangered aquatic species or their critical habitat has been reported within two miles of the Project. Pending final results of field surveys and input from resource agencies, appropriate mitigation and protection measures will be implemented to minimize potential impacts.

Q. What air quality impacts are expected from the pipeline construction or operation?

A. Air quality impacts along the pipeline include potential air emissions during both construction and operation of the pipeline. Dakota Access will comply with all federal and state air quality regulations that are applicable to the proposed facilities along the pipeline and will take necessary steps to ensure that they do not cause an exceedance of any air quality standard. There is one proposed pump station along the pipeline; however, if the potential to emit is below 25 tons per year of each of the relevant criteria pollutants, a source is exempt from obtaining either a construction or operating permit in South Dakota. Emissions from the pump station are anticipated to be well below this threshold; additionally emissions from all launcher/receiver and main line valve sites will be well below the threshold. Therefore, no air permits are being sought.

Q. How has the project planned for its impacts on cultural resources?

A. Cultural resources surveys were conducted for the Project in accordance with Section 106 of the National Historic Preservation Act and the guidelines set forth by the South Dakota State Historical Society to identify and record the extent and temporal affiliation of archaeological resources and assess the potential eligibility for inclusion in the National Register of Historic Places (NRHP).

In August of 2014, consultation was initiated with the South Dakota State Historic Preservation Office (SHPO), and a scope of work was submitted and approved that detailed the Level III intensive survey plan for the Project. It included a survey plan for the Pre-construction Notification (PCN) permit areas defined by the lead Federal agency (USACE-Omaha District), provided a tiered survey approach for high and moderate probability areas as delineated through extensive background research, and the survey of any identified NRHP properties to comply with SDCL 1-19A-11.1. To provide additional information to the SHPO, GIS modeling based on

environmental factors and known cultural resources was used to create a predictive model for locations of unidentified cultural resources.

Q. Were literature reviews conducted and if so, what were the results?

A. Prior to initiating fieldwork for the proposed project route and all reroutes/route modifications, literature reviews were conducted. No properties listed in the NRHP are located within 1-mile of the Project centerline. Within one mile, 215 previous surveys, 148 archaeological sites, 397 historical structures and, eight cemeteries were noted. Two of these resources, both railroad segments, are eligible for inclusion in the NRHP; one which is not within the Project footprint and will be not be impacted and the other is the grade bed for the historic Great Northern Railroad in Spink County.

Q. Has the project performed archaeological investigations?

A. Archaeological investigations were conducted from August through November 2014 and March through July of 2015. Fieldwork consisted of pedestrian reconnaissance, shovel test excavation and test unit excavation. The artifacts collected during this survey were washed, analyzed, and catalogued. As of July 1 2015, all high and moderate probability areas have been surveyed in addition to low probability areas where access was permitted for a total of 97.7% of the route.

Surveys of three previously recorded sites (39CA85, 39ED53, 39BE85) listed as unassessed were re-surveyed and not relocated.

Three stream crossings in the Project were determined by the Level III survey to have the potential for buried cultural deposits. Deep trenching was conducted at these locations following a SHPO approved scope of work. The results of the trenching were negative for cultural material.

Q. Are any sites found along the project eligible for inclusion in the NRHP?

A. As of July 2015, a total of 55 cultural resources consisting of 50 archaeological sites and two historical districts and three individual structures were documented within the Project footprint. Of these, 42 sites have been recommended to be not eligible for inclusion in the NRHP. These sites consist of artifact scatters, isolated finds, or historic sites that do not possess adequate data or integrity to meet NRHP criteria. The three relocated sites discussed in the previous response remain unevaluated. The remaining ten sites consisting of two newly recorded prehistoric stone circle sites, two revisited prehistoric sites (39BE29/39BE94/39BE95; 39LN21), and six historic railroad/railroad bed segments have been recommended as eligible for inclusion in the NRHP. Reroutes have been evaluated to avoid impacts for the newly recorded prehistoric stone circle sites in Campbell County. Additionally, sites 39BE29/39BE94/39BE95 and 39LN21 will be avoided by HDD.

In South Dakota, all railroads are considered eligible for inclusion in the NRHP. Upon consultation with the SHPO it was determined that a construction trench could be excavated across the bed, but the bed must be reconstructed at the conclusion of construction. Photographic documentation and a brief context for each of these sites was determined to be an appropriate mitigation measure for the portion of the railroad beds impacted by the project. Dakota Access will comply with the excavation and restoration of these beds; therefore the impact would be negligible.

Q. Have reports of the investigations been prepared? If so, how will they be utilized?

A. Reports detailing the results of the comprehensive field investigations were prepared in accordance with the SHPO Guidelines submitted to the SHPO in June 2015 for review, no comments have been received to date. An Unanticipated Discovery Plan was also submitted to

the SHPO.

Q. Does this conclude your written pre-filed direct testimony?

A. Yes.

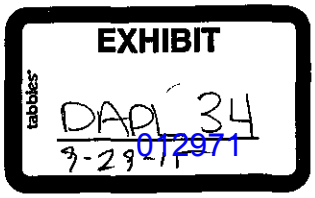
Dated this _____ day of July, 2015

_____

Monica Howard

Todd Stamm

Direct Testimony



BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION OF DAKOTA ACCESS, LLC FOR AN ENERGY FACILITY PERMIT TO CONSTRUCT THE DAKOTA ACCESS PIPELINE PROJECT	))))))	HP14-002

DIRECT TESTIMONY OF

TODD STAMM

ON BEHALF OF

DAKOTA ACCESS, LLC

DAKOTA ACCESS EXHIBIT 8

JUNE 26, 2015

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Q. Please state your name and business address for the record.

Answer: My name is Todd Stamm. I am the Vice President – Pipeline Operations of Sunoco Logistics L.P. My business address is One Fluor Daniel Drive, Building A, Level 3, Sugar Land, TX, 77478-5095.

Q. **Can you briefly describe your education and experience?**

Answer: I have over 20 years of experience with Sunoco Logistics, L.P. I have held various roles throughout the company, with a focus on operations, engineering and construction, project management and crude trucking. I hold a B.S. in Civil Engineering and Architectural Engineering from Drexel University and a MBA in Management from Wayne State University.

Q. Which sections, or portions of sections,of the application are you responsible for?

Answer: Section 23.1, 23.4, 23.7, 38.0 and 38.3 as well as all operational oversight.

Q. What is the purpose of your testimony?

ANSWER: I will describe how the Dakota Access pipeline will be operated and managed from a safety standpoint. This will include information regarding the operations control center for the Dakota Access pipeline, and the maintenance, surveillance and inspection procedures for the pipeline. I will also describe the public awareness and safety initiatives planned for the pipeline.

Q. Please described the operations control center.

ANSWER: The operations control center ("OCC") is a state of the art control center which coordinates all operations throughout the system, including flow rate, pressure, and opening and closing of valves. The operations control center also monitors devices that alert operators to changes in operating parameters, providing a detection mechanism for response to emergency conditions. Satellite and telecommunications links connect the operations control center with facilities along the pipeline to ensure rapid response and constant monitoring of pipeline conditions.

Q. Will the operations control center be operated 24/7?

ANSWER: Yes, the operations control center for the Dakota Access pipeline will be manned 24 hours a day, 7 days a week, 365 days a year.

Q. What kind of data will be collected and transmitted to the operations control center?

ANSWER: A wide variety of data necessary and useful to monitoring the pipeline's operations will be collected and transmitted to the operations control center. The advanced Supervisory Control and Data Acquisition ("SCADA") systems will be utilized to constantly monitor sensing devices placed along the pipeline to track the pressure, temperature, density, and flow of liquid petroleum under transport, and display each movement's status to operators at the control center. Through these systems the pipeline's operators can maintain the pipeline within established operating parameters and can remotely shut down pump stations and isolate pipeline segments when they observe abnormal conditions or if safety parameters are exceeded.

A subsystem of the SCADA system, known as the Computational Pipeline Monitoring system ("CPM"), has the ability to analyze deviations in the flow of liquids to the pipeline, thus improving the operator's ability to identify leaks and other abnormal operating conditions. The CPM system will be used on the Dakota Access pipeline as one of several leak detection capabilities.

Q. Will operating procedures be established to govern the operation and control of the pipeline through the operations control center?

ANSWER: Yes. Strict operations procedures will be prepared and used to direct the OCC operator's actions in both normal and abnormal operations to reduce the risk of release. Such systems and procedures are part of Energy Transfer's extensive efforts to maintain safe operations.

Q. In addition to remote monitoring and control of the pipeline's operations through the operation's control center, will local operation of the pipeline be possible?

ANSWER: Yes. In addition to remote control operations, local automated control operations and manual overrides will be in place to control or operate the pipeline should remote communications fail. Field operations personnel will be located in close proximity to facilities that are controlled remotely from the control center. Field personnel will be trained to respond to abnormal conditions and manually oversee equipment or systems as needed. In the event the pipeline cannot be safely operated manually through remote operations with the control center, the pipeline will be shut down until satisfactory control can be re-established.

Q. Please describe the procedures that will be employed for periodic inspections, surveillance, and maintenance of the Dakota Access pipeline.

ANSWER: During installation and commissioning, the line will be subjected to careful inspection and testing to verify its integrity and compliance with all regulatory standards and contract specifications. Testing will include checking coating integrity; examining by non-destructive testing 100% of field welds (which is well above the 10% required by federal regulation); internally inspecting the entire length of the line by using an inline

inspection tool; and hydrostatically testing the pipeline.

Detailed maintenance procedures will be established which will include regular inspections and surveillance of the pipeline which will include detailed analysis of navigable waterways as required by regulations of the U.S. Department of Transportation, Pipeline and Hazardous Material Safety Administration (PHMSA), at 49 Code of Federal Regulations Part 195.

The pipeline right of way will be patrolled and inspected by air every ten days, weather permitting, but at least every three weeks and not less than 26 times per year, to check for abnormal conditions or dangerous activities, such as unauthorized excavation along the pipeline route.

Q. Will maintenance and emergency response personnel be stationed along the route of the pipeline?

ANSWER: Yes. Upon completion of the project, in addition to the remote control capabilities of the operations control center described above, personnel will be strategically placed along the route of the pipeline. The pipeline operator and qualified contractors will maintain emergency response equipment and personnel at strategic points along the route and will train personnel to respond to pipeline emergencies. Additionally, contracts will be in place with oil spill response companies that have the capability to mobilize to support cleanup and remediation efforts in the event of a pipeline release.

Q. Where will the emergency response equipment be located?

ANSWER: Current plans are for the Redfield Pump Station and in close proximity to Sioux Falls, South Dakota.

Q. Where will the personnel with Dakota Access who are trained in emergencies responses be located?

ANSWER: All personnel employed on the DAPL system will be trained in emergency response as well as the NIMS ICS (National Incident Management System) (Incident Command System) system of managing an emergency response. Personnel will be staffed at the regional office at the Redfield Pump Station as well as several positioned along the main pipeline corridor.

Q. Will an emergency response plan be prepared for the Dakota Access pipeline?

ANSWER: Yes. An emergency response plan for the Dakota Access pipeline, as required by federal regulations 49 CFR 194 and approved by PHMSA, is being prepared and will be in place prior to commencing transportation of crude oil. The plan is currently in draft form.

In addition, the operator will coordinate with local emergency responders and trained local authorities in preventing and responding to any pipeline related problems. These activities will include conducting and hosting, over a period of time, emergency response drills with both employees and local emergency responders along the pipeline route.

Q. What kind of programs and procedures will be implemented to support public awareness and public safety?

ANSWER: For all of its pipelines, Energy Transfer conducts extensive public education outreach programs, including damage prevention programs, that meet or exceed industry (American Petroleum Institute Recommended Practice 1162) and Federal requirements (49 CFR 195.440) concerning public awareness of pipelines and pipeline safety matters. These programs will be implemented for the Dakota Access pipeline.

Q. Will signage be installed to alert the public to the location of the pipeline?

ANSWER: Yes. The Dakota Access pipeline will be marked with signage and warnings pursuant to federal regulations at road and highway crossings, navigable rivers, and other locations; to alert the public to the presence of underground lines and to provide information, contact numbers, and emergency data.

Q. Will Dakota Access utilize the one-call system?

ANSWER: Yes. The Dakota Access pipeline will utilize the 811 one-call system, which is a nationally recognized system to prevent third party damage to underground facilities. When a person or contractor plans to excavate, they place a call to the 811 one-call center and operators identify the location of where the excavation will be and then notify all affected utilities in the area. Upon notification, the pipeline company will dispatch personnel to mark the locations of the pipe and provide specific guidance to the caller if additional company oversight is needed during excavation.

Q. Will a fusion bonded epoxy coating be applied to the pipeline?

ANSWER: Yes.

Q. Please describe the fusion bonded epoxy coating that will be applied and its purpose.

ANSWER: Fusion Bonded Epoxy (FBE) coating consists of resin and hardener components in a powder form. When the powder is sprayed onto the heated pipe surface, the powder components combine to form a bond to the steel surface and provide a coating barrier between the steel pipe surface and corrosive environments, such as soil or water, preventing corrosion of the underlying steel pipeline surface.

Q. Will a cathodic protection system be installed on the pipeline?

ANSWER: Yes.

Q. Please describe the cathodic protection system and how it works.

ANSWER: The cathodic protection system will be an impressed current system. It will consist of multiple transformer/rectifier units and anode installations along the pipeline route. The transformer/rectifier units convert AC current to DC current. The DC current is injected into the earth from the anode installations and the DC current flows from the anodes to the pipeline surface through earth. The interaction between the applied DC current from the transformer/rectifier anode installations and the corrosion current at the pipe surface where the FBE coating may have been damaged mitigates corrosion of the pipeline steel surface.

Q. If the Dakota Access pipeline is constructed, installed, and operated as described in the application and at this hearing, do you believe the pipeline can be safely operated?

ANSWER: Yes

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION OF DAKOTA ACCESS, LLC FOR AN ENERGY FACILITY PERMIT TO CONSTRUCT THE DAKOTA ACCESS PIPELINE PROJECT	))))))	HP14-002

REBUTTAL TESTIMONY OF

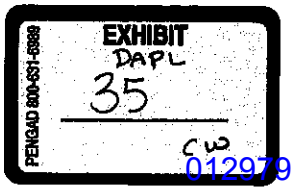
MICAH RORIE

ON BEHALF OF

DAKOTA ACCESS, LLC

DAKOTA ACCESS EXHIBIT #___

August 14, 2015



Q. Please state your name and business address for the record.

A. My name is Micah Rorie. I am employed by Energy Transfer Partners and my business address is 1300 Main St, Houston, TX. 77002.

Q. What is your position with Dakota Access, LLC ("Dakota Access")?

A. I am the Senior Manager of Land and Right-of-Way.

Q. Please briefly describe your educational experience.

A. I have a Bachelor's degree in Economics from Texas A&M University and have 8 years of experience in various facets of right of way acquisitions and management.

Q. Please describe your duties with Dakota Access.

A. I am responsible for the right-of-way acquisition and related work activities for Dakota Access.

Q. Have you previously submitted direct testimony and exhibits in this proceeding?

A. No, I have not.

Q. What is the basis for your rebuttal testimony?

A. Several affected landowners filed direct testimony in the proceeding making statements that need to be addressed and/or corrected by means of my rebuttal testimony.

Q. Exactly what statements are you referring to?

A. A common theme throughout their direct testimony was the concern about the impacts of the project to clay and/or cement drain tiles. Also, another concern brought forth with their testimony was the concern about crop production post pipeline construction.

Q. How does Dakota Access look to address the landowners concerns?

A. The Agricultural Impact Mitigation Plan ("AIMP"), attached as Exhibit D to the Direct Testimony of John H. Edwards "Jack" was developed by Dakota Access for the project

and addresses the concerns brought for the by the landowners related to drain tiles and for crop loss.

Q. Where in the AIMP does it address these items?

A. Section 6 f. – Temporary and Permanent Repair of Drain Tiles, Section 6 k. – Future Drain Tiles and Soil Conservation Structure Installation and Section 7 – Compensation for Damages specifically address the concerns of the landowners.

Q. And how so?

A. Section 6 f specifically states that Dakota Access will install, or compensate the landowner to install, with landowner consent, parallel tile drains along the proposed right-of-way in advance of pipeline construction in order to maintain the drainage of the field tile drain system. In addition, Section 6 also addresses the temporary repair of drain tile lines encountered during construction as well as the permanent repairs to any tile disturbed or damaged during construction. Any tile disturbed or damaged by pipeline construction will be repaired to its original or better condition. Dakota Access will utilize a Tile Inspector that will inspect each permanent tile repair for compliance prior to backfilling the trench area.

Q. What about if it is later determined the drain tile system in not functioning correctly?

A. If it is determined that the tile line in the area disturbed by construction in not functioning correctly or that land adjacent to the pipeline in not draining properly and can be reasonably be attributed to the pipeline construction, Dakota Access will make further repairs or install additional tile as necessary to restore subsurface drainage.

Q. That addresses concerns about drain tile, now what about crop production?

A. As I stated earlier, Section 7 – Compensation for Damages addresses the landowner concerns related to crop production in that it specifically states that Dakota Access will be responsible for compensation landowners for the value of crop loss during construction and will also compensate for the loss of use of agricultural land, if attributable to construction.

Q. That response only addresses crop loss during construction. What about future crop production?

A. As part of the calculation of payments to landowners, Dakota Access has committed to paying for crop damages for a three year period at 100% for the first year, 80% for the second year, and 60% for the third year.

Q. One landowner expressed concern about rocks brought to the surface during construction. How does Dakota Access address that concern?

A. Section 6 g. – Removal of Rocks and Debris from the Right-of-Way specifically addresses the manner in which rocks will be removed from the right-of-way and/or utilized during the backfilling process of construction. In addition, Dakota Access will examine areas adjacent to the pipeline easement and along access roads and will remove any large rocks or debris that may have rolled or blown from the right-of-way or fallen from vehicles.

Q. What other areas related to Agricultural Mitigation Measures are addressed within the AIMP?

A. Other Agricultural Mitigation Measures addressed within the AIMP are as follows: Clearing Brush and Trees along the Easement; Topsoil Separation and Replacement; Prevention of Erosion; Aboveground Facilities; Pumping Water from Open Trenches;

Restoration after Soil Compaction and Rutting; Restoration of Terraces, Waterways and other Erosion Control Structures; Revegetation of Untilled Land; Restoration of Land Slope and Contour; Siting and Restoration of Areas Used for Field Entrances and Temporary Roads; and Construction in Wet Conditions.

Q. How will landowners be able to contact Dakota Access during construction if there is an issue?

A. Section 4 – Points of Contact in the AIMP states that Dakota Access will provide each landowner a name, telephone number, email address, and mailing address of the Dakota Access landowner representative two weeks prior to construction. The Dakota Access representative will be the primary contact for landowners throughout construction. In addition, a team of experienced Environmental and/or Agricultural Inspectors (EI's/AI's) will be involved in project construction, initial restoration, and the post-construction monitoring and follow-up restoration. For agricultural related issues, the name and telephone number of the EI/AI assigned to the area will also be provided as a secondary contact during construction.

Q. Does this conclude your testimony?

A. Yes.

Dated this ____ day of August 2015

_____

Micah Rorie

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION OF DAKOTA ACCESS, LLC FOR AN ENERGY FACILITY PERMIT TO CONSTRUCT THE DAKOTA ACCESS PIPELINE PROJECT	))))))	HP14-002

REBUTTAL TESTIMONY OF

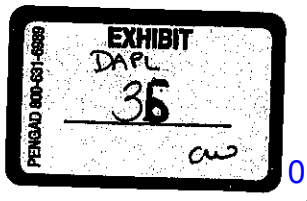
JOEY MAHMOUD

ON BEHALF OF

DAKOTA ACCESS, LLC

DAKOTA ACCESS EXHIBIT#___

August 14, 2015



Q. Please state your name and business address for the record.

A. My name is Joey Mahmoud, I am Vice President of Engineering of Dakota Access, LLC ("Dakota Access"), the Applicant in this proceeding, and Senior Vice President of Engineering of Energy Transfer Partners, L.P. ("ETP"). My business address is 1300 Main St, Houston, TX. 77002.

Q. Have you previously submitted direct testimony in this proceeding?

A. Yes, I previously submitted direct testimony, dated July 6, 2015 which is identified as Dakota Access Exhibit 2.

Q. What is the purpose of your rebuttal testimony?

A. The purpose of my rebuttal testimony is to respond to the testimony of Commission Staff Witness Darren Kearney that recommended the Commission require an indemnity bond of $24 million for the year in which construction is to commence and a second bond in the amount of $24 million for the ensuing year.

In addition, I will address various concerns expressed by interveners.

Q. Do you believe Staff's bond recommendation is consistent with past Commission decisions?

A. No.

Q. What is the methodology used by the Commission in past decisions?

A. In the TransCanada in Docket No. HP07-001, the Commission used the proposed bond value identified in the Socioeconomic Assessment of Keystone Pipeline, prepared by Staff Witness John Muehlhausen. Mr. Muehlhausen recommended a $3 million bond in 2008 and $12 million for 2009. Staff Witness Muehlhausen's Socioeconomic Assessment of the Keystone Pipeline stated on page 38, "The cumulative bond amount is

12 times the estimated cost of repairs/maintenance."

Then, in Docket No. HP09-001, the Commission adopted the same approach in which the Keystone XL indemnity bond was established at $15,600,000 for each year of construction.

Doing the math then, in HP 07-001, the estimated road repairs and maintenance amounted to $250,000 in 2008 and $1,000,000 in 2009.

For HP 09-001, this equates to $2,600,000 per calendar year or 1.69% of total construction cost per calendar year.

Q. How do you apply that methodology in this case?

A. In simple terms, 1.69% of Dakota Access construction cost is $7,024,930 ($415,676,350 x 1.69%). However, we estimate road repairs and maintenance to be approximately 1% of the total construction costs of the project, which is based upon Energy Transfer's collective project experience over more than 72,000 miles of pipe and thousands of pipes being constructed over the years. For Dakota Access and the construction in South Dakota, the construction cost is estimated to be roughly $415,676,350 over a one-year construction season. One-percent of this amount is $4,156,764. Therefore, Dakota Access believes $4,156,764 is a fair and equitable amount for a road bond and would cover any expenses related to construction.

Q. How does it work if you base the bond on a percentage of total construction cost?

A. Keystone XL (HP09-001), the $15.6 million bond equated to 1.69% of the estimated capital cost of $921.4 million on a per construction year basis. Which, based upon Dakota Access's experience is slightly elevated, but roughly accurate. As mentioned above, 1% of the construction cost of Dakota Access's construction cost is approximately

$4,156,764 and 1% of the overall capital cost (similar comparison to Keystone XL is [$820,000,000 X 1%]) $8,200,000.

Q. Did Dakota Access propose and indemnity bond?

A. Yes, in response to Staff's Completeness Review Data Request No. 32, Dakota Access proposed an indemnity bond totaling $15,000,000.

Q. **Do you feel the proposed $15,000,000 bond amount is sufficient to insure any damage beyond normal wear and tear to public roads, highways, bridges, or other related facilities would be adequately compensated?**

A. Yes. The $15,000,000 is roughly 2.6 times more than the equitable value of the road bond as a percentage of construction and 1.8 times more than the capital cost assuming 1 percent of construction or at 1.69% of capital cost as utilized on Keystone XL, the $13,858,000 is 1.08 times more than what was conditioned on Keystone XL. In any comparative metric, Dakota Access's proposal is more than the previous bonds as a percentage basis compared to Keystone XL on a per calendar year.

Q. Are you still proposing the $15,000,000 bond in light of the above application of prior Commission methodology?

A. Yes, even though Dakota Access views the amount as excessive and since we have previously agreed to the amount, we would honor the previously proposed bond amount of $15,000,000. However, we would accept a lesser amount to be equitable across "similar in concept" projects in South Dakota.

Q. Mr. Mahmoud, have you studied the Keystone conditions imposed by the Commission in HP09-001?

A. Yes I have. The Order, which states those conditions, is attached to this testimony marked as Exhibit 1.

Q. Can Dakota Access accept and agree to implement any of those listed conditions on this proposed project?

A. Conceptually, in relative comparative terms, yes. However, certain aspects of the conditions would have to be revised to account for project-specific differences, timing of the project and certain submittal deadlines and to account for the fact that Dakota Access is not proposing to construct or operate its pipeline under an alternative methodology or special permit under PHMSA and Dakota Access is a 100% domestic project with no international border crossing or Federal permit or corresponding Federal Environmental Impact Statement. Taking into account those major differences and the site-specific nature of the each project and the applicable conditions, Dakota Access generally agrees to the conditions and specifically we would agree to the following with project-specific adjustments as listed on Keystone XL's Exhibit 1:

1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, , 26, 27, 28, 30, 31, 32, 33, 34, 36, 37, 38, 39, 40, 42, 43, 45, 46, 47, 48, 49, 50.

Q. What about the other conditions you did not list?

A. The conditions not listed as being acceptable are of such difference to the concepts, designs, and site-specific criteria that Dakota Access does not think even with modifications would those conditions apply. For example, Condition 3 under Keystone XL's Exhibit 1 is specific to the requirements of the Keystone XL Federal requirements since it requires a Presidential Permit from U.S. Department of State for the international border crossing and a resultant federally prepared Environmental Impact Statement and

certain consultation requirements as required by the National Environmental Policy Act. Dakota Access simply does not have such a requirement as part of its project as it is a 100% domestic project with its origin and termination within the lower 50 states of the United States.

Condition 41. This condition is specific to Keystone XL in its entirety and does not apply to Dakota Access.

Q. **Which Keystone XL's Exhibit 1 conditions would not apply to Dakota Access in their entirety?**

A. Conditions 3, Condition 29 and 35.

Condition 3 as mentioned above is not applicable as Dakota Access does not require those type of approvals or an Environmental Impact Statement is not being proposed.

Condition 29 is not applicable as we will not engage in mainline winter construction. However, if for some reason mainline construction would occur in the winter, Dakota Access agrees to provide a winter construction plan to the Commission no less than 60 days prior to conventional construction in the winter.

Condition 35 is not applicable as it pertains to a county that is not traversed by the proposed project.

Q. **Comment on those Conditions imposed in the Keystone XL project that may need some adjustment to apply to the Dakota Access proposed project.**

A. In general all of the conditions that pertain to the construction and operation of the pipeline require some level of updating and to make those conditions project specific. Overall, Dakota Access have different methodologies and fall under similar, but different, rules under 49 CFR 195 because Dakota Access is not requesting any exceptions or

changes to the standard requirements under 49 CFR 195 whereas Keystone XL have proposed their pipeline under a Special Permit. Therefore, the various plans we filed as Exhibit D to the Application address our techniques and plans. Several staff experts and interveners raised questions regarding various aspects of our plans. Monica Howard and Aaron DeJoia, in their rebuttal, address those concerns. In addition to the project specific modifications required for the overall set of Keystone XL conditions, provided below are Dakota Access's comments to the Keystone XL conditions that with certain specific modifications, are acceptable.

Condition 2 requires modification to remove the requirements for consultation and adherence to the Presidential Permit, the reference to the PHMSA special permit and any reference to an Environmental Impact Statement.

Condition 7. Dakota Access agrees to provide a public liaison officer but this person is proposed to be the Dakota Access lead Project Manager for South Dakota and will be back-stopped for times when he cannot be available by the lead right-of-way manager for South Dakota. These individuals are generally available in the state and on the project every day and will have the greatest knowledge of the project during construction and have immediate access to Dakota Access Executive Project Manager and other staff, corporate resources, contractors or any other contact on the project.

Condition 10. Dakota Access accepts this condition, but since we are within 6 months of construction, the timing should be updated to reflect "Prior to Construction, Dakota Access shall continue its program of contacts and consultation with....."

Condition 19. In the event trees are to be removed along the pipeline, Dakota Access has or will pay the landowners for loss of and removal of any trees on their property and will replant any trees in accordance with the land or right-of-way agreement. Additionally, the width of the right-of-way may be greater than 85 feet or 50 feet as contemplated in the Keystone Xl condition based upon site-specific needs, landowner and/or right-of-way agreements that allow for larger openings. Any such limitation should be predicated upon the proposed project plan as submitted and not an overall blanket or general statement as it does not accurately reflect the site-specific conditions of the pipeline or project construability needs or landowner agreements. Also, after construction, no trees will be replanted or allowed to grow within 25 feet of the centerline of the pipeline.

Condition 23 f. Any road bonds or special conditions should be specific to Dakota Access and as previously mentioned should be a total of $15,000,000 or less as determined by the Commission based upon the aforementioned data provided.

Condition 24 g. Dakota Access agrees to the concepts of this condition but suggests that the time to backfill the trench would be 14 days in residential areas. In all instances, Dakota Access will backfill the ditch as soon as practical after installing the pipeline to reduce hazards to the residents or public.

Condition 25. Dakota Access has provided its construction plan, agriculture crossing plan and erosion and sedimentation plan which all contemplate construction in adverse weather conditions. Therefore, an additional plan is not necessary outside of the information already provided. However, Dakota Access will agree to limit its construction or stop construction in the event weather conditions pose a threat to safety of the construction workforce and/or irreparable damage that cannot be mitigated for with construction or work techniques.

Condition 31. Dakota Access has not or is not requesting a Special permit from PHMSA and therefore this provision is not applicable.

Condition 37. Dakota Access agrees to this condition in concept but suggests that it be changed to and have the word 'minimum" added to the width requirements. In most instances and in accordance with the landowner easements, Dakota Access will maintain a 50 foot wide easement (25 foot on each side of the centerline) for operations in a herbaceous state, but in select areas may reduce this to 15 feet or a minimum of a 30 foot maintained corridor in a herbaceous state. However, this is the exception and not the majority.

Condition 38. Similar to Condition 37, Dakota Access agrees to the concept of this condition but suggests that it be changed to and have the word 'minimum" added to the width requirements and replace the 10 feet with 15 feet as the minimum clearing width

from the centerline of the pipeline. Ten feet, let alone 15 feet, is simply not wide enough to do meaningful and complete leak detection surveys and Dakota Access does not believe this conforms to the monitoring requirements as required by 49CFR195. In most instances and in accordance with the landowner easements, Dakota Access will maintain a 50 foot wide easement (25 foot on each side of the centerline) for operations in a herbaceous state, but in select areas may reduce this to 15 feet or a minimum of a 30 foot maintained corridor in a herbaceous state. However, this is the exception and not the majority. Anything less than the 30 foot wide corridor impacts the ability to do aerial patrol leak detection surveys?

Condition 40. Dakota Access agrees with a portion of this condition as it relates to the South Dakota water districts, but does not agree with the overly burdensome notice provisions or expansiveness of the condition above and beyond the federal requirements as contemplated under the 49 CFR 195 or any requirements under the Clean Water Act (1972), Oil Pollution Act (1990), Comprehensive Environmental Response, Compensation, and Liability Act of 1980 or the National Pollution Funds Center guidance manual for water quality or spills and remediation (or any other Federal or state legislation that may contemplate spills and clean-up activities). Dakota Access has reached agreement with the water districts traversed by the proposed pipeline to implement voluntary protection mechanisms that will result in relocating the water lines to a depth below the proposed pipeline and to replace the water lines with materials impervious to BTEX up to and extending a minimum to the extent of the permanent easement or more depending upon the water district's guidance (copies can be provided if

requested). However, this agreement is limited to the water districts and does not apply to specific landowners or other owners of water systems that may be traversed or as suggested in the Keystone XL conditions. Dakota Access has reviewed the technical documentation pertaining to submersion of water lines in crude oil and although the study results indicated the possibility of permeating into the water or into the pipe, the reality of real world conditions suggests this would not occur and therefore, the science behind the studies is substantially flawed and cannot reasonably be applied to actual real world conditions. Simply put, a spill large enough to saturate the soils surrounding the water pipe would never be allowed to sit for one year without notice, clean-up or remediation. Dakota Access will and agrees to protect any water system and will take immediate measures to protect any water system in the event of a release of any size and would mitigate the exposure to a water line or system. In the event a release did occur and a water line was submerged or impacted, Dakota Access, as part of its restoration and mitigation responsibilities, would ensure that water pipes or any impacts were mitigated so as not to result in any impact to the public, landowners or water system or districts.

Condition 44. Dakota Access consulted with Museum of Geology at the South Dakota School of Minerals and Technology for paleontological resources and based upon that consultation and review of their data, no areas of concern were identified and therefore Keystone XL condition 44 in its entirety does not apply. However, Dakota Access Unanticipated Discoveries Plan contemplates paleontological resources and the actions Dakota Access would employ if such resources were encountered during construction.

Q. **Is it your testimony that the proposed project will meet or exceed all relevant federal and state requirements?**

A. Yes it is. We have asked for no waivers from PHMSA with respect to the construction and operation of this pipeline. This pipeline meets or exceeds all state and federal requirements for construction and operations.

Q. Will the proposed facility comply with all applicable laws and rules?

A. Yes it will.

Q. Will the facility pose a threat of serious injury to the environment or to the social and economic condition of inhabitants or expected inhabitants in the siting area?

A. No. Dakota Access will be a state of the art facility constructed and operated by professionals. Normal operation of the pipeline poses no threat of serious injury to the environment. Our construction techniques, materials utilized, testing plans and operational plans, procedures and continuous monitoring activities are designed and built into the project to avoid, minimize and mitigate any threat from abnormal operations of the pipeline. Our emergency response plans and staging of personnel and equipment to manage and abnormal conditions or other effects of abnormal operations are also designed and incorporated into the project and facilities to substantially mitigate any threat.

Q. Under normal pipeline operations, will agricultural activities be affected?

A. No. We know that construction will have effects, although temporary, on agricultural activities. We have developed construction and agricultural mitigation plans, have hired local and regional experts to design construction techniques and restoration plans to restore agricultural areas to their pre-project conditions and fully expect any impacts to

be fully mitigated within a three year period. As such, we have and are paying landowners for three years of crop loss up front and in instances where there is a reduction of yield that has resulted from our pipeline beyond the three year period, we will work with those landowners to restore the production to similar production as compared to undisturbed areas not affected by construction and compensate those landowners until such impacts are fully restored.

Q. **Will the facility substantially impair the health, safety or welfare of the inhabitants?**

A. No.

Q. **Will the facility unduly interfere with the orderly development of the region?**

A. No. During the routing of the pipeline, Dakota Access spent considerable time and resources as well as consulting with the various Federal, state, and local governmental bodies and landowners and any other interested parties identifying and avoiding as many stakeholders, development areas, constraints and/or obstacles as possible while still allowing for a route that is constructible and safe. Based upon this routing, Dakota Access believes the route will not interfere with the orderly development of the region and is located along such a route to avoid areas of potential development.

Q. **What consideration has been given the views of governing bodies of affected local units of government?**

A. We consulted with local governments as much as practicable in all counties and a number of cities along the proposed route, made the recommended adjustments when requested and believe that we have routed the pipeline to account for the best route with the least amount of impacts to the most stakeholders while still allowing for a pipeline route that is constructible and safe and minimizes impacts to the human and natural environmental

considerations and resources.

Q. Does this conclude your testimony?

A. Yes.

Dated this 14 day of August, 2015

_____

Joey Mahmoud

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION BY TRANSCANADA KEYSTONE PIPELINE, LP FOR A PERMIT UNDER THE SOUTH DAKOTA ENERGY CONVERSION AND TRANSMISSION FACILITIES ACT TO CONSTRUCT THE KEYSTONE XL PROJECT	)))))	AMENDED FINAL DECISION AND ORDER; NOTICE OF ENTRY HP09-001

PROCEDURAL HISTORY

On March 12, 2009, TransCanada Keystone Pipeline, LP ("Applicant" or "Keystone") filed an application with the South Dakota Public Utilities Commission ("Commission") for a permit as required by SDCL Chapter 49-41B to construct the South Dakota portion of the Keystone XL Pipeline ("Project")[1]. The originally filed application described the Project as proposed to be an approximately 1,702 mile pipeline for transporting crude oil from Alberta, Canada, to the greater Houston area in Texas, with approximately 1,375 miles to be located in the United States and 313 miles located in South Dakota.

On April 6, 2009, the Commission issued its Notice of Application; Order for and Notice of Public Input Hearings; and Notice of Opportunity to Apply for Party Status. The notice provided that pursuant to SDCL 49-41 B-17 and ARSD 20:10:22:40, each municipality, county, and governmental agency in the area where the facility is proposed to be sited; any nonprofit organization, formed in whole or in part to promote conservation or natural beauty, to protect the environment, personal health or other biological values, to preserve historical sites, to promote consumer interests, to represent commercial and industrial groups, or to promote the orderly development of the area in which the facility is to be sited; or any interested person, may be granted party status in this proceeding by making written application to the Commission on or before May 11, 2009.

Pursuant to SDCL 49-41B-15 and 49-41B-16, and its Notice of Application; Order for and Notice of Public Hearings and Notice of Opportunity to Apply for Party Status, the Commission held public hearings on Keystone's application as follows: Monday, April 27, 2009, 12:00 noon CDT at Winner Community Playhouse, 7th and Leahy Boulevard, Winner, SD, at which 26 persons presented comments or questions; Monday, April 27, 2009, 7:00 p.m. MDT at Fine Arts School, 330 Scottie Avenue, Philip, SD, at which 17 persons presented comments or questions; and Tuesday, April 28, 2009, 6:00 p.m. MDT at Harding County Recreation Center, 204 Hodge Street, Buffalo, SD, at which 16 persons presented comments or questions. The purpose of the public input hearings was to hear public comment regarding Keystone's application. At the public input hearings, Keystone presented a brief description of the project, following which interested persons appeared and presented their views, comments and questions regarding the application.

On April 29, 2009, Mary Jasper (Jasper) filed an Application for Party Status. On May 4, 2009, Paul F. Seamans (Seamans) filed an Application for Party Status. On May 5, 2009, Darrell Iversen (D. Iversen) filed an Application for Party Status. On May 8, 2009, the City of Colome (Colome) and Glen Iversen (G. Iversen) filed Applications for Party Status. On May 11, 2009, Jacqueline Limpert (Limpert), John H. Harter (Harter), Zona Vig (Vig), Tripp County Water User District (TCWUD), Dakota Rural Action (DRA) and David Niemi (David Niemi) filed Applications for

[1]The Commission's Orders in the case and all other filings and documents in the record are available on the Commission's web page for Docket HP09-001 at: http://puc.sd.gov/dockets/hydrocarbonpipeline/2009/hp09-001.aspx

Party Status. On May 11, 2009, the Commission received a Motion for Extension of Time to File Application for Party Status from DRA requesting that the intervention deadline be extended to June 10, 2009. On May 12, 2009, Debra Niemi (Debra Niemi) and Lon Lyman (Lyman) filed Applications for Party Status. On May 15, 2009, the Commission received a Response to Motion to Extend Time from DRA and a Motion to Establish a Procedural Schedule from the Commission's Staff ("Staff").

At its regularly scheduled meeting of May 19, 2009, the Commission voted unanimously to grant party status to Jasper, Seamans, D. Iversen, Colome, G. Iversen, Limpert, Harter, Vig, TCWUD, DRA, David Niemi, Debra Niemi and Lyman. The Commission also voted to deny the Motion for Extension of Time to File Application for Party Status, and in the alternative, the Commission extended the intervention deadline to May 31, 2009. On May 29, 2009, Ruth M. Iversen (R. Iversen) and Martin R. Lueck (Lueck) filed Applications for Party Status. At its regularly scheduled meeting of June 9, 2009, the Commission voted unanimously to grant the Motion to Establish a Procedural Schedule and granted intervention to R. Iversen and Lueck.

On August 26, 2009, the Commission received a revised application from Keystone. On September 3, 2009, the Commission received a Motion for Extension of Time to Submit Testimony from DRA. At its regularly scheduled meeting of September 8, 2009, the Commission voted unanimously to grant the Motion for Extension of Time to Submit Testimony to extend DRA's time for filing and serving testimony until September 22, 2009.

On September 18, 2009, Keystone filed Applicant's Response to Dakota Rural Action's Request for Further Discovery. On September 21, 2009, DRA filed a Motion to Compel Responses and Production of Documents Addressed to TransCanada Keystone Pipeline, LP Propounded by Dakota Rural Action. At an ad hoc meeting on September 23, 2009, the Commission considered DRA's Motion to Compel and on October 2, 2009, issued its Order Granting in Part and Denying in Part Motion to Compel Discovery. By letter filed on September 29, 2009, Chairman Johnson requested reconsideration of the Commission's action with respect to DRA's Request 6 regarding Keystone documents pertaining to development of its Emergency Response Plan for the Project. At its regularly scheduled meeting on October 6, 2009, the Commission voted two to one, with Commissioner Hanson dissenting, to require Keystone to produce to DRA via email the References for the Preparation of Emergency Response Manuals before the close of business on October 6, 2009, that DRA communicate which documents on the list it wished Keystone to produce on or before the close of business on October 8, 2009, and that Keystone produce such documents to DRA on or before October 15, 2009.

On October 2, 2009, Staff filed a letter requesting the Commission to render a decision as to whether the hearing would proceed as scheduled commencing on November 2, 2009. Staff's letter stated that rescheduling the hearing would result in significant scheduling complications for Staff's expert witnesses whose scheduling and travel arrangements had been made months earlier based on the Commission's Order Setting Procedural Schedule issued on June 30, 2009. At its regular meeting on October 6, 2009, the Commission considered Staff's request. At the meeting, all parties agreed that the hearing could proceed on the scheduled dates. DRA requested that its date for submission of pre-filed testimony be extended from October 14, 2009, until October 22, if possible, or at least until October 20, 2009. After discussion, the parties agreed on an extension for DRA's pre-filed testimony until October 20, 2009, with Applicant's rebuttal to be filed by October 27, 2009. The Commission voted unanimously to approve such dates and issued its Order Setting Amended Procedural Schedule on October 8, 2009.

On October 15, 2009, the Commission issued its Order for and Notice of Hearing setting the matter for hearing on November 2-6, 2009, and its Order for and Notice of Public Hearing for an

additional informal public input hearing to be held in Pierre on November 3, 2009, commencing at 7:00 p.m. CST. On October 19, 2009, DRA requested that the time for commencement of the public hearing be changed from 7:00 p.m. CST to 6:00 p.m. CST to better accommodate the schedules of interested persons. On October 21, 2009, the Commission issued an Amended Order for and Notice of Public Hearing amending the start time for the public hearing to 6:00 p.m. CST.

On October 19, 2009, Keystone filed a second revised application ("Application") containing minor additions and amendments reflecting refinements to the route and facility locations and the most recent environmental and other planning evaluations.

In accordance with the scheduling and procedural orders in this case, Applicant, Staff and Intervenors David and Debra Niemi filed pre-filed testimony. The hearing was held as scheduled on November 2-4, 2009, at which Applicant, DRA and Staff appeared and participated. The informal hearing was held as scheduled on the evening of November 3, 2009, at which 23 persons presented comments and/or questions. A combined total of 326 persons attended the public input hearings in Winner, Phillip, Buffalo and Pierre. As of February 26, 2009, the Commission had received 252 written comments regarding this matter from the public.

On December 31, 2009, the Commission issued its Amended Order Establishing Briefing Schedule setting the following briefing schedule: (i) initial briefs and proposed findings of fact and conclusions of law from all parties wishing to submit them due by January 20, 2010; and (ii) reply briefs and objections and revisions to proposed findings of fact and conclusions of law due from all parties wishing to submit them on or before February 2, 2010.

On January 13, 2009, Intervenor David Niemi filed a letter with the Commission requesting and recommending a series of conditions to be included in the order approving the permit, if granted. On January 20, 2010, initial briefs were filed by the Applicant and Staff. On January 20, 2010, Applicant also filed and served proposed findings of fact and conclusions of law. On January 21, 2010, DRA filed an initial brief and Motion to Accept Late-Filed Brief. On January 21 and 26, 2010, respectively, Keystone and Staff filed letters of no objection to acceptance of DRA's late-filed initial brief. On February 2, 2010, reply briefs were filed and served by Applicant, DRA and Staff, and Keystone filed Applicant's Response to David Niemi's Letter filed on January 13, 2010.

At an ad hoc meeting on February, 18, 2010, after separately considering each of a set of draft conditions prepared by Commission Counsel from inputs from the individual Commissioners and a number of Commissioner motions to amend the draft conditions, the Commission voted unanimously to approve conditions to which a permit to construct the Project would be subject, if granted, and to grant a permit to Keystone to construct the Project, subject to the approved conditions.

On April 14, 2010, Keystone filed Applicant's Motion for Limited Reconsideration of Certain Permit Conditions ("Motion"). On April 19, 2010, intervenors David Niemi and Seamans filed responses to the Motion. On April 19, 2010, Peter Larson ("Larson") filed two comments responsive to the Motion. On April 27, 2010, Keystone filed Applicant's Reply Brief In Support of Motion for Limited Reconsideration responding to the responses and comments filed by Niemi, Seamans and Larson. On April 28, 2010, Staff filed a response to the Motion. On April 29, 2010, DRA filed the Answer of Dakota Rural Action in Opposition to Applicant's Motion for Limited Reconsideration of Certain Permit Conditions.

At its regularly scheduled meeting on May 4, 2010, the Commission considered the Motion and the responses and comments filed by the parties and Larson. Applicant, Staff, intervenor John

H. Harter, DRA and Larson appeared and participated in the hearing on the Motion. After an extensive discussion among the Commission and participants, the Commission made rulings on the specific requests in the Motion and voted to grant the Motion in part and deny in part and amend certain of the Conditions as set forth in the Commission's Order Granting in Part Motion to Reconsider and Amending Certain Conditions In Final Decision And Order, which was issued by the Commission on June 29, 2010.

Having considered the evidence of record, applicable law and the arguments of the parties, the Commission makes the following Findings of Fact, Conclusions of Law and Decision:

FINDINGS OF FACT

Parties

1. The permit applicant is TransCanada Keystone Pipeline, LP, a limited partnership, organized under the laws of the State of Delaware, and owned by affiliates of TransCanada Corporation ("TransCanada"), a Canadian public company organized under the laws of Canada. Ex TC-1, 1.5, p. 4.

2. On May 19, 2009, the Commission unanimously voted to grant party status to all persons that had requested party status prior to the commencement of the meeting. On June 9, 2009, the Commission unanimously voted to grant party status to all persons that had requested party status after the commencement of the meeting on May 19, 2009, through the intervention deadline of May 31, 2009. Fifteen persons intervened, including: Mary Jasper, Paul F. Seamans, Darrell Iversen, the City of Colome, Glen Iversen, Jacqueline Limpert, John H. Harter, Zona Vig, Tripp County Water User District ("TCWUD"), Dakota Rural Action, David Niemi, Debra Niemi, Ruth M. Iversen, Martin R. Lueck, and Lon Lyman. Minutes of May 19, 2009, and June 9, 2009, Commission Meetings; Applications for Party Status.

3. The Staff also participated in the case as a full party.

Procedural Findings

4. The application was signed on behalf of the Applicant on February 26, 2009, in Calgary, Alberta, Canada, and was filed with the Commission on March 12, 2009. Ex TC -1, 9.0, p. 116.

5. The Commission issued the following notices and orders in the case as described in greater detail in the Procedural History above, which is hereby incorporated by reference in these Findings of Fact and Conclusions of Law:

- Order of Assessment of Filing Fee
- Notice of Application; Order for and Notice of Public Input Hearings; and Notice of Opportunity to Apply for Party Status
- Order Granting Party Status; Order Denying Motion for Extension of Time to File Application for Party Status; Order Extending Intervention Deadline
- Order Granting Motion to Establish Procedural Schedule and Order Granting Party Status
- Order Setting Procedural Schedule
- Order Granting Motion for Extension of Time to Submit Testimony

- Order Granting in Part and Denying in Part Motion to Compel Discovery
- Order Amending Order Granting in Part and Denying in Part Motion to Compel Discovery
- Order Setting Amended Procedural Schedule
- Order for and Notice of Hearing
- Order for and Notice of Public Hearing
- Amended Order for and Notice of Public Hearing
- Order Establishing Briefing Schedule
- Amended Order Establishing Briefing Schedule
- Order Granting in Part Motion to Reconsider and Amending Certain Conditions In Final Decision And Order

6. Pursuant to SDCL 49-41B-15 and 49-41B-16 and its Notice of Application; Order for and Notice of Public Hearings; and Notice of Opportunity to Apply for Party Status, the Commission held public hearings on Keystone's application at the following times and places (see Public Hearing Transcripts):

- Monday, April 27, 2009, 12:00 noon CDT at Winner Community Playhouse, 7th and Leahy Boulevard, Winner, SD
- Monday, April 27, 2009, 7:00 p.m. MDT at Fine Arts School, 330 Scottie Avenue, Philip, SD
- Tuesday, April 28, 2009, 6:00 p.m. MDT at Harding County Recreation Center, 204 Hodge Street, Buffalo, SD.

7. The purpose of the public hearings was to afford an opportunity for interested persons to present their views and comments to the Commission concerning the Application. At the hearings, Keystone presented a brief description of the project after which interested persons presented their views, comments and questions regarding the application. Public Hearing Transcripts.

8. The following testimony was prefiled in advance of the formal evidentiary hearing held November 2, 3 and 4, 2009, in Room 414, State Capitol, Pierre, South Dakota:

A. Applicant's March 12, 2009, Direct Testimony.
- Robert Jones
- John Phillips
- Richard Gale
- Jon Schmidt
- Meera Kothari
- John Hayes
- Donald Scott
- Heidi Tillquist
- Tom Oster

B. Supplemental Direct Testimony of August 31, 2009.
- John Phillips

C. Intervenors' Direct Testimony of September 11, 2009.
- David Niemi
- Debra Niemi

D. Staff's September 25, 2009, Direct Testimony.

- Kim McIntosh
- Brian Walsh
- Derric Iles
- Tom Kirschenmann
- Paige Hoskinson Olson
- Michael Kenyon
- Ross Hargove
- Patrick Robblee
- James Arndt
- William Walsh
- Jenny Hudson
- David Schramm
- William Mampre
- Michael K. Madden
- Tim Binder

E. Applicant's Updated Direct and Rebuttal Testimony.

- Robert Jones Updated Direct (10/23/09)
- Jon Schmidt Updated Direct and Rebuttal (10/19/09)
- Meera Kothari Updated Direct and Rebuttal (10/19/09)
- Donald M. Scott Updated Direct (10/19/09)
- John W. Hayes Updated Direct (10/19/09)
- Heidi Tillquist Updated Direct (10/20/09)
- Steve Hicks Direct and Rebuttal (10/19/09)

F. Staff's Supplemental Testimony of October 29, 2009.

- William Walsh
- William Mampre
- Ross Hargrove

9. As provided for in the Commission's October 21, 2009, Amended Order for and Notice of Public Hearing, the Commission held a public input hearing in Room 414 of the State Capitol beginning at 6:00 p.m. on November 3, 2009, at which 23 members of the public presented comments and/or questions. Transcript of November 3, 2009 Public Input Hearing.

Applicable Statutes and Regulations

10. The following South Dakota statutes are applicable: SDCL 49-41B-1 through 49-41B-2.1, 49-41B-4, 49-41B-11 through 49-41B-19, 49-41B-21, 49-41B-22, 49-41B-24, 49-41B-26 through 49-41B-38 and applicable provisions of SDCL Chs. 1-26 and 15-6.

11. The following South Dakota administrative rules are applicable: ARSD Chapter 20:10:01, ARSD 20:10:22:01 through ARSD 20:10:22:25 and ARSD 20:10:22:36 through ARSD 20:10:22:40.

12. Pursuant to SDCL 49-41B-22, the Applicant for a facility construction permit has the burden of proof to establish that:

(1) The proposed facility will comply with all applicable laws and rules;

(2) The facility will not pose a threat of serious injury to the environment nor to the social and economic condition of inhabitants or expected inhabitants in the siting area;
(3) The facility will not substantially impair the health, safety or welfare of the inhabitants; and
(4) The facility will not unduly interfere with the orderly development of the region with due consideration having been given the views of governing bodies of affected local units of government.

The Project

13. The Project will be owned, managed and operated by the Applicant, TransCanada Keystone Pipeline, LP. Ex TC-1, 1.5 and 1.7, p. 4.

14. The purpose of the Project is to transport incremental crude oil production from the Western Canadian Sedimentary Basin ("WCSB") to meet growing demand by refineries and markets in the United States ("U.S."). This supply will serve to replace U.S. reliance on less stable and less reliable sources of offshore crude oil. Ex TC-1, 1.1, p. 1; Ex TC-1, 3.0 p. 23; Ex TC-1, 3.4 p. 24.

15. The Project will consist of three segments: the Steele City Segment, the Gulf Coast Segment, and the Houston Lateral. From north to south, the Steele City Segment extends from Hardisty, Alberta, Canada, southeast to Steele City, Nebraska. The Gulf Coast Segment extends from Cushing, Oklahoma south to Nederland, in Jefferson County, Texas. The Houston Lateral extends from the Gulf Coast Segment in Liberty County, Texas southwest to Moore Junction, Harris County, Texas. It will interconnect with the northern and southern termini of the previously approved 298-mile-long, 36-inch-diameter Keystone Cushing Extension segment of the Keystone Pipeline Project. Ex TC-1, 1.2, p. 1. Initially, the pipeline would have a nominal capacity to transport 700,000 barrels per day ("bpd"). Keystone could add additional pumping capacity to expand the nominal capacity to 900,000 bpd. Ex TC-1, 2.1.2, p. 8.

16. The Project is an approximately 1,707 mile pipeline with about 1,380, miles in the United States. The South Dakota portion of the pipeline will be approximately 314 miles in length and will extend from the Montana border in Harding County to the Nebraska border in Tripp County. The Project is proposed to cross the South Dakota counties of Harding, Butte, Perkins, Meade, Pennington, Haakon, Jones, Lyman and Tripp. Ex TC-1, 1.2 and 2.1.1, pp. 1 and 8. Detailed route maps are presented in Ex TC-1, Exhibits A and C, as updated in Ex TC-14.

17. Construction of the Project is proposed to commence in May of 2011 and be completed in 2012. Construction in South Dakota will be conducted in five spreads, generally proceeding in a north to south direction. The Applicant expects to place the Project in service in 2012. This in-service date is consistent with the requirements of the Applicant's shippers who have made the contractual commitments that underpin the viability and need for the project. Ex TC-1, 1.4, pp. 1 and 4; TR 26.

18. The pipeline in South Dakota will extend from milepost 282.5 to milepost 597, approximately 314 miles. The pipeline will have a 36-inch nominal diameter and be constructed using API 5L X70 or X80 high-strength steel. An external fusion bonded epoxy ("FBE") coating will be applied to the pipeline and all buried facilities to protect against corrosion. Cathodic protection will be provided by impressed current. The pipeline will have batching capabilities and will be able to transport products ranging from light crude oil to heavy crude oil. Ex TC-1, 2.2, 2.2.1, 6.5.2, pp. 8-9, 97-98; Ex TC-8, ¶ 26.

19. The pipeline will operate at a maximum operating pressure of 1,440 psig. For location specific low elevation segments close to the discharge of pump stations, the maximum operating pressure will be 1,600 psig. Pipe associated with these segments of 1,600 psig MOP are excluded from the Special Permit application and will have a design factor of 0.72 and pipe wall thickness of 0.572 inch (X-70) or 0.500 inch (X-80). All other segments in South Dakota will have a MOP of 1,440 psig. Ex TC-1, 2.2.1, p. 9.

20. The Project will have seven pump stations in South Dakota, located in Harding (2), Meade, Haakon, Jones and Tripp (2) Counties. TC-1, 2.2.2, p. 10. The pump stations will be electrically driven. Power lines required for providing power to pump stations will be permitted and constructed by local power providers, not by Keystone. Initially, three pumps will be installed at each station to meet the nominal design flow rate of 700,000 bpd. If future demand warrants, pumps may be added to the proposed pump stations for a total of up to five pumps per station, increasing nominal throughput to 900,000 bpd. No additional pump stations will be required to be constructed for this additional throughput. No tank facilities will be constructed in South Dakota. Ex TC-1, 2.1.2, p.8. Sixteen mainline valves will be located in South Dakota. Seven of these valves will be remotely controlled, in order to have the capability to isolate sections of line rapidly in the event of an emergency to minimize impacts or for operational or maintenance reasons. Ex TC-1, 2.2.3, pp. 10-11.

21. The pipeline will be constructed within a 110-foot wide corridor, consisting of a temporary 60-foot wide construction right-of-way and a 50-foot permanent right-of-way. Additional workspace will be required for stream, road, and railroad crossings, as well as hilly terrain and other features. The Applicant committed to reducing the construction right-of-way to 85 feet in certain wetlands to minimize impacts. Ex TC-1, 2.2.4, pp. 11-12; Ex TC-7, ¶ 20. FERC guidelines provide that the wetland construction right-of-way should be limited to 75 feet except where conditions do not permit, and Staff witness Hargrove's Construction, Mitigation and Reclamation Plan Review states that industry practice is to reduce the typical construction right-of-way width to 75 feet in non-cultivated wetlands, although exceptions are sometimes made for larger-diameter pipelines or where warranted due to site-specific conditions. Ex S-5, p. 2 and Attachment 2, 6.2; TR 335, 353. The Commission finds that the construction right-of-way should be limited to 75 feet, except where site-specific conditions require use of Keystone's proposed 85-foot right-of-way or where special circumstances are present, and the Commission accordingly adopts Condition 22(a), subject to the special circumstance provisions of Condition 30.

22. The Project will be designed, constructed, tested, and operated in accordance with all applicable requirements, including the U.S. Department of Transportation, Pipeline Hazardous Materials and Safety Administration (PHMSA) regulations set forth at 49 CFR Part 195, as modified by the Special Permit requested for the Project from PHMSA (see Finding 71). These federal regulations are intended to ensure adequate protection for the public and the environment and to prevent crude oil pipeline accidents and failures. Ex TC-1, 2.2, p. 8.

23. The current estimated cost of the Keystone Project in South Dakota is $921.4 million. Ex TC-1, 1.3, p. 1.

Demand for the Facility

24. The transport of additional crude oil production from the WCSB is necessary to meet growing demand by refineries and markets in the U.S. The need for the project is dictated by a number of factors, including increasing WCSB crude oil supply combined with insufficient export pipeline capacity; increasing crude oil demand in the U.S. and decreasing domestic crude supply;

the opportunity to reduce U.S. dependence on foreign off-shore oil through increased access to stable, secure Canadian crude oil supplies; and binding shipper commitments to utilize the Keystone Pipeline Project. Ex TC-1, 3.0, p. 23.

25. According to the U.S. Energy Information Administration ("EIA"), U.S. demand for petroleum products has increased by over 11 percent or 2,000,000 bpd over the past 10 years and is expected to increase further. The EIA estimates that total U.S. petroleum consumption will increase by approximately 10 million bpd over the next 10 years, representing average demand growth of about 100,000 bpd per year (EIA Annual Energy Outlook 2008). Ex TC-1, 3.2, pp. 23-24.

26. At the same time, domestic U.S. crude oil supplies continue to decline. For example, over the past 10 years, domestic crude production in the United States has declined at an average rate of about 135,000 bpd per year, or 2% per year. Ex TC-1, 3.3, p. 24. Crude and refined petroleum product imports into the U.S. have increased by over 3.3 million bpd over the past 10 years. In 2007, the U.S. imported over 13.4 million bpd of crude oil and petroleum products or over 60 percent of total U.S. petroleum product consumption. Canada is currently the largest supplier of imported crude oil and refined products to the U.S., supplying over 2.4 million bpd in 2007, representing over 11 percent of total U.S. petroleum product consumption (EIA 2007). Ex TC-1, 3.4, p. 24.

27. The Project will provide an opportunity for U.S. refiners in Petroleum Administration for Defense District III, the Gulf Coast region, to further diversify supply away from traditional offshore foreign crude supply and to obtain direct access to secure and growing Canadian crude supplies. Access to additional Canadian crude supply will also provide an opportunity for the U.S. to offset annual declines in domestic crude production and, specifically, to decrease its dependence on other foreign crude oil suppliers, such as Mexico and Venezuela, the top two heavy crude oil exporters into the U.S. Gulf Coast. Ex TC-1, 3.4, p. 24.

28. Reliable and safe transportation of crude oil will help ensure that U.S. energy needs are not subject to unstable political events. Established crude oil reserves in the WCSB are estimated at 179 billion barrels (CAPP 2008). Over 97 percent of WCSB crude oil supply is sourced from Canada's vast oil sands reserves located in northern Alberta. The Alberta Energy and Utilities Board estimates there are 175 billion barrels of established reserves recoverable from Canada's oil sands. Alberta has the second largest crude oil reserves in the world, second only to Saudi Arabia. Ex TC-1, 3.1, p. 23.

29. Shippers have already committed to long-term binding contracts, enabling Keystone to proceed with regulatory applications and construction of the pipeline once all regulatory, environmental, and other approvals are received. These long-term binding shipper commitments demonstrate a material endorsement of support for the Project, its economics, proposed route, and target market, as well as the need for additional pipeline capacity and access to Canadian crude supplies. Ex TC-1, 3.5, p. 24.

Environmental

30. In order to construct the Project, Keystone is required to obtain a Presidential Permit from the U.S. Department of State ("DOS") authorizing the construction of facilities across the international border. Ex TC-1, 1.8, pp. 4-5; 5.1, p. 30.

31. Because Keystone is required to obtain a Presidential Permit from the DOS, the National Environmental Policy Act requires the DOS to prepare an Environmental Impact Statement

("EIS"). Ex TC-1, 1.8, pp. 4-5; Ex TC-4; Ex S-3. In support of its Presidential Permit application, Keystone has submitted studies and other environmental information to the DOS. Ex TC-1, 1.8, pp. 4-5; 5.1, p. 30.

32. Table 6 to the Application summarizes the environmental impacts that Keystone's analysis indicates could be expected to remain after its Construction Mitigation and Reclamation Plan is implemented. Ex TC-1, pp. 31-37.

33. The pipeline will cross the Unglaciated Missouri Plateau. This physiographic province is characterized by a dissected plateau where river channels have incised into the landscape. Elevations range from just over 3,000 feet above mean sea level in the northwestern part of the state to around 1,800 feet above mean sea level in the White River valley. The major river valleys traversed include the Little Missouri River, Cheyenne River, and White River. Ex TC-1, 5.3.1, p. 30; Ex TC-4, ¶15. Exhibit A to the Application includes soil type maps and aerial photograph maps of the Keystone pipeline route in South Dakota that indicate topography, land uses, project mileposts and Section, Township, Range location descriptors. Ex TC-1, Exhibit A. Updated versions of these maps were received in evidence as Exhibit TC-14.

34. The surficial geologic deposits along the proposed route are primarily composed of Quaternary alluvium, colluvium, alluvial terraces, and eolian deposits (sand dunes). The alluvium primarily occurs in modern stream channels and floodplains, but also is present in older river terraces. The bedrock geology consists of Upper Cretaceous and Tertiary rocks. The Upper Cretaceous units include the Pierre Shale, Fox Hills Formation, and the Hell Creek Formation. The Ogallala Group, present in the far southern portion of the Project in South Dakota, was deposited as a result of uplift and erosion of the Rocky Mountains. Material that was eroded from the mountains was transported to the east by streams and wind. Ex TC-1, 5.3.2, p. 37.

35. Sand, gravel, crushed stone, oil, natural gas, coal and metallic ore resources are mineral resources existing along the proposed route. The route passes through the Buffalo Field in Harding County. Construction will have very minor and short-term impact on current mineral extraction activities due to the temporary and localized nature of pipeline construction activities. Several oil and gas wells were identified within or close to the Project construction ROW. Prior to construction, Keystone will identify the exact locations of active, shut-in, and abandoned wells and any associated underground pipelines in the construction ROW and take appropriate precautions to protect the integrity of such facilities. Ex TC-1, 5.3.3, pp. 38-39.

36. Soil maps for the route are provided in Exhibit A to Ex TC-1. In the northwestern portions of South Dakota, the soils are shallow to very deep, generally well drained, and loamy or clayey. Soils such as the Assiniboine series formed in fluvial deposits that occur on fans, terraces, and till plains. Soils such as the Cabbart, Delridge, and Blackhall series formed in residuum on hills and plains. Fertile soils and smooth topography dominate Meade County. The soils generally are shallow to very deep, somewhat excessively drained to moderately well drained, and loamy or clayey. Cretaceous Pierre Shale underlies almost all of Haakon, Jones, and portions of Tripp counties. This shale weathers to smectitic clays. These clays shrink as they dry and swell as they get wet, causing significant problems for road and structural foundations. From central Tripp County to the Nebraska state line, soils typically are derived from shale and clays on the flatter to moderately sloping, eroded tablelands. In southern Tripp County, the route also crosses deep, sandy deposits on which the Doger, Dunday, and Valentine soils formed. These are dry, rapidly permeable soils. Topsoil layers are thin and droughty, and wind erosion and blowouts are a common hazard. Ex TC-1, 5.3.4, p. 40.

37. Grading and excavating for the proposed pipeline and ancillary facilities will disturb a variety of agricultural, rangeland, wetland and forestland soils. Prime farmland soils may be altered temporarily following construction due to short-term impact such as soil compaction from equipment traffic, excavation and handling. However, potential impacts to soils will be minimized or mitigated by the soil protection measures identified in the Construction Mitigation and Reclamation Plan (CMR Plan) to the extent such measures are fully implemented. The measures include procedures for segregating and replacing top soil, trench backfilling, relieving areas compacted by heavy equipment, removing surface rock fragments and implementing water and wind erosion control practices. Ex TC-1, 5.3.4, p. 41; TC-1 Ex. B.

38. To accommodate potential discoveries of contaminated soils, Keystone made a commitment in the Application to develop, in consultation with relevant agencies, procedures for the handling and disposal of unanticipated contaminated soil discovered during construction. These procedures will be added to the CMR Plan. If hydrocarbon contaminated soils are encountered during trench excavation, the appropriate federal and state agencies will be contacted immediately. A remediation plan of action will be developed in consultation with that agency. Depending on the level of contamination found, affected soil may be replaced in the trench or removed to an approved landfill for disposal. Ex TC-1, 5.3.4, p. 42.

39. The USGS ground motion hazard mapping indicates that potential ground motion hazard in the Project area is low. South Dakota historically has had little earthquake activity. No ground subsidence or karst hazards are present in the vicinity of the route. Ex TC-1, 5.3.6, p. 43.

40. Cretaceous and Tertiary rocks in the Missouri River Plateau have high clay content and upon weathering can be susceptible to instability in the form of slumps and earth flows. Landslide potential is enhanced on steeper slopes. Formations that are especially susceptible are the Cretaceous Hell Creek and Pierre Shale as well as shales in the Tertiary Fort Union Formation mainly on river banks and steep slopes. These units can contain appreciable amounts of bentonite, a rock made up of montmorillonite clay that has deleterious properties when exposed to moisture. The bentonite layers in the Pierre Shale may present hazards associated with swelling clays. These formations are considered to have "high swelling potential." Bentonite has the property whereby when wet, it expands significantly in volume. When bentonite layers are exposed to successive cycles of wetting and drying, they swell and shrink, and the soil fluctuates in volume and strength. Ex TC-1, 5.3.4, pp. 43.

41. Fifteen perennial streams and rivers, 129 intermittent streams, 206 ephemeral streams and seven man-made ponds will be crossed during construction of the Project in South Dakota. Keystone will utilize horizontal directional drilling ("HDD") to cross the Little Missouri, Cheyenne and White River crossings. Keystone intends to use open-cut trenching at the other perennial streams and intermittent water bodies. The open cut wet method can cause the following impacts: loss of in-stream habitat through direct disturbance, loss of bank cover, disruption of fish movement, direct disturbance to spawning, water quality effects and sedimentation effects. Alternative techniques include open cut dry flume, open cut dam-and-pump and horizontal directional drilling. Exhibit C to the Application contains a listing of all water body crossings and preliminary site-specific crossing plans for the HDD sites. Ex TC-14. Permitting of water body crossings, which is currently underway, will ultimately determine the construction method to be utilized. Keystone committed to mitigate water crossing impacts through implementation of procedures outlined in the CMR Plan. Ex TC-1, 5.4.1, pp. 45-46.

42. The pipeline will be buried at an adequate depth under channels, adjacent flood plains and flood protection levees to avoid pipe exposure caused by channel degradation and lateral scour. Determination of the pipeline burial depth will be based on site-specific channel and hydrologic investigations where deemed necessary. Ex TC-1, 5.4.1, p. 46.

43. Although improvements in pipeline safety have been made, the risk of a leak cannot be eliminated. Keystone's environmental consulting firm for the Project, AECOM, estimated the chances of and the environmental consequences of a leak or spill through a risk assessment. Ex TC-1, 6.5.2, pp. 96-102; Table 6; TC-12, 10, 24.

44. Keystone's expert estimated the chance of a leak from the Project to be not more than one spill in 7,400 years for any given mile of pipe. TR 128-132, 136-137; Ex TC-12, ¶10; TC-1, 5.5.1, p. 54; 6.1.2.1, p. 87. The frequency calculation found the chance to be no more than one release in 24 years in South Dakota. TR 137.

45. Keystone's spill frequency and volume estimates are conservative by design, overestimating the risk since the intent is to use the assessment for planning purposes. The risk assessment overestimates the probable size of a spill to ensure conservatism in emergency response and other planning objectives. If a spill were to occur on the Keystone pipeline, PHMSA data indicate that the spill is likely to be three barrels or less. Ex TC-12, ¶10; TR 128-132, 137; TC-1, 6.1.2.1, p. 87.

46. Except for a few miles in the far southern reach of the Project in southern Tripp County which will be located over the permeable Sand Hills and shallow High Plains Aquifer, the Project route in South Dakota does not cross geologic units that are traditionally considered as aquifers. TR 440. Where aquifers are present, at most locations they are more than 50 feet deep, which significantly reduces the chance of contamination reaching the aquifer. Additionally, the majority of the pipeline is underlain by low permeability confining materials (e.g., clays, shales) that inhibit the infiltration of released crude oil into aquifers. TR 158; Ex TC-12, ¶13, EX TC-1, 5.4.2, pp. 47-48. Keystone consulted with the DENR during the routing process to identify and subsequently avoid sensitive aquifers and recharge areas, e.g., Source Water Protection Areas (SWPAs) in order to minimize risk to important public groundwater resources, and no groundwater SWPAs are crossed by the Project in South Dakota. EX TC-1, 5.4.2, pp. 47-48. Except for the Sand Hills area, no evidence was offered of the existence of a shallow aquifer (i.e. less than 50 feet in depth) crossed by the Project.

47. Because of their high solubility and their very low Maximum Contaminant Levels ("MCLs"), the constituents of primary concern in petroleum, including crude oil, are benzene, toluene, ethyl benzene and xylene. These constituents are commonly referred to as BTEX. TR 142, 146. The crude oil to be shipped through the Project will be similar in composition to other crude oils produced throughout the world and currently shipped in the United States. TR 155-56. The BTEX concentration in the crude oil to be shipped through the Project is close to 1 % to 1.5%. TR 151.

48. The Project will pass through areas in Tripp County where shallow and surficial aquifers exist. Since the pipeline will be buried at a shallow depth, it is unlikely that the construction or operation of the pipeline will alter the yield from any aquifers that are used for drinking water purposes. Keystone will investigate shallow groundwater when it is encountered during construction to determine if there are any nearby livestock or domestic wells that might be affected by construction activities. Appropriate measures will be implemented to prevent groundwater contamination and steps will be taken to manage the flow of any ground water encountered. Ex TC-

1, 5.4.2, pp. 47-48. The Tripp County Water User District is up-gradient of the pipeline and therefore would not be affected by a spill. TR 441, 449-50.

49. The risk of a spill affecting public or private water wells is low because the components of crude oil are unlikely to travel more than 300 feet from the spill site. TR 142-43. There are no private or public wells within 200 or 400 feet, respectively, of the right of way. TC-16, Data Response 3-46.

50. The total length of Project pipe with the potential to affect a High Consequence Area ("HCA") is 34.3 miles. A spill that could affect an HCA would occur no more than once in 250 years. TC-12, ¶ 24.

51. In the event that soils and groundwater are contaminated by a petroleum release, Keystone will work with state agency personnel to determine what type of remediation process would be appropriate. TR 148. Effective emergency response can reduce the likelihood and severity of contamination. TC-12, ¶ 10, 14, 24. Soils and groundwater contaminated by a petroleum release can be remediated. TR 499-500. The experience of DENR is that pipeline facilities have responded immediately to the incident in every case. TR 502.

52. The Commission finds that the risk of a significant release occurring is low and finds that the risk that a release would irremediably impair a water supply is very low and that it is probable that Keystone, in conjunction with state and federal response agencies, will be able to and will be required to mitigate and successfully remediate the effects of a release.

53. The Commission nevertheless finds that the Sand Hills area and High Plains Aquifer in southeastern Tripp County is an area of vulnerability that warrants additional vigilance and attention in Keystone's integrity management and emergency response planning and implementation process. The evidence demonstrates that the shallow Sand Hills groundwater or High Plains Aquifer is used by landowners in the Project area, that many wells are developed into the aquifer, including TCWUD 's, that the very high permeability of both the sandy surficial soils and deeper soils render the formation particularly vulnerable to contamination and that rapid discovery and response can significantly lessen the impact of a release on this vulnerable groundwater resource. The Commission further finds that if additional surficial aquifers are discovered in the course of pipeline construction, such aquifers should have similar treatment. The Commission accordingly finds that Condition 35 shall be adopted.

54. Of the approximately 314-mile route in South Dakota, all but 21.5 miles is privately owned. 21.5 miles is state-owned and managed. The list is found in Table 14. No tribal or federal lands are crossed by the proposed route. Ex TC-1, 5.7.1, p. 75.

55. Table 15 of the Application identifies the land uses affected by the pipeline corridor. Among other things, it shows that the project will not cross or be co-located with any major industrial sites, the pipeline will not cross active farmsteads, but may cross near them and the pipeline will not cross suburban and urban residential areas. The project will not cross municipal water supplies or water sources for organized rural water districts. Ex TC-1, 5.7.1, pp. 76-78.

56. The pipeline will be compatible with the predominant land use, which is rural agriculture, because the pipeline will be buried to a depth of four feet in fields and will interfere only minimally with normal agricultural operations. In most locations, the pipeline will be placed below agricultural drain tiles, and drain tiles that are damaged will be repaired. The only above-ground

facilities will be pump stations and block valves located at intervals along the pipeline. Ex TC-1, 5.7.3, pp.78-79.

57. The Project's high strength X70 steel will have a puncture resistance of 51 tons of digging force. Ex TC-8, ¶ 28. Keystone will have a public awareness program in place and an informational number to call where landowners and others can obtain information concerning activities of concern. TC-1, 6.3.4, pp. 93-94. The Commission finds that the risk of damage by ordinary farming operations is very low and that problems can be avoided through exercise of ordinary common sense.

58. If previously undocumented sites are discovered within the construction corridor during construction activities, all work that might adversely affect the discovery will cease until Keystone, in consultation with the appropriate agencies such as the SHPO, can evaluate the site's eligibility and the probable effects. If a previously unidentified site is recommended as eligible to the National Registry of Historic Places, impacts will be mitigated pursuant to the Unanticipated Discovery Plan submitted to the SHPO. Treatment of any discovered human remains, funerary objects, or items of cultural patrimony found on federal land will be handled in accordance with the Native American Grave Protection and Repatriation Act. Construction will not resume in the area of the discovery until the authorized agency has issued a notice to proceed. If human remains and associated funerary objects are discovered on state or private land during construction activities, construction will cease within the vicinity of the discovery and the county coroner or sheriff will be notified of the find. Treatment of any discovered human remains and associated funerary objects found on state or private land will be handled in accordance with the provisions of applicable state laws. TR 40; Ex TC-1, 6.4, pp. 96; Ex TC-16, 3-54. In accordance with these commitments, the Commission finds that Condition 43 should be adopted.

59. Certain formations to be crossed by the Project, such as the Fox Hills, Ludlow and particularly the Hell Creek Formation are known to contain paleontological resources of high scientific and monetary value. TR 438-439, 442-444. In northwest South Dakota, the Hell Creek Formation has yielded valuable dinosaur bones including from a triceratops, the South Dakota State fossil. Ex TC-1, 5.3.2, p. 38. Protection of paleontological resources was among the most frequently expressed concerns at the public input hearings held by the Commission. There is no way for anyone to know with any degree of certainty whether fossils of significance will be encountered during construction activities. TR 439. Because of the potential significance to landowners of the encounter by construction activities with paleontological resources and the inability to thoroughly lessen the probability of such encounter through pre-construction survey and avoidance, the Commission adopts Condition 44 to require certain special procedures in high probability areas, including the Hell Creek formation, such as the presence of a monitor with training in identification of a paleontological strike of significance.

Design and Construction

60. Keystone has applied for a special permit ("Special Permit") from PHMSA authorizing Keystone to design, construct, and operate the Project at up to 80% of the steel pipe specified minimum yield strength at most locations. TC-1, 2.2, p. 8; TR 62. In Condition 2, the Commission requires Keystone to comply with all of the conditions of the Special Permit, if issued.

61. TransCanada operates approximately 11,000 miles of pipelines in Canada with a 0.8 design factor and requested the Special Permit to ensure consistency across its system and to reduce costs. PHMSA has previously granted similar waivers adopting this modified design factor for natural gas pipelines and for the Keystone Pipeline. Ex TC-8, ¶¶ 13, 17.

62. The Special Permit is expected to exclude pipeline segments operating in (i) PHMSA-defined HCAs described as high population areas and commercially navigable waterways in 49 CFR Section 195.450; (ii) pipeline segments operating at highway, railroad, and road crossings; (iii) piping located within pump stations, mainline valve assemblies, pigging facilities, and measurement facilities; and (iv) areas where the MOP is greater than 1,440 psig. Ex TC-8, ¶ 16.

63. Application of the 0.8 design factor and API 5L PSL2 X70 high-strength steel pipe results in use of pipe with a 0.463 inch wall thickness, as compared with the 0.512 inch wall thickness under the otherwise applicable 0.72 design factor, a reduction in thickness of .050 inches. TR 61. PHMSA previously found that the issuance of a waiver is not inconsistent with pipeline safety and that the waiver will provide a level of safety equal to or greater than that which would be provided if the pipeline were operated under the otherwise applicable regulations. Ex TC-8, ¶ 15.

64. In preparation for the Project, Keystone conducted a pipeline threat analysis, using the pipeline industry published list of threats under ASME B31.8S and PHMSA to determine threats to the pipeline. Identified threats were manufacturing defects, construction damage, corrosion, mechanical damage and hydraulic event. Safeguards were then developed to address these threats. Ex TC-8, ¶ 22.

65. Steel suppliers, mills and coating plants were pre-qualified using a formal qualification process consistent with ISO standards. The pipe is engineered with stringent chemistry to ensure weldability during construction. Each batch of pipe is mechanically tested to prove strength, fracture control and fracture propagation properties. The pipe is hydrostatically tested. The pipe seams are visually and manually inspected and also inspected using ultrasonic instruments. Each piece of pipe and joint is traceable to the steel supplier and pipe mill shift during production. The coating is inspected at the plant with stringent tolerances on roundness and nominal wall thickness. A formal quality surveillance program is in place at the steel mill and at the coating plant. Ex TC-8, ¶ 24; TR 59-60.

66. All pipe welds will be examined around 100 percent of their circumferences using ultrasonic or radiographic inspection. The coating is inspected and repaired if required prior to lowering into the trench. After construction the pipeline is hydrostatically tested in the field to 125 percent of its maximum operating pressure, followed by caliper tool testing to check for dents and ovality. Ex TC-8, ¶ 25.

67. A fusion-bonded epoxy ("FBE") coating will be applied to the external surface of the pipe to prevent corrosion. Ex TC- 8, ¶ 26.

68. TransCanada has thousands of miles of this particular grade of pipeline steel installed and in operation. TransCanada pioneered the use of FBE, which has been in use on its system for over 29 years. There have been no leaks on this type of pipe installed by TransCanada with the FBE coating and cathodic protection system during that time. When TransCanada has excavated pipe to validate FBE coating performance, there has been no evidence of external corrosion. Ex TC-8, ¶ 27.

69. A cathodic protection system will be installed comprised of engineered metal anodes, which are connected to the pipeline. A low voltage direct current is applied to the pipeline, resulting in corrosion of the anodes rather than the pipeline. Ex TC-8, ¶ 27. FBE coating and cathodic protection mitigate external corrosion. Ex TC-8, ¶ 26.

70. A tariff specification of 0.5 percent solids and water by volume will be utilized to minimize the potential for internal corrosion. This specification is half the industry standard of one percent. In Condition 32, the Commission requires Keystone to implement and enforce its crude oil specifications in order to minimize the potential for internal corrosion. Further, the pipeline is designed to operate in turbulent flow to minimize water drop out, another potential cause of internal corrosion. During operations, the pipeline will be cleaned using in-line inspection tools, which measure internal and external corrosion. Keystone will repair areas of pipeline corrosion as required by federal regulation. Ex TC-8, ¶ 26. Staff expert Schramm concluded that the cathodic protection and corrosion control measures that Keystone committed to utilize would meet or exceed applicable federal standards. TR 407-427; Ex S-12.

71. To minimize the risk of mechanical damage to the pipeline, it will be buried with a minimum of four feet of cover, one foot deeper than the industry standard, reducing the likelihood of mechanical damage. The steel specified for the pipeline is high-strength steel with engineered puncture resistance of approximately 51 tons of force. Ex TC-8, ¶ 28.

72. Hydraulic damage is caused by over-pressurization of the pipeline. The risk of hydraulic damage will be minimized through the SCADA system's continuous, real-time pressure monitoring systems and through operator training. Ex TC-8, ¶ 29.

73. The Applicant has prepared a detailed CMR Plan that describes procedures for crossing cultivated lands, grasslands, including native grasslands, wetlands, streams and the procedures for restoring or reclaiming and monitoring those features crossed by the Project. The CMR Plan is a summary of the commitments that Keystone has made for environmental mitigation, restoration and post-construction monitoring and compliance related to the construction phase of the Project. Among these, Keystone will utilize construction techniques that will retain the original characteristics of the lands crossed as detailed in the CMR Plan. Keystone's thorough implementation of these procedures will minimize the impacts associated with the Project. A copy of the CMR Plan was filed as Exhibit B to Keystone's permit application and introduced into evidence as TC-1, Exhibit B.

74. The CMR Plan establishes procedures to address a multitude of construction-related issues, including but not limited to the following:

- Training
- Advance Notice of Access
- Depth of Cover
- Noise Control
- Weed Control
- Dust Control
- Fire Prevention and Control
- Spill Prevention and Containment
- Irrigation Systems
- Clearing
- Grading
- Topsoil Removal and Storage
- Temporary Erosion and Sediment Control
- Clean-Up
- Reclamation and Revegetation
- Compaction Relief

- Rock Removal
- Soil Additives
- Seeding
- Construction in Residential and Commercial/Industrial Areas
- Drain Tile Damage Mitigation and Repair

Ex TC-1, Exhibit B.

75. The fire prevention and containment measures outlined in the CMR Plan will provide significant protection against uncontrolled fire in the arid region to be crossed by the Project. The Commission finds, however, that these provisions are largely centered on active construction areas and that certain additional fire prevention and containment precautions are appropriate as well for vehicles performing functions not in proximity to locations where fire suppression equipment will be based, such as route survey vehicles and vehicles involved in surveillance and inspection activities whether before, during and after construction. The Commission accordingly adopts Conditions 16(p) and the last sentence of Condition 30 to address these situations.

76. Keystone's CMR Plan includes many mitigation steps designed to return the land to its original production. These include topsoil removal and replacement, compaction of the trench line, decompaction of the working area, and tilling the topsoil after replacement. Ex TC-1, Exhibit B; Ex TC-6, ¶ 27; Ex TC-1, 6.1.2.2, pp. 87-88.

77. In areas where geologic conditions such as ground swelling, or slope instability, could pose a potential threat, Keystone will conduct appropriate pre-construction site assessments and subsequently will design facilities to account for various ground motion hazards as required by federal regulations. The main hazard of concern during construction of the pipeline will be from unintentional undercutting of slopes or construction on steep slopes resulting in instability that could lead to landslides. Other hazards may result from construction on Cretaceous shales that contain bentonite beds. The high swelling hazard may cause slope instability during periods of precipitation. Ex TC-1, 5.3.6, p. 44.

78. When selecting the proposed pipeline route, Keystone has attempted to minimize the amount of steep slopes crossed by the pipeline. Special pipeline construction practices described in the CMR Plan will minimize slope stability concerns during construction. Landslide hazards can be mitigated by:

- Returning disturbed areas to pre-existing conditions or, where necessary, reducing steep grades during construction;
- Preserving or improving surface drainage;
- Preserving or improving subsurface drainage during construction;
- Removing overburden where necessary to reduce weight of overlying soil mass; and
- Adding fill at toe of slope to resist movement.

Ex TC-1, 5.3.6, pp. 43-44.

79. Slope instability poses a threat of ground movement responsible for approximately 1 percent of liquid pipeline incidents (PHMSA 2008). Keystone will monitor slope stability during routine surveillance. Areas where slope stability poses a potential threat to the pipeline will be incorporated into Keystone's Integrity Management Plan. If ground movement is suspected of having caused abnormal movement of the pipeline, federal regulations (49 CFR Part 195) require

Keystone to conduct an internal inspection. Consequently, damage to the pipeline would be detected quickly and spills would be averted or minimized. Ex TC-1, 5.3.6, p. 44

80. Keystone is in the process of preparing, in consultation with the area National Resource Conservation Service, construction/reclamation unit ("Con/Rec Unit") mapping to address differing construction and reclamation techniques for different soils conditions, slopes, vegetation, and land use along the pipeline route. This analysis and mapping results in the identification of segments called Con/Rec Units. Ex. TC-5; TC-16, DR 3-25.

81. The Applicant will use special construction methods and measures to minimize and mitigate impacts where warranted by site specific conditions. These special techniques will be used when constructing across paved roads, primary gravel roads, highways, railroads, water bodies, wetlands, sand hills areas, and steep terrain. These special techniques are described in the Application. Ex TC-1, 2.2.6, p. 17; TC-6, ¶ 11.

82. Of the perennial streams that are crossed by the proposed route, the Cheyenne River is the largest water body and is classified as a warm water permanent fishery. Of the other streams that have been classified, habitat is considered more limited as indicated by a warm water semi-permanent or warm water marginal classification. Ex TC-1, 5.6.2, pp. 71-72, Table 13.

83. Keystone will utilize HDD for the Little Missouri, Cheyenne and White River crossings, which will aid in minimizing impacts to important game and commercial fish species and special status species. Open-cut trenching, which can affect fisheries, will be used at other perennial streams. Keystone will use best practices to reduce or eliminate the impact of crossings at the perennial streams other than the Cheyenne and White Rivers. Ex TC-1, 5.4.1, p. 46; 5.6.2, p. 72; TC-16, DR 3-39.

84. Water used for hydrostatic testing during construction and subsequently released will not result in contamination of aquatic ecosystems since the pipe is cleaned prior to testing and the discharge water is monitored and tested. Ex TC-1, 5.4.3.1, pp. 48-50. In Conditions 1 and 2, the Commission has required that Keystone comply with DENR's regulations governing temporary use and discharge of water and obtain and comply with the DENR General Permits for these activities.

85. During construction, Keystone will have a number of inspectors on a construction spread, including environmental inspectors, who will monitor erosion control, small spills, full tanks, and any environmental issues that arise. TR. 37-38. In Condition 14, the Commission requires that Keystone incorporate such inspectors into the CMR Plan.

86. The Pipeline corridor will pass through areas where shallow and surficial aquifers exist. Appropriate measures will be implemented to prevent groundwater contamination and steps will be taken to manage the flow of any ground water encountered. Ex TC-1, 5.4.2, p. 47-48.

87. In addition to those recommendations of Staff and its expert witnesses referenced specifically in these Findings, Staff expert witnesses made a number of recommendations which the Commission has determined will provide additional protections for affected landowners, the environment and the public, and has included Conditions in this Order requiring certain of these measures. These recommendations encompassed matters such as sediment control at water body crossings, soil profile analysis, topsoil, subsoil and rock segregation and replacement, special procedures in areas of bentenitic, sodic, or saline soils, noise, etc. Staff's final recommendations are set forth in its Brief. See also Staff Exhibits and testimony in Transcript Vols. II and III.

88. Keystone will be required to acquire permits authorizing the crossing of county roads and township roads. These permits will typically require Keystone to restore roads to their pre-construction condition. If its construction equipment causes damage to county or township roads, Keystone will be responsible for the repair of those roads to pre-construction condition. Pursuant to SDCL 49-41B-38, Keystone will be required to post a bond to ensure that any damage beyond normal wear to public roads, highways, bridges or other related facilities will be adequately compensated. Staff witness Binder recommended that the bond amount under SDCL 49-41B-38 for damage to highways, roads, bridges and other related facilities be set at $15,600,000 for 2011 and $15,600,000 for 2012. TR 224. Keystone did not object to this requirement.

89. The Commission finds that the procedures in the CMR Plan and the other construction plans and procedures that Keystone has committed to implement, together with the Conditions regarding construction practices adopted by the Commission herein, will minimize impacts from construction of the Project to the environment and social and economic condition of inhabitants and expected inhabitants in the Project area.

Operation and Maintenance

90. The Keystone pipeline will be designed constructed, tested and operated in accordance with all applicable requirements, including the PHMSA regulations set forth at 49 CFR Parts 194 and 195, as modified by the Special Permit. These federal regulations are intended to ensure adequate protection for the public and the environment and to prevent crude oil pipeline accidents and failures. Ex TC-8, ¶ 2.

91. The safety features of Keystone's operations are governed by 49 CFR Part 195 and include aerial inspection 26 times per year, with any interval not to exceed three weeks, right-of-way maintenance for accessibility, and continual monitoring of the pipeline to identify potential integrity concerns. A Supervisory Control and Data Acquisition ("SCADA") system will be used to monitor the pipeline at all times. Ex TC-8, ¶ 9.

92. The Project will have a SCADA system to remotely monitor and control the pipeline. The SCADA system will include: (i) a redundant, fully functional back-up Operational Control Center available for service at all times; (ii) automatic features within the system to ensure operation within prescribed limits; and (iii) additional automatic features at the pump stations to provide pipeline pressure protection in the event that communications with the SCADA host are interrupted. Ex TC-10, ¶ 8.

93. The pipeline will have a control center manned 24 hours per day. A backup control center will also be constructed and maintained. A backup communications system is included within the system design and installation. Keystone's SCADA system should have a very high degree of reliability. TR 82-83.

94. Keystone will use a series of complimentary and overlapping SCADA-based leak detection systems and methods at the Operational Control Center, including: (i) remote monitoring; (ii) software-based volume balance systems that monitor injection and delivery volumes; (iii) Computational Pipeline Monitoring or model-based leak detection systems that break the pipeline into smaller segments and monitor each segment on a mass balance basis; and (iv) computer-based, non-real-time, accumulated gain/(loss) volume trending to assist in identifying low rate or seepage releases below the 1.5 percent by volume detection threshold. The SCADA and other monitoring and control systems to be implemented by Keystone for the Project are state of the art

and consistent with the best commercially available technology. Ex TC-10, ¶ 8. Staff witness, William Mampre, testified that Keystone's SCADA system was one he probably would have selected himself. TR 431.

95. Additionally, Keystone will implement and utilize direct observation methodologies, which include aerial patrols, ground patrols and public and landowner awareness programs designed to encourage and facilitate the reporting of suspected leaks and events that may suggest a threat to the integrity of the pipeline. Ex TC10, ¶ 8. Remote sensing technologies that could be employed in pipeline surveillance such as aerial surveillance are in their infancy and practical systems are not currently available. Keystone would consider using such technology if it becomes commercially available. TR 89-90.

96. Keystone will implement abnormal operating procedures when necessary and as required by 49 CFR 195.402(d). Abnormal operating procedures will be part of the written manual for normal operations, maintenance activities, and handling abnormal operating and emergencies. Ex TC-1, 2.3.2, p. 20.

97. As required by US DOT regulations, Keystone will prepare an emergency response plan ("ERP") for the system. Ex TC-11, ¶ 13. The ERP will be submitted to PHMSA for review prior to commencement of pipeline operations. Ex TC-11, ¶ 13. The Commission finds that the ERP and manual of written procedures for conducting normal operations and maintenance activities and handling abnormal operations and emergencies as required under 49 CFR195.402 should also be submitted to the Commission at the time it is submitted to PHMSA to apprise the Commission of its details. Keystone has agreed to do this. The Commission has so specified in Condition 36.

98. Keystone will utilize the ERP approved by PHMSA for the Keystone Pipeline as the basis for its ERP for the Project. Under the ERP, Keystone will strategically locate emergency response equipment along the pipeline route. The equipment will include trailers, oil spill containment and recovery equipment, boats, and a communication office. Keystone will also have a number of local contractors available to provide emergency response assistance. Ex TC-11, ¶ 15. Keystone's goal is to respond to any spill within six hours. TR 102-103. Additional details concerning the ERP and the ERP process are set forth in the Application at Section 6.5.2 and in the pre-filed and hearing testimony of John Hayes. Ex TC-11; EX TC-1, 6.5.2, pp. 96-101. Keystone has consulted with DENR in developing its ERP. TR 111-12.

99. If the Keystone pipeline should experience a release, Keystone would implement its ERP. TC-11, ¶ 10; S-18, p. 4. DENR would be involved in the assessment and abatement of the release, and require the leak to be cleaned up and remediated. S-18, p. 5. DENR has been successful in enforcing remediation laws to ensure the effects of any pipeline releases are mitigated. TR 488-89, 497, 502-03.

100. Local emergency responders may be required to initially secure the scene and ensure the safety of the public, and Keystone will provide training in that regard. Ex TC-11, ¶ 17; TR 105-107.

101. If ground movement is suspected of having caused abnormal movement of the pipeline, federal regulations (49 CFR Part 195) require Keystone to conduct an internal inspection. Consequently, damage to the pipeline would be detected quickly and spills would be averted or minimized. Ex TC-1, 5.3.6, p. 44.

102. In addition to the ERP, hazardous materials pipeline segments through High Consequence Areas ("HCAs") are subject to the Integrity Management Rule. 49 CFR 195.452. Pipeline operators are required to develop a written Integrity Management Plan ("IMP") that must include methods to measure the program's effectiveness in assessing and evaluating integrity and protecting HCAs. Keystone will develop and implement an IMP for the entire pipeline including the HCAs. The overall objective of the IMP is to establish and maintain acceptable levels of integrity and having regard to the environment, public and employee safety, regulatory requirements, delivery reliability, and life cycle cost. The IMP uses advanced in-line inspection and mitigation technologies applied with a comprehensive risk-based methodology. 49 CFR Part 195 also requires pipeline operators to develop and implement public awareness programs consistent with the API's Recommended Practice 1162, Public Awareness Programs for Pipeline Operators. Staff witness Jenny Hudson testified that Keystone's planning and preparation of the IMP were fully compliant with the PHMSA regulations and had no recommendations for conditions. Ex S-9, p.5.

103. The Commission finds that the threat of serious injury to the environment or inhabitants of the State of South Dakota from a crude oil release is substantially mitigated by the integrity management, leak detection and emergency response processes and procedures that Keystone is continuing to plan and will implement.

Rural Water Crossings

104. The route crosses through two rural water system districts, the West River/Lyman-Jones Rural Water District and the Tripp County Water User District. Keystone met with these rural water districts to discuss the Project and will continue to coordinate with these districts. During construction and maintenance, Keystone will coordinate with the One Call system to avoid impacts to underground utilities, including water lines. Ex TC-4.

Alternative Routes

105. The proposed Project route was developed through an, iterative process. TC-1, 4.1, p. 25. During the course of the route evaluation process, Keystone held public meetings, open houses, and one-on-one meetings with stakeholders to discuss and review the proposed routing through South Dakota. TC-1, 4.1.5, p. 27. The route was refined in Mellette County to avoid environmentally sensitive areas and reduce wetland crossings, and near Colome to avoid groundwater protection areas. Ex TC-3; TC-1, 4.2.1-4.2.2, p. 28.

106. SDCL 49-41B-36 explicitly states that Chapter 49-41B "shall not be construed as a delegation to the Public Utilities Commission of the authority to route a facility." The Commission accordingly finds and concludes that it lacks authority to compel the Applicant to select an alternative route or to base its decision on whether to grant or deny a permit for a proposed facility on whether the selected route is the route the Commission itself might select.

Socio-Economic Factors

107. Socio-economic evidence offered by both Keystone and Staff demonstrates that the welfare of the citizens of South Dakota will not be impaired by the Project. Staff expert Dr. Michael Madden conducted a socio-economic analysis of the Keystone Pipeline, and concluded that the positive economic benefits of the project were unambiguous, while most if not all of the social impacts were positive or neutral. S-2, Madden Assessment at 21. The Project, subject to compliance with the Special Permit and the Conditions herein, would not, from a socioeconomic standpoint: (i) pose a threat of serious injury to the socioeconomic conditions in the project area; (ii)

substantially impair the health, safety, or welfare of the inhabitants in the project area; or (iii) unduly interfere with the orderly development of the region.

108. The Project will pay property taxes to local governments on an annual basis estimated to be in the millions of dollars. Ex TC-2, ¶ 24, TC-13, S-13; TR 584. An increase in assessed, taxable valuation for school districts is a positive development. TR 175.

109. The Project will bring jobs, both temporary and permanent, to the state of South Dakota and specifically to the areas of construction and operation. Ex TC-1 at 6.1.1, pp. 85-86.

110. The Project will have minimal effect in the areas of agriculture, commercial and industrial sectors, land values, housing, sewer and water, solid waste management, transportation, cultural and historical resources, health services, schools, recreation, public safety, noise, and visual impacts. Ex TC-1. It follows that the project will not substantially impair the health, safety, or welfare of the inhabitants.

General

111. Applicant has provided all information required by ARSD Chapter 20:10:22 and SDCL Chapter 49-41B. S-1.

112. The Commission finds that the Conditions attached hereto as Exhibit A and incorporated herein by reference are supported by the record, are reasonable and will help ensure that the Project will meet the standards established for approval of a construction permit for the Project set forth in SDCL 49-41B-22 and should be adopted.

113. The Commission finds that subject to the conditions of the Special Permit and the Conditions set forth as Exhibit A hereto, the Project will (i) comply with all applicable laws and rules; (ii) not pose an unacceptable threat of serious injury to the environment nor to the social and economic condition of inhabitants or expected inhabitants in the siting area; (iii) not substantially impair the health, safety or welfare of the inhabitants; and (iv) not unduly interfere with the orderly development of the region with due consideration having been given the views of governing bodies of affected local units of government.

114. The Commission finds that a permit to construct the Project should be granted subject to the Conditions set forth in Exhibit A.

115. To the extent that any Conclusion of Law set forth below is more appropriately a finding of fact, that Conclusion of Law is incorporated by reference as a Finding of Fact.

Based on the foregoing Findings of Fact, the Commission hereby makes the following:

CONCLUSIONS OF LAW

1. The Commission has jurisdiction over the subject matter and parties to this proceeding pursuant to SDCL Chapter 49-41B and ARSD Chapter 20:10:22. Subject to the findings made on the four elements of proof under SDCL 49-41B-22, the Commission has authority to grant,

deny or grant upon reasonable terms, conditions or modifications, a permit for the construction, operation and maintenance of the TransCanada Keystone Pipeline.

2. The TransCanada Keystone Pipeline Project is a transmission facility as defined in SDCL 49-41B-2.1(3).

3. Applicant's permit application, as amended and supplemented through the proceedings in this matter, complies with the applicable requirements of SDCL Chapter 49-41B and ARSD Chapter 20:10:22.

4. The Project, if constructed and operated in accordance with the terms and conditions of this decision, will comply with all applicable laws and rules, including all requirements of SDCL Chapter 49-41B and ARSD 20:10:22.

5. The Project, if constructed and operated in accordance with the terms and conditions of this decision, will not pose an unacceptable threat of serious injury to the environment nor to the social and economic conditions of inhabitants or expected inhabitants in the siting area.

6. The Project, if constructed and operated in accordance with the terms and conditions of this decision, will not substantially impair the health, safety or welfare of the inhabitants in the siting area.

7. The Project, if constructed and operated in accordance with the terms and conditions of this decision, will not unduly interfere with the orderly development of the region with due consideration having been given the views of governing bodies of affected local units of government.

8. The standard of proof is by the preponderance of evidence. The Applicant has met its burden of proof pursuant to SDCL 49-41B-22 and is entitled to a permit as provided in SDCL 49-41B-25.

9. The Commission has authority to revoke or suspend any permit granted under the South Dakota Energy Facility Permit Act for failure to comply with the terms and conditions of the permit pursuant to SDCL 49-41B-33 and must approve any transfer of the permit granted by this Order pursuant to SDCL 49-41B-29.

10. To the extent that any of the Findings of Fact in this decision are determined to be conclusions of law or mixed findings of fact and conclusions of law, the same are incorporated herein by this reference as a Conclusion of Law as if set forth in full herein.

11. Because a federal EIS will be required and completed for the Project and because the federal EIS complies with the requirements of SDCL Chapter 34A-9, the Commission appropriately exercised its discretion under SDCL 49-41B-21 in determining not to prepare or require the preparation of a second EIS.

12. PHMSA is delegated exclusive authority over the establishment and enforcement of safety-orientated design and operational standards for hazardous materials pipelines. 49 U.S.C. 60101, et seq.

13. SDCL 49-41B-36 explicitly states that SDCL Chapter 49-41B "shall not be construed as a delegation to the Public Utilities Commission of the authority to route a facility." The

Commission accordingly concludes that it lacks authority (i) to compel the Applicant to select an alternative route or (ii) to base its decision on whether to grant or deny a permit for a proposed facility on whether the selected route is the route the Commission might itself select.

14. The Commission concludes that it needs no other information to assess the impact of the proposed facility or to determine if Applicant or any Intervenor has met its burden of proof.

15. The Commission concludes that the Application and all required filings have been filed with the Commission in conformity with South Dakota law and that all procedural requirements under South Dakota law, including public hearing requirements, have been met or exceeded.

16. The Commission concludes that it possesses the authority under SDCL 49-41B-25 to impose conditions on the construction, operation and maintenance of the Project, that the Conditions set forth in Exhibit A are supported by the record, are reasonable and will help ensure that the Project will meet the standards established for approval of a construction permit for the Project set forth in SDCL 49-41B-22 and that the Conditions are hereby adopted.

It is therefore

ORDERED, that a permit to construct the Keystone Pipeline Project is granted to TransCanada Keystone Pipeline, LP, subject to the Conditions set forth in Exhibit A.

NOTICE OF ENTRY AND OF RIGHT TO APPEAL

PLEASE TAKE NOTICE that this Amended Final Decision and Order was duly issued and entered on the ____ day of June, 2010. Pursuant to SDCL 1-26-32, this Final Decision and Order will take effect 10 days after the date of receipt or failure to accept delivery of the decision by the parties. Pursuant to ARSD 20:10:01:30.01, an application for a rehearing or reconsideration may be made by filing a written petition with the Commission within 30 days from the date of issuance of this Final Decision and Order; Notice of Entry. Pursuant to SDCL 1-26-31, the parties have the right to appeal this Final Decision and Order to the appropriate Circuit Court by serving notice of appeal of this decision to the circuit court within thirty (30) days after the date of service of this Notice of Decision.

Dated at Pierre, South Dakota, this 29th of June, 2010.

CERTIFICATE OF SERVICE

The undersigned hereby certifies that this document has been served today upon all parties of record in this docket, as listed on the docket service list, electronically.

By: _____

Date: 06/29/10

(OFFICIAL SEAL)

BY ORDER OF THE COMMISSION:

DUSTIN M. JOHNSON, Chairman

STEVE KOLBECK, Commissioner

GARY HANSON, Commissioner

Exhibit A

AMENDED PERMIT CONDITIONS

I. Compliance with Laws, Regulations, Permits, Standards and Commitments

1. Keystone shall comply with all applicable laws and regulations in its construction and operation of the Project. These laws and regulations include, but are not necessarily limited to: the federal Hazardous Liquid Pipeline Safety Act of 1979 and Pipeline Safety Improvement Act of 2002, as amended by the Pipeline Inspection, Protection, Enforcement, and Safety Act of 2006, and the various other pipeline safety statutes currently codified at 49 U.S.C. § 60101 et seq. (collectively, the "PSA"); the regulations of the United States Department of Transportation implementing the PSA, particularly 49 C.F.R Parts 194 and 195; temporary permits for use of public water for construction, testing or drilling purposes, SDCL 46-5-40.1 and ARSD 74:02:01:32 through 74:02:01:34.02 and temporary discharges to waters of the state, SDCL 34A-2-36 and ARSD Chapters 74:52:01 through 74:52:11, specifically, ARSD § 74:52:02:46 and the General Permit issued thereunder covering temporary discharges of water from construction dewatering and hydrostatic testing.

2. Keystone shall obtain and shall thereafter comply with all applicable federal, state and local permits, including but not limited to: Presidential Permit from the United States Department of State, Executive Order 11423 of August 16, 1968 (33 Fed. Reg. 11741) and Executive Order 13337 of April 30, 2004 (69 Fed. Reg. 25229), for the construction, connection, operation, or maintenance, at the border of the United States, of facilities for the exportation or importation of petroleum, petroleum products, coal, or other fuels to or from a foreign country; Clean Water Act § 404 and Rivers and Harbors Act Section 10 Permits; Special Permit if issued by the Pipeline and Hazardous Materials Safety Administration; Temporary Water Use Permit, General Permit for Temporary Discharges and federal, state and local highway and road encroachment permits. Any of such permits not previously filed with the Commission shall be filed with the Commission upon their issuance. To the extent that any condition, requirement or standard of the Presidential Permit, including the Final EIS Recommendations, or any other law, regulation or permit applicable to the portion of the pipeline in this state differs from the requirements of these Conditions, the more stringent shall apply.

3. Keystone shall comply with and implement the Recommendations set forth in the Final Environmental Impact Statement when issued by the United States Department of State pursuant to its Amended Department of State Notice of Intent To Prepare an Environmental Impact Statement and To Conduct Scoping Meetings and Notice of Floodplain and Wetland Involvement and To Initiate Consultation Under Section 106 of the National Historic Preservation Act for the Proposed Transcanada Keystone XL Pipeline; Notice of Intent--Rescheduled Public Scoping Meetings in South Dakota and extension of comment period (FR vol. 74, no. 54, Mar. 23, 2009). The Amended Notice and other Department of State and Project Documents are available on-line at: http://www.keystonepipeline-xl.state.gov/clientsite/keystonexl.nsf?Open.

4. The permit granted by this Order shall not be transferable without the approval of the Commission pursuant to SDCL 49-41B-29.

5. Keystone shall undertake and complete all of the actions that it and its affiliated entities committed to undertake and complete in its Application as amended, in its testimony and

exhibits received in evidence at the hearing, and in its responses to data requests received in evidence at the hearing.

II. Reporting and Relationships

6. The most recent and accurate depiction of the Project route and facility locations is found on the maps in Exhibit TC-14. The Application indicates in Section 4.2.3 that Keystone will continue to develop route adjustments throughout the pre-construction design phase. These route adjustments will accommodate environmental features identified during surveys, property-specific issues, and civil survey information. The Application states that Keystone will file new aerial route maps that incorporate any such route adjustments prior to construction. Ex TC-1.4.2.3, p. 27. Keystone shall notify the Commission and all affected landowners, utilities and local governmental units as soon as practicable if material deviations are proposed to the route. Keystone shall notify affected landowners of any change in the route on their land. At such time as Keystone has finalized the pre-construction route, Keystone shall file maps with the Commission depicting the final pre-construction route. If material deviations are proposed from the route depicted on Exhibit TC-14 and accordingly approved by this Order, Keystone shall advise the Commission and all affected landowners, utilities and local governmental units prior to implementing such changes and afford the Commission the opportunity to review and approve such modifications. At the conclusion of construction, Keystone shall file detail maps with the Commission depicting the final as-built location of the Project facilities.

7. Keystone shall provide a public liaison officer, approved by the Commission, to facilitate the exchange of information between Keystone, including its contractors, and landowners, local communities and residents and to promptly resolve complaints and problems that may develop for landowners, local communities and residents as a result of the Project. Keystone shall file with the Commission its proposed public liaison officer's credentials for approval by the Commission prior to the commencement of construction. After the public liaison officer has been approved by the Commission, the public liaison officer may not be removed by Keystone without the approval of the Commission. The public liaison officer shall be afforded immediate access to Keystone's on-site project manager, its executive project manager and to contractors' on-site managers and shall be available at all times to the Staff via mobile phone to respond to complaints and concerns communicated to the Staff by concerned landowners and others. Keystone shall also implement and keep an up-dated web site covering the planning and implementation of construction and commencement of operations in this state as an informational medium for the public. As soon as the Keystone's public liaison officer has been appointed and approved, Keystone shall provide contact information for him/her to all landowners crossed by the Project and to law enforcement agencies and local governments in the vicinity of the Project. The public liaison officer's contact information shall be provided to landowners in each subsequent written communication with them. If the Commission determines that the public liaison officer has not been adequately performing the duties set forth for the position in this Order, the Commission may, upon notice to Keystone and the public liaison officer, take action to remove the public liaison officer.

8. Until construction of the Project, including reclamation, is completed, Keystone shall submit quarterly progress reports to the Commission that summarize the status of land acquisition and route finalization, the status of construction, the status of environmental control activities, including permitting status and Emergency Response Plan and Integrity Management Plan development, the implementation of the other measures required by these conditions, and the overall percent of physical completion of the project and design changes of a substantive nature. Each report shall include a summary of consultations with the South Dakota Department of Environment and Natural Resources and other agencies concerning the issuance of permits. The

reports shall list dates, names, and the results of each contact and the company's progress in implementing prescribed construction, land restoration, environmental protection, emergency response and integrity management regulations, plans and standards. The first report shall be due for the period ending June 30, 2010. The reports shall be filed within 31 days after the end of each quarterly period and shall continue until the project is fully operational.

9. Until one year following completion of construction of the Project, including reclamation, Keystone's public liaison officer shall report quarterly to the Commission on the status of the Project from his/her independent vantage point. The report shall detail problems encountered and complaints received. For the period of three years following completion of construction, Keystone's public liaison officer shall report to the Commission annually regarding post-construction landowner and other complaints, the status of road repair and reconstruction and land and crop restoration and any problems or issues occurring during the course of the year.

10. Not later than six months prior to commencement of construction, Keystone shall commence a program of contacts with state, county and municipal emergency response, law enforcement and highway, road and other infrastructure management agencies serving the Project area in order to educate such agencies concerning the planned construction schedule and the measures that such agencies should begin taking to prepare for construction impacts and the commencement of project operations.

11. Keystone shall conduct a preconstruction conference prior to the commencement of construction to ensure that Keystone fully understands the conditions set forth in this order. At a minimum, the conference shall include a Keystone representative, Keystone's construction supervisor and Staff.

12. Once known, Keystone shall inform the Commission of the date construction will commence, report to the Commission on the date construction is started and keep the Commission updated on construction activities as provided in Condition 8.

III. Construction

13. Except as otherwise provided in the conditions of this Order and Permit, Keystone shall comply with all mitigation measures set forth in the Construction Mitigation and Reclamation Plan (CMR Plan) as set forth in Exhibit TC-1, Exhibit B. If modifications to the CMR Plan are made by Keystone as it refines its construction plans or are required by the Department of State in its Final EIS Record of Decision or the Presidential Permit, the CMR Plan as so modified shall be filed with the Commission and shall be complied with by Keystone.

14. Keystone shall incorporate environmental inspectors into its CMR Plan and obtain follow-up information reports from such inspections upon the completion of each construction spread to help ensure compliance with this Order and Permit and all other applicable permits, laws, and rules.

15. Prior to construction, Keystone shall, in consultation with area NRCS staff, develop specific construction/reclamation units (Con/Rec Units) that are applicable to particular soil and subsoil classifications, land uses and environmental settings. The Con/Rec Units shall contain information of the sort described in response to Staff Data Request 3-25 found in Exhibit TC-16.

a) In the development of the Con/Rec Units in areas where NRCS recommends, Keystone shall conduct analytical soil probing and/or soil boring and analysis in areas of

particularly sensitive soils where reclamation potential is low. Records regarding this process shall be available to the Commission and to the specific land owner affected by such soils upon request.

b) Through development of the Con/Rec Units and consultation with NRCS, Keystone shall identify soils for which alternative handling methods are recommended. Alternative soil handling methods shall include but are not limited to the "triple-lift" method where conditions justify such treatment. Keystone shall thoroughly inform the landowner regarding the options applicable to their property, including their respective benefits and negatives, and implement whatever reasonable option for soil handling is selected by the landowner. Records regarding this process shall be available to the Commission upon request.

c) Keystone shall, in consultation with NCRS, ensure that its construction planning and execution process, including Con/Rec Units, CMR Plan and its other construction documents and planning shall adequately identify and plan for areas susceptible to erosion, areas where sand dunes are present, areas with high concentrations of sodium bentonite, areas with sodic, saline and sodic-saline soils and any other areas with low reclamation potential.

d) The Con/Rec Units shall be available upon request to the Commission and affected landowners. Con/Rec Units may be evaluated by the Commission upon complaint or otherwise, regarding whether proper soil handling, damage mitigation or reclamation procedures are being followed.

e) Areas of specific concern or of low reclamation potential shall be recorded in a separate database. Action taken at such locations and the results thereof shall also be recorded and made available to the Commission and the affected property owner upon request.

16. Keystone shall provide each landowner with an explanation regarding trenching and topsoil and subsoil/rock removal, segregation and restoration method options for his/her property consistent with the applicable Con/Rec Unit and shall follow the landowner's selected preference as documented on its written construction agreement with the landowner, as modified by any subsequent amendments, or by other written agreement(s).

a) Keystone shall separate and segregate topsoil from subsoil in agricultural areas, including grasslands and shelter belts, as provided in the CMR Plan and the applicable Con/Rec Unit.

b) Keystone shall repair any damage to property that results from construction activities.

c) Keystone shall restore all areas disturbed by construction to their preconstruction condition, including their original preconstruction topsoil, vegetation, elevation, and contour, or as close thereto as is feasible, except as is otherwise agreed to by the landowner.

d) Except where practicably infeasible, final grading and topsoil replacement and installation of permanent erosion control structures shall be completed in non-residential areas within 20 days after backfilling the trench. In the event that seasonal or other weather conditions, extenuating circumstances, or unforeseen developments beyond Keystone's control prevent compliance with this time frame, temporary erosion controls shall be maintained until conditions allow completion of cleanup and reclamation. In the event

Keystone can not comply with the 20-day time frame as provided in this Condition, it shall give notice of such fact to all affected landowners, and such notice shall include an estimate of when such restoration is expected to be completed.

e) Keystone shall draft specific crop monitoring protocols for agricultural lands. If requested by the landowner, Keystone shall provide an independent crop monitor to conduct yield testing and/or such other measurements of productivity as he shall deem appropriate. The independent monitor shall be a qualified agronomist, rangeland specialist or otherwise qualified with respect to the species to be restored. The protocols shall be available to the Commission upon request and may be evaluated for adequacy in response to a complaint or otherwise.

f) Keystone shall work closely with landowners or land management agencies to determine a plan to control noxious weeds. Landowner permission shall be obtained before the application of herbicides.

g) Keystone's adverse weather plan shall apply to improved hay land and pasture lands in addition to crop lands.

h) The size, density and distribution of rock within the construction right-of-way following reclamation shall be similar to adjacent undisturbed areas. Keystone shall treat rock that cannot be backfilled within or below the level of the natural rock profile as construction debris and remove it for disposal offsite except when the landowner agrees to the placement of the rock on his property. In such case, the rock shall be placed in accordance with the landowner's directions.

i) Keystone shall utilize the proposed trench line for its pipe stringing trucks where conditions allow and shall employ adequate measures to decompact subsoil as provided in its CMR Plan. Topsoil shall be decompacted if requested by the landowner.

j) Keystone shall monitor and take appropriate mitigative actions as necessary to address salinity issues when dewatering the trench, and field conductivity and/or other appropriate constituent analyses shall be performed prior to disposal of trench water in areas where salinity may be expected. Keystone shall notify landowners prior to any discharge of saline water on their lands or of any spills of hazardous materials on their lands of one pint or more or of any lesser volume which is required by any federal, state, or local law or regulation or product license or label to be reported to a state or federal agency, manufacturer, or manufacturer's representative.

k) Keystone shall install trench and slope breakers where necessary in accordance with the CMR Plan as augmented by Staff's recommendations in Post Hearing Commission Staff Brief, pp. 26-27.

l) Keystone shall apply mulch when reasonably requested by landowners and also wherever necessary following seeding to stabilize the soil surface and to reduce wind and water erosion. Keystone shall follow the other recommendations regarding mulch application in Post Hearing Commission Staff Brief, p. 27.

m) Keystone shall reseed all lands with comparable crops to be approved by landowner in landowner's reasonable discretion, or in pasture, hay or native species areas with comparable grass or forage crop seed or native species mix to be approved by landowner in

landowner's reasonable discretion. Keystone shall actively monitor revegetation on all disturbed areas for at least two years.

n) Keystone shall coordinate with landowners regarding his/her desires to properly protect cattle, shall implement such protective measures as are reasonably requested by the landowner and shall adequately compensate the landowner for any loss.

o) Prior to commencing construction, Keystone shall file with the Commission a confidential list of property owners crossed by the pipeline and update this list if route changes during construction result in property owner changes.

p) Except in areas where fire suppression resources as provided in CMR Plan 2.16 are in close proximity, to minimize fire risk, Keystone shall, and shall cause its contractor to, equip each of its vehicles used in pre-construction or construction activities, including off-road vehicles, with a hand held fire extinguisher, portable compact shovel and communication device such as a cell phone, in areas with coverage, or a radio capable of achieving prompt communication with Keystone's fire suppression resources and emergency services.

17. Keystone shall cover open-bodied dump trucks carrying sand or soil while on paved roads and cover open-bodied dump trucks carrying gravel or other materials having the potential to be expelled onto other vehicles or persons while on all public roads.

18. Keystone shall use its best efforts to not locate fuel storage facilities within 200 feet of private wells and 400 feet of municipal wells and shall minimize and exercise vigilance in refueling activities in areas within 200 feet of private wells and 400 feet of municipal wells.

19. If trees are to be removed that have commercial or other value to affected landowners, Keystone shall compensate the landowner for the fair market value of the trees to be cleared and/or allow the landowner the right to retain ownership of the felled trees. Except as the landowner shall otherwise agree in writing, the width of the clear cuts through any windbreaks and shelterbelts shall be limited to 50 feet or less, and he width of clear cuts through extended lengths of wooded areas shall be limited to 85 feet or less. The environmental inspection in Condition 14 shall include forested lands.

20. Keystone shall implement the following sediment control practices:

a) Keystone shall use floating sediment curtains to maintain sediments within the construction right of way in open water bodies with no or low flow when the depth of non-flowing water exceeds the height of straw bales or silt fence installation. In such situations the floating sediment curtains shall be installed as a substitute for straw bales or silt fence along the edge or edges of each side of the construction right-of-way that is under water at a depth greater than the top of a straw bale or silt fence as portrayed in Keystone's construction Detail #11 included in the CMR Plan.

b) Keystone shall install sediment barriers in the vicinity of delineated wetlands and water bodies as outlined in the CMR Plan regardless of the presence of flowing or standing water at the time of construction.

c) The Applicant should consult with South Dakota Game, Fish and Parks (SDGFP) to avoid construction near water bodies during fish spawning periods in which in-stream

construction activities should be avoided to limit impacts on specific fisheries, if any, with commercial or recreational importance.

21. Keystone shall develop frac-out plans specific to areas in South Dakota where horizontal directional drilling will occur. The plan shall be followed in the event of a frac-out. If a frac-out event occurs, Keystone shall promptly file a report of the incident with the Commission. Keystone shall also, after execution of the plan, provide a follow-up report to the Commission regarding the results of the occurrence and any lingering concerns.

22. Keystone shall comply with the following conditions regarding construction across or near wetlands, water bodies and riparian areas:

a) Unless a wetland is actively cultivated or rotated cropland or unless site specific conditions require utilization of Keystone's proposed 85 foot width and the landowner has agreed to such greater width, the width of the construction right-of-way shall be limited to 75 feet in non-cultivated wetlands unless a different width is approved or required by the United States Army Corps of Engineers.

b) Unless a wetland is actively cultivated or rotated cropland, extra work areas shall be located at least 50 feet away from wetland boundaries except where site-specific conditions render a 50-foot setback infeasible. Extra work areas near water bodies shall be located at least 50 feet from the water's edge, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land or where site-specific conditions render a 50-foot setback infeasible. Clearing of vegetation between extra work space areas and the water's edge shall be limited to the construction right-of-way.

c) Water body crossing spoil, including upland spoil from crossings of streams up to 30 feet in width, shall be stored in the construction right of way at least 10 feet from the water's edge or in additional extra work areas and only on a temporary basis.

d) Temporary in-stream spoil storage in streams greater than 30 feet in width shall only be conducted in conformity with any required federal permit(s) and any applicable federal or state statutes, rules and standards.

e) Wetland and water body boundaries and buffers shall be marked and maintained until ground disturbing activities are complete. Keystone shall maintain 15-foot buffers where practicable, which for stream crossings shall be maintained except during the period of trenching, pipe laying and backfilling the crossing point. Buffers shall not be required in the case of non-flowing streams.

f) Best management practices shall be implemented to prevent heavily silt-laden trench water from reaching any wetland or water body directly or indirectly.

g) Erosion control fabric shall be used on water body banks immediately following final stream bank restoration unless riprap or other bank stabilization methods are utilized in accordance with federal or state permits.

h) The use of timber and slash to support equipment crossings of wetlands shall be avoided.

i) Subject to Conditions 37 and 38, vegetation restoration and maintenance adjacent to water bodies shall be conducted in such manner to allow a riparian strip at least 25 feet wide as measured from the water body's mean high water mark to permanently re-vegetate with native plant species across the entire construction right-of way.

23. Keystone shall comply with the following conditions regarding road protection and bonding:

a) Keystone shall coordinate road closures with state and local governments and emergency responders and shall acquire all necessary permits authorizing crossing and construction use of county and township roads.

b) Keystone shall implement a regular program of road maintenance and repair through the active construction period to keep paved and gravel roads in an acceptable condition for residents and the general public.

c) Prior to their use for construction, Keystone shall videotape those portions of all roads which will be utilized by construction equipment or transport vehicles in order to document the pre-construction condition of such roads.

d) After construction, Keystone shall repair and restore, or compensate governmental entities for the repair and restoration of, any deterioration caused by construction traffic, such that the roads are returned to at least their preconstruction condition.

e) Keystone shall use appropriate preventative measures as needed to prevent damage to paved roads and to remove excess soil or mud from such roadways.

f) Pursuant to SDCL 49-41B-38, Keystone shall obtain and file for approval by the Commission prior to construction in such year a bond in the amount of $15.6 million for the year in which construction is to commence and a second bond in the amount of $15.6 million for the ensuing year, including any additional period until construction and repair has been completed, to ensure that any damage beyond normal wear to public roads, highways, bridges or other related facilities will be adequately restored or compensated. Such bonds shall be issued in favor of, and for the benefit of, all such townships, counties, and other governmental entities whose property is crossed by the Project. Each bond shall remain in effect until released by the Commission, which release shall not be unreasonably denied following completion of the construction and repair period. Either at the contact meetings required by Condition 10 or by mail, Keystone shall give notice of the existence and amount of these bonds to all counties, townships and other governmental entities whose property is crossed by the Project.

24. Although no residential property is expected to be encountered in connection with the Project, in the event that such properties are affected and due to the nature of residential property, Keystone shall implement the following protections in addition to those set forth in its CMR Plan in areas where the Project passes within 500 feet of a residence:

a) To the extent feasible, Keystone shall coordinate construction work schedules with affected residential landowners prior to the start of construction in the area of the residences.

b) Keystone shall maintain access to all residences at all times, except for periods when it is infeasible to do so or except as otherwise agreed between Keystone and the occupant. Such periods shall be restricted to the minimum duration possible and shall be coordinated with affected residential landowners and occupants, to the extent possible.

c) Keystone shall install temporary safety fencing, when reasonably requested by the landowner or occupant, to control access and minimize hazards associated with an open trench and heavy equipment in a residential area.

d) Keystone shall notify affected residents in advance of any scheduled disruption of utilities and limit the duration of such disruption.

e) Keystone shall repair any damage to property that results from construction activities.

f) Keystone shall separate topsoil from subsoil and restore all areas disturbed by construction to at least their preconstruction condition.

g) Except where practicably infeasible, final grading and topsoil replacement, installation of permanent erosion control structures and repair of fencing and other structures shall be completed in residential areas within 10 days after backfilling the trench. In the event that seasonal or other weather conditions, extenuating circumstances, or unforeseen developments beyond Keystone's control prevent compliance with this time frame, temporary erosion controls and appropriate mitigative measures shall be maintained until conditions allow completion of cleanup and reclamation.

25. Construction must be suspended when weather conditions are such that construction activities will cause irreparable damage, unless adequate protection measures approved by the Commission are taken. At least two months prior to the start of construction in South Dakota, Keystone shall file with the Commission an adverse weather land protection plan containing appropriate adverse weather land protection measures, the conditions in which such measures may be appropriately used, and conditions in which no construction is appropriate, for approval of or modification by the Commission prior to the start of construction. The Commission shall make such plan available to impacted landowners who may provide comment on such plan to the Commission.

26. Reclamation and clean-up along the right-of-way must be continuous and coordinated with ongoing construction.

27. All pre-existing roads and lanes used during construction must be restored to at least their pre-construction condition that will accommodate their previous use, and areas used as temporary roads during construction must be restored to their original condition, except as otherwise requested or agreed to by the landowner or any governmental authority having jurisdiction over such roadway.

28. Keystone shall, prior to any construction, file with the Commission a list identifying private and new access roads that will be used or required during construction and file a description of methods used by Keystone to reclaim those access roads.

29. Prior to construction, Keystone shall have in place a winterization plan and shall implement the plan if winter conditions prevent reclamation completion until spring. The plan shall be provided to affected landowners and, upon request, to the Commission.

30. Numerous Conditions of this Order, including but not limited to 16, 19, 24, 25, 26, 27 and 51 relate to construction and its effects upon affected landowners and their property. The Applicant may encounter physical conditions along the route during construction which make compliance with certain of these Conditions infeasible. If, after providing a copy of this order, including the Conditions, to the landowner, the Applicant and landowner agree in writing to modifications of one or more requirements specified in these conditions, such as maximum clearances or right-of-way widths, Keystone may follow the alternative procedures and specifications agreed to between it and the landowner.

IV. Pipeline Operations, Detection and Emergency Response

31. Keystone shall construct and operate the pipeline in the manner described in the application and at the hearing, including in Keystone's exhibits, and in accordance with the conditions of this permit, the PHMSA Special Permit, if issued, and the conditions of this Order and the construction permit granted herein.

32. Keystone shall require compliance by its shippers with its crude oil specifications in order to minimize the potential for internal corrosion.

33. Keystone's obligation for reclamation and maintenance of the right-of-way shall continue throughout the life of the pipeline. In its surveillance and maintenance activities, Keystone shall, and shall cause its contractor to, equip each of its vehicles, including off-road vehicles, with a hand held fire extinguisher, portable compact shovel and communication device such as a cell phone, in areas with coverage, or a radio capable of achieving prompt communication with emergency services.

34. In accordance with 49 C.F.R. 195, Keystone shall continue to evaluate and perform assessment activities regarding high consequence areas. Prior to Keystone commencing operation, all unusually sensitive areas as defined by 49 CFR 195.6 that may exist, whether currently marked on DOT's HCA maps or not, should be identified and added to the Emergency Response Plan and Integrity Management Plan. In its continuing assessment and evaluation of environmentally sensitive and high consequence areas, Keystone shall seek out and consider local knowledge, including the knowledge of the South Dakota Geological Survey, the Department of Game Fish and Parks and local landowners and governmental officials.

35. The evidence in the record demonstrates that in some reaches of the Project in southern Tripp County, the High Plains Aquifer is present at or very near ground surface and is overlain by highly permeable sands permitting the uninhibited infiltration of contaminants. This aquifer serves as the water source for several domestic farm wells near the pipeline as well as public water supply system wells located at some distance and upgradient from the pipeline route. Keystone shall identify the High Plains Aquifer area in southern Tripp County as a hydrologically sensitive area in its Integrity Management and Emergency Response Plans. Keystone shall similarly treat any other similarly vulnerable and beneficially useful surficial aquifers of which it becomes aware during construction and continuing route evaluation.

36. Prior to putting the Keystone Pipeline into operation, Keystone shall prepare, file with PHMSA and implement an emergency response plan as required under 49 CFR 194 and a manual of written procedures for conducting normal operations and maintenance activities and handling abnormal operations and emergencies as required under 49 CFR 195.402. Keystone shall also prepare and implement a written integrity management program in the manner and at such time as required under 49 CFR 195.452. At such time as Keystone files its Emergency Response Plan and

Integrity Management Plan with PHMSA or any other state or federal agency, it shall also file such documents with the Commission. The Commission's confidential filing rules found at ARSD 20:10:01:41 may be invoked by Keystone with respect to such filings to the same extent as with all other filings at the Commission. If information is filed as "confidential," any person desiring access to such materials or the Staff or the Commission may invoke the procedures of ARSD 20:10:01:41 through 20:10:01:43 to determine whether such information is entitled to confidential treatment and what protective provisions are appropriate for limited release of information found to be entitled to confidential treatment.

37. To facilitate periodic pipeline leak surveys during operation of the facilities in wetland areas, a corridor centered on the pipeline and up to 15 feet wide shall be maintained in an herbaceous state. Trees within 15 feet of the pipeline greater than 15 feet in height may be selectively cut and removed from the permanent right-of-way.

38. To facilitate periodic pipeline leak surveys in riparian areas, a corridor centered on the pipeline and up to 10 feet wide shall be maintained in an herbaceous state.

V. Environmental

39. Except to the extent waived by the owner or lessee in writing or to the extent the noise levels already exceed such standard, the noise levels associated with Keystone's pump stations and other noise-producing facilities will not exceed the L10=55dbA standard at the nearest occupied, existing residence, office, hotel/motel or non-industrial business not owned by Keystone. The point of measurement will be within 100 feet of the residence or business in the direction of the pump station or facility. Post-construction operational noise assessments will be completed by an independent third-party noise consultant, approved by the Commission, to show compliance with the noise level at each pump station or other noise-producing facility. The noise assessments will be performed in accordance with applicable American National Standards Institute standards. The results of the assessments will be filed with the Commission. In the event that the noise level exceeds the limit set forth in this condition at any pump station or other noise producing facility, Keystone shall promptly implement noise mitigation measures to bring the facility into compliance with the limits set forth in this condition and shall report to the Commission concerning the measures taken and the results of post-mitigation assessments demonstrating that the noise limits have been met.

40. At the request of any landowner or public water supply system that offers to provide the necessary access to Keystone over his/her property or easement(s) to perform the necessary work, Keystone shall replace at no cost to such landowner or public water supply system, any polyethylene water piping located within 500 feet of the Project with piping that is resistant to permeation by BTEX. Keystone shall not be required to replace that portion of any piping that passes through or under a basement wall or other wall of a home or other structure. At least forty-five (45) days prior to commencing construction, Keystone shall publish a notice in each newspaper of general circulation in each county through which the Project will be constructed advising landowners and public water supply systems of this condition.

41. Keystone shall follow all protection and mitigation efforts as identified by the US Fish and Wildlife Service ("USFWS") and SDGFP. Keystone shall identify all greater prairie chicken and greater sage and sharp-tailed grouse leks within the buffer distances from the construction right of way set forth for the species in the FEIS and Biological Assessment (BA) prepared by DOS and USFWS. In accordance with commitments in the FEIS and BA, Keystone shall avoid or restrict

construction activities as specified by USFWS within such buffer zones between March 1 and June 15 and for other species as specified by USFWS and SDGFP.

42. Keystone shall keep a record of drain tile system information throughout planning and construction, including pre-construction location of drain tiles. Location information shall be collected using a sub-meter accuracy global positioning system where available or, where not available by accurately documenting the pipeline station numbers of each exposed drain tile. Keystone shall maintain the drain tile location information and tile specifications and incorporate it into its Emergency Response and Integrity Management Plans where drains might be expected to serve as contaminant conduits in the event of a release. If drain tile relocation is necessary, the applicant shall work directly with landowner to determine proper location. The location of permanent drain tiles shall be noted on as-built maps. Qualified drain tile contractors shall be employed to repair drain tiles.

VI. Cultural and Paleontological Resources

43. In accordance with Application, Section 6.4, Keystone shall follow the "Unanticipated Discoveries Plan," as reviewed by the State Historical Preservation Office ("SHPO") and approved by the DOS and provide it to the Commission upon request. Ex TC-1.6.4, pp. 94-96; Ex S-3. If during construction, Keystone or its agents discover what may be an archaeological resource, cultural resource, historical resource or gravesite, Keystone or its contractors or agents shall immediately cease work at that portion of the site and notify the DOS, the affected landowner(s) and the SHPO. If the DOS and SHPO determine that a significant resource is present, Keystone shall develop a plan that is approved by the DOS and commenting/signatory parties to the Programmatic Agreement to salvage avoid or protect the archaeological resource. If such a plan will require a materially different route than that approved by the Commission, Keystone shall obtain Commission and landowner approval for the new route before proceeding with any further construction. Keystone shall be responsible for any costs that the landowner is legally obligated to incur as a consequence of the disturbance of a protected cultural resource as a result of Keystone's construction or maintenance activities.

44. Keystone shall implement and comply with the following procedures regarding paleontological resources:

a) Prior to commencing construction, Keystone shall conduct a literature review and records search, and consult with the BLM and Museum of Geology at the S.D. School of Mines and Technology ("SDSMT") to identify known fossil sites along the pipeline route and identify locations of surface exposures of paleontologically sensitive rock formations using the BLM's Potential Fossil Yield Classification system. Any area where trenching will occur into the Hell Creek Formation shall be considered a high probability area.

b) Keystone shall at its expense conduct a pre-construction field survey of each area identified by such review and consultation as a known site or high probability area within the construction ROW. Following BLM guidelines as modified by the provisions of Condition 44, including the use of BLM permitted paleontologists, areas with exposures of high sensitivity (PFYC Class 4) and very high sensitivity (PFYC Class 5) rock formations shall be subject to a 100% pedestrial field survey, while areas with exposures of moderately sensitive rock formations (PFYC Class 3) shall be spot-checked for occurrences of scientifically or economically significant surface fossils and evidence of subsurface fossils. Scientifically or economically significant surface fossils shall be avoided by the Project or mitigated by collecting them if avoidance is not feasible. Following BLM guidelines for the assessment

and mitigation of paleontological resources, scientifically significant paleontological resources are defined as rare vertebrate fossils that are identifiable to taxon and element, and common vertebrate fossils that are identifiable to taxon and element and that have scientific research value; and scientifically noteworthy occurrences of invertebrate, plant and trace fossils. Fossil localities are defined as the geographic and stratigraphic locations at which fossils are found.

c) Following the completion of field surveys, Keystone shall prepare and file with the Commission a paleontological resource mitigation plan. The mitigation plan shall specify monitoring locations, and include BLM permitted monitors and proper employee and contractor training to identify any paleontological resources discovered during construction and the procedures to be followed following such discovery. Paleontological monitoring will take place in areas within the construction ROW that are underlain by rock formations with high sensitivity (PFYC Class 4) and very high sensitivity (PFYC Class 5), and in areas underlain by rock formations with moderate sensitivity (PFYC Class 3) where significant fossils were identified during field surveys.

d) If during construction, Keystone or its agents discover what may be a paleontological resource of economic significance, or of scientific significance, as defined in subparagraph (b) above, Keystone or its contractors or agents shall immediately cease work at that portion of the site and, if on private land, notify the affected landowner(s). Upon such a discovery, Keystone's paleontological monitor will evaluate whether the discovery is of economic significance, or of scientific significance as defined in subparagraph (b) above. If an economically or scientifically significant paleontological resource is discovered on state land, Keystone will notify SDSMT and if on federal land, Keystone will notify the BLM or other federal agency. In no case shall Keystone return any excavated fossils to the trench. If a qualified and BLM-permitted paleontologist, in consultation with the landowner, BLM, or SDSMT determines that an economically or scientifically significant paleontological resource is present, Keystone shall develop a plan that is reasonably acceptable to the landowner(s), BLM, or SDSMT, as applicable, to accommodate the salvage or avoidance of the paleontological resource to protect or mitigate damage to the resource. The responsibility for conducting such measures and paying the costs associated with such measures, whether on private, state or federal land, shall be borne by Keystone to the same extent that such responsibility and costs would be required to borne by Keystone on BLM managed lands pursuant to BLM regulations and guidelines, including the BLM Guidelines for Assessment and Mitigation of Potential Impacts to Paleontological Resources, except to the extent factually inappropriate to the situation in the case of private land (e.g. museum curation costs would not be paid by Keystone in situations where possession of the recovered fossil(s) was turned over to the landowner as opposed to curation for the public). If such a plan will require a materially different route than that approved by the Commission, Keystone shall obtain Commission approval for the new route before proceeding with any further construction. Keystone shall, upon discovery and salvage of paleontological resources either during pre-construction surveys or construction and monitoring on private land, return any fossils in its possession to the landowner of record of the land on which the fossil is found. If on state land, the fossils and all associated data and documentation will be transferred to the SDSM; if on federal land, to the BLM.

e) To the extent that Keystone or its contractors or agents have control over access to such information, Keystone shall, and shall require its contractors and agents to, treat the locations of sensitive and valuable resources as confidential and limit public access to this information.

VII. Enforcement and Liability for Damage

45. Keystone shall repair or replace all property removed or damaged during all phases of construction and operation of the proposed transmission facility, including but not limited to, all fences, gates and utility, water supply, irrigation or drainage systems. Keystone shall compensate the owners for damages or losses that cannot be fully remedied by repair or replacement, such as lost productivity and crop and livestock losses or loss of value to a paleontological resource damaged by construction or other activities.

46. In the event that a person's well is contaminated as a result of construction or pipeline operation, Keystone shall pay all costs associated with finding and providing a permanent water supply that is at least of similar quality and quantity; and any other related damages, including but not limited to any consequences, medical or otherwise, related to water contamination.

47. Any damage that occurs as a result of soil disturbance on a persons' property shall be paid for by Keystone.

48. No person will be held responsible for a pipeline leak that occurs as a result of his/her normal farming practices over the top of or near the pipeline.

49. Keystone shall pay commercially reasonable costs and indemnify and hold the landowner harmless for any loss, damage, claim or action resulting from Keystone's use of the easement, including any resulting from any release of regulated substances or from abandonment of the facility, except to the extent such loss, damage claim or action results from the gross negligence or willful misconduct of the landowner or its agents.

50. The Commission's complaint process as set forth in ARSD 20:10:01 shall be available to landowners, other persons sustaining or threatened with damage or the consequences of Keystone's failure to abide by the conditions of this permit or otherwise having standing to obtain enforcement of the conditions of this Order and Permit.

Exhibit B

RULINGS ON PROPOSED FINDINGS OF FACT

Rulings on Applicants' Proposed Findings of Fact

As Applicant is the prevailing party, most of Applicant's Proposed Findings of Fact have been accepted in their general substance and incorporated in the Findings of Fact, with additions and modifications to reflect the Commission's understanding of the record.

Chuck Frey

Rebuttal Testimony

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION OF DAKOTA ACCESS, LLC FOR AN ENERGY FACILITY PERMIT TO CONSTRUCT THE DAKOTA ACCESS PIPELINE PROJECT	))))))	HP14-002

REBUTTAL TESTIMONY OF

CHUCK FREY

ON BEHALF OF

DAKOTA ACCESS, LLC

DAKOTA ACCESS EXHIBIT #___

August 14, 2015

Q. Please state your name and business address for the record.

A. My name is Chuck Frey. I am employed by Energy Transfer Partners and my business address is 1300 Main St, Houston, TX. 77002.

Q. What is your position with Dakota Access, LLC ("Dakota Access")?

A. I am the Vice President of Engineering.

Q. Did you previously file direct testimony in this matter?

A. Yes

Q. What is the purpose of this rebuttal testimony?

A. I intent to address the concerns raised by interveners regarding the outside storage of pipe prior to construction.

Q. What was the concern raised by landowners?

A. Various landowners commented that they believe premature aging and deterioration will occur due to the elements the pipe experiences prior to installation.

Q. What is your response to that concern?

A. I appreciate the concern; however, based on my experience I do not believe pipe integrity will be compromised. Pipeline construction includes a time of pipe storage prior to construction. However, we also responded to the concern by making a direct inquiry with Valspar. The pipe coating is a Valspar product. Attached to my testimony as Exhibit A is the reply we received from Valspar. In addition please find attached as Exhibit B a Technical Brief on the subject.

Q. Does this conclude your testimony?

A. Yes.

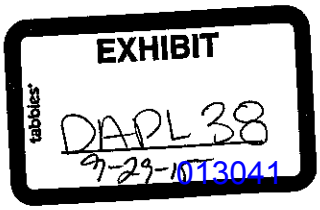
Dated this ____ day of July, 2015

_____

Chuck Frey

Monica Howard

Rebuttal Testimony



BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION OF DAKOTA ACCESS, LLC FOR AN ENERGY FACILITY PERMIT TO CONSTRUCT THE DAKOTA ACCESS PIPELINE PROJECT	))))))	HP14-002

REBUTTAL TESTIMONY OF

MONICA HOWARD

ON BEHALF OF

DAKOTA ACCESS, LLC

DAKOTA ACCESS EXHIBIT #____

August 14, 2015

Q. Please state your name and business address for the record.

A. My name is Monica Howard, I am the Environmental Project Manager with Dakota Access, LLC ("Dakota Access"), the Applicant in this proceeding, and Director of Environmental Science for Energy Transfer Partners, L.P. ("ETP"). My business address is 1300 Main St, Houston, TX. 77002.

Q. Have you previously submitted direct testimony in this proceeding?

A. Yes, I previously submitted direct testimony, dated July 6, 2015 which is identified as Dakota Access Exhibit 6.

Q. What is the purpose of your rebuttal testimony?

A. The purpose of my rebuttal testimony is to respond to the environmental components of the testimony of Derric Iles, Tom Kirschenmann, Ryan Ledin, Kimberly McIntosh, David Nickel, Paige Olson, Andrea Thorton, DeAnn Thyse, Brian Walsh, and Cameron Young.

Q. Several of the above listed parties referenced the Federal Energy Regulatory Commission (FERC) filing requirements in their testimony. Is the Dakota Access Pipeline project subject these FERC environmental regulations?

A. No.

Q. Did Dakota Access omit reference to general permit SDG070000 for hydrostatic and trench dewatering as stated by Ryan Ledin (See page 2 of his testimony, starting at line 20)?

A. No. The application submitted in December 2014 identifies permit number SDG070000 as a permit required for construction. Table 5.0-1 within Section 5.0 discusses permit applicability. The permit is again discussed in Section 15.5.

Q. **Will Dakota Access implement the hydrostatic test water withdrawal or discharge recommendations made by Ryan Ledin in his prefiled testimony?**

A. Yes.

Q. **Do you have any comments on Ryan Ledin's statements regarding perceived deficiencies in the SWPPP ?**

A. Yes, throughout his testimony Mr. Ledin referenced Federal Energy Regulatory Commission (FERC) Procedures; however this project is not regulated by FERC; nor is the pipeline construction subject to NPDES permitting as it has been expressly exempted by the EPA. The submitted SWPPP meets the applicable federal requirements designed to protect the environment and specifically waters of the U.S.

Mr. Ledin's testimony repeatedly expressed concern regarding consistency in applying Best Management Practices (BPMs). However, consistency is not the measure of a successful SWPPP. Rather, BMPs must be employed to meet site specific challenges in the field. BMPs will be employed as necessary to comply with the Clean Water Act at each specific location.

Dakota Access intends to employ experienced and qualified Environmental Inspectors familiar with appropriate implementation of BMPs to ensure compliance. It should be further noted that the typical drawings appended to the SWPPP did provide maximum spacing recommendations for slope breakers and trench breakers.

Q. **Do you have any comments regarding Mr. Ledin's recommendations relative to vegetation management and control of noxious weed including wash stations?**

A. Yes, as directed by the Department of Agriculture, Dakota Access is managing noxious weeks in consultation with individual landowners on a case-by-case basis. Dakota

Access requires the contractor to ensure that equipment mobilized to the project is clean/free of dirt and debris that may host noxious weeds. Further, plots of noxious weeds warranting the implementation of wash stationswere not observed during surveys or reported to us by landowners. As a result, the use of wash stations is not warranted.

Q. **Do you have a response to Mr. Ledin's recommendation that a "master waterbody and wetland" crossing table be included in the SWPPP with milepost or stationing to indicate the features' exact location? (See page 4 of his testimony starting at line 14)**

A. Yes, all wetlands and waterbodies are incorporated onto the alignment sheets issued for construction, which identifies the features by name and station and it is evident which features will be crossed via HDD. The crossing method for all other features will be determined by the contractor, with advice as necessary from the Chief Inspector and the Environmental Inspector, to ensure compliance with applicable regulations. The site by site decision for which crossing method to employ is based on conditions present at the time of crossing. Any given wetland or waterbody could be crossed by any of the presented methods. As a result, once again, a site by site analysis at the time of crossing is necessary to assure the best method given current circumstances.

Q. **Are you aware of the concern Tom Kirschenmann raises in his testimony regarding the pipeline's close proximity to Game Production Areas (See page 2 of his testimony starting at line 1)?**

A. Yes, Dakota Access understands that the proposed route is in close proximity to these sensitive areas. However, the route does not currently pass through these areas and Dakota Access has no plans to change the route such that it will pass through these areas.

Based on the current route, Dakota Access does not anticipate adverse impacts on these sensitive areas.

Q. Are you aware of the concern Tom Kirschenmann raises in his testimony regarding Native Prairie areas (See page 2 of his testimony starting at line 10)?

A. Yes, again we appreciate his concern. As noted in Section 16.1 of the December 2014 submittal, a very small amount of native prairie is crossed by the Project, and Dakota Access is consulting with the NRCS regarding appropriate seed mixtures for restoration.

Q. Are you aware of the concern Tom Kirschenmann raises in his testimony regarding waterfowl production areas and private lands under conservation easements (See page 2 of his testimony starting at line 10)?

A. Yes. The route does not cross any waterfowl production areas or federal wildlife management areas. However, Wetland and Grassland easements held by the USFWS on private lands are being crossed by the Project. As a result, an Environmental Assessment has been submitted to the USFWS-Refuge Division for review as part of the Special Use Permit process to cross these easements.

Q. Can you comment on the potential impact the project may have on federally protected species in South Dakota?

A. Dakota Access has been working with the USFWS since June of 2014. Impact assessments on all federally protected species is being coordinated in accordance with the Endangered Species Act.

Q. Please comment specifically on the impact to the Topica Shiner.

A. The SD Ecological Field Office identified nine waterbodies crossed by the project where the Topeka shiner was potentially present. As a result, Dakota Access proposes to to

HDD four of these of these water crossings. As a result, impacts will be avoided. Biological surveys determined that the pipeline crossing location at two other waterbodies lack suitable habitat for the species. As such, the Project has the potential to impact the Topkea shiner at three remaining streams that will be conventionally crossed. Based on communication with the USFWS and USACE, Dakota Access intends to utilize the existing Programmatic Biological Opinion for the Issuance of Selected Nationwide Permits Impacting the Topeka Shiner in South Dakota, dated October 2014, to address impacts to the species.

Q. Please comment specifically on the impact to the Dakota Skipper.

A. The Dakota Skipper is a federally protected species and is listed in Campbell and Edmunds Counties. However, biological surveys concluded that no suitable habitat within those counties is crossed by the project, thus no impacts are anticipated.

Q. Did you read Ms. Andrea Thornton's prefiled testimony and do you have any comments to offer?

A. Yes. Ms. Thornton's testimony references the Federal Energy Regulatory Commission filing requirements, Plan, and the Interstate Natural Gas Association of America. None of the listed references are applicable to this Project.

Q. In addition, Ms. Thornton recommends the PUC "require a more quantifiable measure to determine when revegation is successful..." She recommends 70% revegation as a quantifiable measure. Does Dakota Access agree to do so?

A. Yes. In section 5.0 of the SWPPP submitted in December 2014 we propose the 70% revegation measure as it is consistent with EPA recommendations

Q. On page 7 of her testimony, Ms. Thornton addresses revegation potential. How did

Dakota Access determine the revegetation potential?

A. The SSURGO database was utilized and supplemented with the Official Soil Series Descriptions within the County Soil Surveys of the affected counties. The attribute data within the geospatially references database provides the extent of the component soils and properties for each map unit. The soil attribute data was used to determine the revegetation potential for each soil map unit. For example, soils with low revegetation potential typically have high compaction and/or erosion potentials, have slopes greater than 8 percent, are generally not classified as prime farmland, and/or are usually hydric in nature.

Q. Did Dakota Access omit identification of areas with saline, sodic, and saline-sodic soils crossed by the project as stated in Ms. Thornton's testimony?

A. No, the December 2014 submittal contained this information in Section 14.5 and Exhibit C. The potential for negative impacts to revegetation from these factors was discussed, as well as the fact that Dakota Access has retained an agricultural consultant to develop specific measures for work in these areas.

Q. Do you have a response to Ms. Thornton's statements that Dakota Access lacks measures to address specific seed mixes as needed or areas with revegetation concerns (see page 8 of her testimony)?

A. As stated in Section 16.1, Dakota Access will consult with the NRCS for recommended seed mixes for restoration of grasslands and pasture/rangeland. Additionally, our agricultural consultant is developing measures to be included in the construction line list for site specific measures needed during construction and/or revegetation. Such recommendations will be incorporated into the construction line list or under separate

cover.

Q. Did Dakota Access route the project to avoid Zone A Wellhead or Source Water Protection Areas as recommended by Brian Walsh?

A. Yes.

Q. Did Dakota Access contact the counties with Zone B areas in accords with Mr. Walsh's testimony?

A. Yes. All counties with identified Zone B areas were contacted and Dakota Access confirmed that no respective permitting or coordination is needed.

Q. Do you agree with Cameron Young's testimony that the northern long-eared bat is a federally protected species in South Dakota (See page 3 of his testimony)?

A. No. On April 2, 2015, the USFWS published the final listing in the Federal Register with an effective date of May 4, 2015 listing the northern long-eared bat as threatened and exercised the option of issuing an interim 4(d) rule. The 4(d) rule allowed for more flexible implementation of the Endangered Species Act and "to tailor prohibitions to those that make the most sense for protecting and managing at-risk species." In areas outside of the 150-mile White Nose Syndrome (WNS) buffer zone, incidental take from lawful activities is not prohibited. The state of South Dakota currently falls outside of the WNS 150-mile buffer zone; thus impacts to the species in South Dakota are exempted.

Q. Do you agree with Cameron Young's testimony that the Sprague's pipit is a federally listed species in Campbell and McPherson Counties (See page 3 of his testimony)?

A. No, this species is a candidate for listing and has no statutory protection under the Endangered Species Act.

Q. Do you agree with Cameron Young's testimony regarding impacts and mitigation for the whooping crane (See page 3 of his testimony)?

A. No. During migration, during which the project may be constructed, the species may inhabit various areas including croplands and palustrine wetlands. While the Project area within South Dakota may provide suitable stopover habitat for migrating whooping cranes, this species is highly mobile and would likely avoid the areas affected during construction. Additionally, there is ample suitable stopover habitat surrounding the Project area and throughout the region that would provide habitat for the whooping crane outside the construction footprint that may be more desirable to individuals than the temporarily affected area within the project footprint. Further, impacts to potential stop over habitat does not warrant mitigation under the ESA.

Q. Do you agree with Cameron Young's testimony regarding the Pallid Sturgeon, Dakota Skipper, or Western prairie fringed orchid in South Dakota (see page 4 of his testimony)?

A. No. The project is being designed, constructed and operated to meet or exceed US DOT regulations and will therefore be protective of aquatic resources, including the pallid sturgeon. All sturgeon habitat will be crossed via HDD and there are block valves located on both sides of waterbodies known to support the pallid sturgeon. Block valves are remotely operated and constantly monitored (24/7).

No suitable habitat for the Dakota skipper is crossed in Edmunds or McPherson Counties; therefore a no effect determination is appropriate. Additionally, the western prairie fringed orchid was not observed during surveys, thus a no effect determination is appropriate.

Q. Is Dakota Access committed to compliance with all applicable federal and state regulations respective to protection of species and the environment and will Dakota Access contractually require their contractor to comply as well?

A. Yes.

Q. Are there any archeological or historically sensitive areas crossed by DAPL, if so can Dakota Access mitigate the risks associated with those sensitive crossings?

A. During early coordination with the SD SHPO Dakota Access committed to surveying all high and moderate probability areas, which constitutes 80% of the Project area in South Dakota. To date, Dakota Access has surveyed 89% of the route, which is inclusive of the high and moderate probability areas, and has exceeded survey commitments. The results of the 89% surveyed was documented in the 2015 Level III report and addendum reports dated June 2 and August 7, respectively.

A total of 11 archaeological sites within the 400 foot survey corridor were recommended as eligible for listing in the National Register of Historic Places (NRHP), or were determined to have an unevaluated NRHP status and recommended to be avoided. The Project has been successfully tweaked the route to avoid impacts to all 11 sites. Dakota Access is confident that impacts to sensitive cultural resources will be avoided through rerouting, modifications to Project workspace, or trenchless installation (i.e, bore, HDD). It should be noted that Dakota Access is not involved in the sighting or permitting of the contractor or delivery yards, those are the responsibility of the contractor and manufacturer/vender, respectively.

Q. Has the extent of federal involvement on the project been established?

A. Yes. The extent of federal involvement is limited to the federally jurisdictional areas

along the route. For Waters of the U.S. this is up to 257 feet on either side of the water feature. For USFWS easements, it is limited to the jurisdictional areas along the respective tracts containing easements. There is no other federal jurisdiction along the Project in South Dakota. A map of the federal jurisdictional areas was created and provided to Ms. Paige Olson on 08/07/15 for clarification of areas of federal involvement questioned in her testimony.

Q. Will Dakota Access make the changes to the Unanticipated Discovery Plan provided in Ms. Paige Olson's and DeAnn Thyse's testimonies?

A. Yes, these revisions have been made and a revised plan was submitted to Paige Olson on August 8, 2015.

Q. Can Dakota Access clarify the three items from the June Level III report that were discussed in Ms. Paige Olson's testimony?

A. Yes. Clarifications were provided to Mr. Olson on August 8, 2015.

Q. Does this conclude your testimony?

A. Yes.

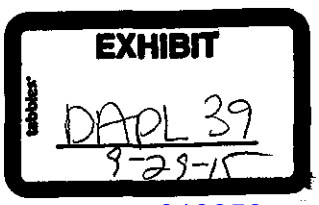
Dated this ____ day of August 2015

_____

Monica Howard

Aaron Dejoia

Rebuttal Testimony



BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION OF DAKOTA ACCESS, LLC FOR AN ENERGY FACILITY PERMIT TO CONSTRUCT THE DAKOTA ACCESS PIPELINE PROJECT	))))))	HP14-002

REBUTTAL TESTIMONY OF

AARON DEJOIA

ON BEHALF OF

DAKOTA ACCESS, LLC

DAKOTA ACCESS EXHIBIT

August 14, 2015

Q. Please state your name, present position and business address.

A. My name is Aaron DeJoia. My business address is: 4626 CR 65 Keenesburg, Colorado 80643. I am employed by Duraroot, LLC as a Principal Soil Scientist/Agronomist.

Q. What is your educational and professional background?

A. I have a BS degree in Agriculture (Agronomy) and a MS degree in Agronomy (Soil Fertility) from Kansas State University.

I have worked as an environmental soil scientist since 2000. Currently I am a Principal Soil Scientist/Agronomist with Duraroot, LLC based in Colorado. A majority of my work since 2004 has been focused on the reclamation of drastically, disturbed lands in agricultural, prime farmland, and rangeland/pasture settings throughout the United States. I have studied the effects of various restoration techniques and helped to design and implement successful reclamation plans for oil and gas exploration pads, pipeline right-of-ways, mines, and roadways. I have particular expertise in agricultural land and saline/sodic soil restoration.

Q. What professional credentials do you hold?

A. I am a Certified Professional Soil Scientist, through the Soil Science Society of America, Certified Professional Agronomist and Certified Crop Advisor, through the American Society of Agronomy, and a Certified Inspector Sediment and Erosion Control. All of these certification programs have required me to take and pass written tests and show education and professional experience in the chosen industry. I have had to sign ethics pledges for all three certification that require me to provide ethical services to my clients and the greater community. I have also passed the practical field examination for being licensed as a soil classifier in the state of North Dakota and am currently in the process of

providing the required paper work and work history to the Professional Soil Classifier Board in North Dakota. The certification that I currently hold are the highest certifications that can be obtained for Soil Scientists and Agronomists in the United States.

Q. Have you previously submitted or prepared testimony in this proceeding in South Dakota?

A. No.

Q. What is the purpose of your testimony?

A. My testimony is in response, or to rebut, direct testimony filed by various interveners, and expert witness, Brian Top. In addition, I will address concerns PUC Staff Expert witnesses raise. I will testify specifically address issues within my area of expertise; which includes soil, water, vegetation, agronomic and reclamation related issues.

Q. Did you read testimony in preparation for your written rebuttal?

A. Yes.

Q. What fact witness, or intervener, testimony did you read?

A. I read testimony submitted by the following individuals: Corliss Faye Wiebers, Delores Assid, Devona Smith, Janice Elaine Petterson, Kevin John Schoffelman, Linda Ann Goulet, Margaret Hilt, Marilyn Murray, Matthew Anderson, Mavis Parry, Nancy Stofferhan, Peggy Hoogestraat, Rod and Joy Hohn, Ron Stofferhan, Shirley Oltmanns, Tom Stofferhan, Ruth Arends, Allen Arends, Lorrie Bacon and Sherrie Fines, Orrin Geide, Kent Moeckly, Sue Sibson and Laurie Kunzelman.

Q. Are you aware that, aside from Kent Moeckly and Sue Sibson, the listed fact witnesses either own land or have a strong connection to land along the proposed Dakota Access Project?

A. Yes

Q. Based on the work you do, do you understand the concerns of these land owners have?

A. Absolutely. Having grown up in a small rural community in North Central Kansas that is supported by the local agricultural community, I appreciate how important the land is to those that depend on it for their livelihood. In addition, I read about the family and historical connection these land owners have to their land. Their concerns are well received and I am glad for this opportunity to respond to those concerns.

Q. Did you note several common concerns among the land owners? If so, what were they.

A. I did notice several common concerns. I will address each of them individually:

I. NATURAL WATER WAY RECONSTRUCTION

Natural waterway reconstruction after pipeline installation is an important aspect for any well-functioning ecosystem. It is very important for the natural waterways crossed by the right-of way to be reconstructed properly to protect both the sensitive environment and valuable pipeline asset. The slopes approaching the natural waterways will need to be returned to the natural contours and stabilized using appropriate erosion control devices and seeded with appropriate seed mixes. The use of erosion control devices will stabilize the slopes until the newly planted vegetation can establish. In the actual waterway it is

critical that the pre-construction channel slope is returned so that the natural stream habitat and natural flow process are not altered.

II. AFFECT ON STOCK DAMS

In my opinion, the Dakota Access pipeline will have no effects on dams that are either not crossed or are in close proximity of the pipeline right-of-way if erosion control devices are properly placed and maintained during construction as outlined in the Storm Water Pollution Prevention Plan.

III. PRODUCTION ABILITY OF AFFECTED TILLABLE ACRES

The yield potential of tillable lands after pipeline right-of-way restoration is required to be at least equal to pre-disturbance yield potential levels. I have worked on many pipeline projects throughout the nation, including some of the best farmland in North America, and in all cases that I know of these lands have been as productive following pipeline construction as they were prior to construction of the pipeline. Pipeline projects that I have worked on and have helped or observed the return of farmland to its original state of productivity include Rockies Express (Nebraska, Kansas, Missouri, Illinois, and Indiana), Bison Pipeline (Montana, and North Dakota), Alliance Pipeline (Iowa) and others. In a very few instances some of the farmland did take longer than the allotted crop loss payment period to return years but these were a very few areas that had special circumstances that were returned to pre-disturbance yields once limiting factors were addressed

Pipeline construction is not always completed during optimal site conditions however if a good plan is utilized and proper reclamation techniques are implemented returning the

productivity of the sites can be accomplished. Time is a critical element for returning farmland productivity to it pre-disturbance productivity.

Based on my experience if proper reclamation techniques are utilized and landowners/tenants work with the pipeline company productivity can be returned to pre-disturbance conditions within 3 years. However, if the landowner/tenant interrupt the reclamation process good intention practices such as, additional unnecessary tillage, can short circuit the process and cause productivity lags for extended periods. However it should be recognized, the reclamation process is conducted on natural, dynamic systems and I have witnessed isolated areas where it has taken longer than 3 years to return crop productivity to pre-disturbance conditions. Keep in mind, these have been very isolated and typically it was due to a variety of site-specific situations, but in all instances the land was eventually returned to full productivity at the end of the project.

IV. REHABILITATION OF GRAZING/PASTURE GROUND

The rehabilitation (revegetation) of grazing/pasture land takes time, effort and science but certainly can be accomplished if an appropriate revegetation plan is used. As with all revegetation of disturbed areas the soils are the foundation and must be managed appropriately during the construction and revegetation process. Dakota Access is addressing this very important resource by segregating topsoil during the construction phase.

Once the soil is protected, an appropriate seed mixture is required to effectively protect the replaced soil and begin to redevelop the natural vegetative community. Dakota Access is in the process of working with the NRCS and landowner/tenants to develop appropriate and desired seed mixtures for the construction areas. Proper restoration can

only be achieved if the planted seed mixture and resulting crop has a non-compacted root zone to explore and obtain required water and nutrients. Compaction can occur when the soil compresses and soil porosity is decreased by forces exerted by heavy equipment such as tractors, grain carts, combines, dozers and other construction equipment travel across the soil surface. Decompaction is the process of physically removing the induced from the soil. Decompaction can be performed by either mechanical or natural processes. The mechanical process typically used in agricultural setting to remove soil compaction is deep ripping. Deep ripping generally is a process where the soil is lifted and shattered. Crop roots are the primary natural process to alleviate soil compaction the crop roots travel through the pore space and as they grow they widen the pore spaces and decrease soil compaction. Natural process take longer to remove compaction therefore to enhance the restoration processes mechanical decompaction is the preferred alternative. Dakota Access is committed to all best management practices, including rooting zone decompaction in areas where decompaction would help promote growth and sustainability.

Finally, replanting of grazing/pastureland must be performed in an appropriate manner that provides a conducive environment for germination plant, establishment and growth. The seeds must be planted at the right depth, right time and into an appropriate seed bed. Dakota Access is currently working with the local county, state, and federal agencies to develop appropriate seed mixes for the project. The use of reclamation techniques and seed mixes such as those developed and being developed on by Dakota Access will provide the rehabilitation success that is expected for this project.

V. REHABILITATION OF SOIL STRUCTURE

With any soil excavation procedure soil structure (pores) will be damaged and some soil structure will definitely be destroyed during the construction process. However, it should be noted that a majority of soil structure loss is due to the excavation and movement of the soil material and compaction. Research indicates that the soil structure and associated pores can quickly redevelop in the soil profile. Sencindiver and Ammons (2000) and Haering et al. (1993) indicate that in mine soils, soil structure in the surface horizons have developed soil structure within 1 to 2 years. The time it takes for the surface horizon to begin to redevelop soil structure has been anticipated and is one of the reasons Dakota Access is offering crop loss payments for multiple years post construction. The development of soil structure in the subsurface horizons can take longer depending on the degree of decompaction and root growth that can be established. Dakota Access Agricultural Mitigation Plan includes soil compaction relief of the subsoil to ensure that rooting is not limited by soil compaction.

VI. REHABILITATION OF LAND'S NATURAL CONTOUR AND SLOPES

According to all documents that I have reviewed Dakota Access is committed to returning the land back to original contour and slopes.

VII. WEED CONTROL IN AFFECTED AREAS

Weed management of a pipeline right-of-way is necessary to achieve reclamation success. The use of Integrated Weed management (IWM) is the most effective and appropriate weed management. IWM evaluates the uses cultural, biological, mechanical and chemical weed control methods based on weed pressure, weed type, reclamation time frame and establishing vegetation. It should be noted that IWM protocols understand that

a fully functioning rangeland or cropping system is the most effective manner to control weedy species.

Cultural practices may include limited access, or education to limit the spread of weedy species by construction personnel and equipment. Cultural practices are some of the most effective ways to inhibit the spread of noxious and invasive weeds along a pipeline right-of-way. Biological practices are usually of limited use along the right-of way due to limited options and time required for control. However, biological control of weedy species may be reviewed especially near sensitive resources and organic farms.

Mechanical control (i.e. Mowing, clipping, hand removal) of weeds is an effective manner of weed control during the beginning stages of right-of-way reclamation. Mechanical weed control general is effective against weedy annual species and certain perennial species (i.e. Canada Thistle) especially in the initial year or two of plant establishment in range or pasture land when the reclamation crop is susceptible to chemical applications. Mechanical methods allow for the newly establishing crops to continue their life cycle and start to outcompete the weedy species. Chemical methods (herbicides) of control will be evaluated on a site by site basis as with all other potential control methods. In certain instances the use of broadcast spraying may be utilized however the preferred chemical control method will be spot spraying. Spot spraying allows for a more directed application that will limit the potential damage to desired species that are within the right-of-way. In organic farming areas chemical weed control will not be utilized to ensure that the organic status of the land is maintained.

VIII. OVERALL SUCCESS OF RESTORATION

Restoration success will be evaluated on a site-by site review. In agricultural areas site restoration will be successful when the post-construction yield potential is equivalent to existing off-ROW areas. This determination will be conducted through visual and data review of crop growth and yields. In rangeland areas restoration success is initially achieved when the site is returned back to 70 percent of off-ROW coverage as defined in the Storm Water Pollution Prevention Plan.

Q. Did you read expert witness Brian Top's testimony?

A. Yes.

Q. Do you have any comments regarding his concerns for topsoil segregation and stockpiling?

A. Yes. Mr. Top is correct, separating topsoil and stockpiling topsoil must be done carefully and correctly.

Q. Explain whether Dakota Access' plans for soil separation and stockpiling are adequate to protect the soil.

A. The method for topsoil and subsoil removal and segregation is outlined in Dakota Access' Agricultural Mitigation Plan. According to Dakota Access' plan all topsoil and subsoil will be separated and segregated in separate stockpiles. Topsoil will be salvaged to a depth of up to 12 inches. The top 12 inches of topsoil contain the most plant nutrients and microbial life and is critical for successful reclamation. After the pipeline is installed and all drain tiles are fixed the segregated subsoil stockpile will be returned to the trench. Once the trench line is replaced the subsoil will be decompacted to 18 inches or to a little less than the depth of the drain tiles, as to not compromise the drain tile integrity. After

the subsoil is decompacted the topsoil will be replaced and smoothed with a tillage implement, if necessary.

The topsoil and subsoil methods outlined in Dakota Access' agricultural mitigation plan is a common and successful practice in the pipeline industry. This method of topsoil salvage and segregation is the most successful and scientifically proven method to protect the soil resource and return the soil to 100 percent yield potential as quickly as possible. In addition, this method of topsoil segregation provide the highest level of protection for the topsoil and is intended not to allow for mixing of the topsoil and subsoil resources.

Q. **Mr. Top testified that pores in subsoil will be destroyed. Do you agree?**

A. To a point. With any soil excavation procedure soil structure (pores) will be damaged and some soil structure will definitely be destroyed during the construction process. However, it should be noted that a majority of soil structure loss is due to the excavation and movement of the soil material and compaction. To limit this decrease in soil structure from excavation processes Dakota Access will only remove the topsoil, up to 12 inches, and only the subsoil directly over the trench line. Research indicates that the soil structure and associated pores can quickly redevelop in the soil profile. Sencindiver and Ammons (2000) and Haering et al. (1993) indicate that in mine soils, soil structure in the surface horizons have developed soil structure within 1 to 2 years. The time it takes for the surface horizon to begin to redevelop soil structure has been anticipated and is one of the reasons Dakota Access is offering crop loss payments for multiple years post construction. The development of soil structure in the subsurface horizons can take longer depending on the degree of decompaction and root growth that can be established.

Dakota Access Agricultural Mitigation Plan includes soil compaction relief of the subsoil to ensure that rooting is not limited by soil compaction.

Q. **Mr. Top testified that it will take ten years or longer for the soil to regain its productivity. Do you agree? Why or why not.**

A. No. I have been on many pipeline projects that crossed agricultural fields and have seen most of the sites that used reclamation techniques similar to those identified in Dakota Access' Agricultural Mitigation Plan, back to full productivity in 3 growing seasons post-construction. The sites that were not back to full productivity within the first 3 growing seasons, that I have reviewed and evaluated, the potential problems were addressed and remedied and within 1 to 2 growing seasons, after solving the identified issues and productivity was returned to pre-disturbance levels.

Q. **Mr. Top testified that it will take 20 years or more for soil compaction issues to be remedied. Do you agree? Why or why not.**

A. No. Soil compaction is a physical condition of the soil where the soil is compressed and the voids are removed due to a force exerted on the soil surface. Compaction is a common problem in agricultural fields due to tractors, loaded grain carts, combines and other equipment passing over the site. The installation of a pipeline is likely going to cause soil compaction however Dakota Access' Agricultural Mitigation Plan aggressively addresses the removal of this potential compaction. The use of mechanical equipment is the initial step for alleviating soil compaction. Such mechanical equipment, is primarily a deep ripping implement that lifts and shatters the soil, creating channels that roots and water can follow to help further decompact the soil and begin the process of increasing soil structure. It is important to note that once decompacted, traffic on the ROW should

be kept to a minimum for the following year. Planting an appropriate crop such as alfalfa, corn, cover crops or other deep rooted crops following deep ripping is important to keep the newly created voids open. Note, excessive tillage or use of the ROW could easily decrease the beneficial effects of the previously completed ripping.

Depending on freeze-thaw cycles to decompact a soil is a common misconception. To be effective you must have multiple freeze-thaw cycles within a given year. In South Dakota multiple freeze-thaw cycles likely only occur in the upper 8 to 12 inches of the soil profile, the remainder of the soil profile typically does not have multiple freeze-thaw cycles. Below the very upper portion of the soil profile soil temperature fluctuates very little over a course of a day or week and once frozen in the fall the soil will likely not thaw again until the spring at which time it likely will not refreeze until the following fall. This is why in pipeline reclamation we actively manage the decompaction and use the proper equipment to speed up the natural decompaction processes. The use of an active management allows us to achieve and maintain decompaction within the initial 1 to 2 growing season post-construction.

Q. **Mr. Top testified that insects and diseases will survive winter due to the increase in heat surrounding the pipeline. Do you agree? Why or why not.**

A. No. There have been a limited number of studies reviewing soil temperature changes due to pipeline installation. The research indicated that soil warming from heated cables, buried at 36 inches and heated to 96 degree Fahrenheit, increased soil temperature by less than 5 degrees Fehrenheit (Rykbost et al., 1975). The Dakota Access pipeline will be

buried at least a foot deeper than the cables in the Rykbost et al. study, thus, logically indicating that surface soil warming will be less than that identified in the study. Rykbost et al. also indicated that corn yields were increased due to this slight soil warming. Dunn et al. (2008) found that yields were not affected by an increase in soil temperature due to pipeline heat. Although none of these studies directly measured insects and disease persistence due to pipeline heating it is apparent that yields were not negatively impacted. In my professional career as an agronomist working on pipelines throughout the country I have never seen an increase in insect or disease pressure on a pipeline ROW compared to off-ROW conditions.

Q. Is it possible to rehabilitate and re-vegetate native prairie ground? Are Dakota Access' plans in this regard adequate?

A. Yes, and Yes once seed mixes are developed for this area.

Q. Did you read testimony written by PUC Staff expert witness Andrea Thornton?

A. Yes

Q. Do you have any comment, question or take issue with any of her testimony?

A. It is my opinion that Ms. Thornton provides a good assessment of the revegetation and erosion control plan. Ms. Thornton's two, most significant, requests are for Dakota Access to provide a winter construction plan and an in/out crossing table of soil limitations. Ms. Thornton's requests are requirements for a Federal Energy Regulatory Commission (FERC) applications. The Dakota Access pipeline is not a FERC regulated project and those requirements are not applicable to this project. In addition, the preparation of an in/out crossing table of soil limitations is only as accurate as the soil survey from which it is developed. South Dakota soil surveys were developed as Order 2

soil surveys which typically has a minimum delineation of about 1.4 acres. This means that potentially different soil series can exist within each delineated soil map unit. Therefore the in/out tables could be incorrect and existence of soil series with more or less limitations could exist through the pipeline ROW. These tables can create a belief that conditions exist that are not actually present on the ground. Dakota Access will employee qualified, professional EIs who will be responsible for making site specific decisions based on actual field conditions. It is my opinion that the use of in/out tables would decrease the ability of the EIs to make the best field-based erosion control decisions and will decrease environmental protections. The inclusion of a Winter Construction Plan may be warranted if a large portion of the ROW will be constructed during winter. However by utilizing qualified, professional EIs in the field, their experience and knowledge of site specific conditions will likely be more protective of the environment than a broadly written Winter Construction Plan. Further, to my knowledge, winter mainline construction is not anticipated.

Ms. Thornton also requests that a more quantifiable measurement to determining revegetation success is identified. Ms. Thornton suggests that "sufficient coverage in upland areas is defined when vegetation has a uniform 70 percent vegetative coverage". Dakota Access has a defined vegetative metric *of 70 percent cover relative to undisturbed areas* in Section 5.0 of the filed SWPPP. The vegetative metric expressed by Dakota Access is the standard vegetative cover requirement promulgated by the EPA for termination of a Storm Water Pollution Prevention Plan. Clearly, Dakota Access should

not be required to improve the vegetative coverage to greater levels than previously existed prior to construction activities.

Q. On page 5 of her testimony, she recommends "that the PUC require that pre-construction design efforts include best management practices specific to locations with higher erosion potential." Do you have a response or a position based on her proposed PUC condition?

A. Yes, The use or design of pre-construction best management practices are not necessary since the Dakota Access pipeline will be using qualified, professional and experienced EIs during construction. The construction activities will temporarily change the conditions of the ROW and by implementing site-specific pre-construction BMPs, this limits the EI's ability to quickly and effectively adjust to actual site conditions in the field. I would recommend that the potentially higher erosion potential areas be identified so the EI is aware that these areas may need additional erosion control devices installed but selection and placement of BMPs should be decided upon actual site conditions and the EIs field experience.

Q. Also on page 5, Ms. Thornton recommends "the PUC require a mile post in/out table showing the areas that are more prone to erosion so the environmental inspectors can have the data more readily accessible during construction and restoration to know where the more problem areas expected to be." Do you have any comments or concern regarding Ms. Thornton's recommendation?

A. Yes, It is my opinion that the EI should be aware of these potentially sensitive areas but the use of mile post in/out tables is one of multiple ways that these areas could be identified. In/out tables are not required for this project. The problem I have with mile

post in/out area is that the tables are created based on remote sensed data. Remoted sensed data is a place to start, but as every farmer/rancher knows you cannot not correctly manage and protect a natural resource from behind a desk. By using in/out tables it will install a sense of protection through paper, however to truly manage and protect a natural resource one must use real time in the field data. Remoted sensed data use can lead to larger problems during the construction phase by concentrating on areas that were identified as sensitive from a desk and not the areas that are being impacted by construction. It is recommended that the EIs be made aware of the potential problem areas in some manner so that they are aware of the potential problem but other methods such as advance scouting, GIS map layers, site inspections or other methods will provide better information to the EIs in the field.

Q. **On page 5 of her testimony she recommends that the PUC "require a more quantifiable measurement to determine when re-vegetation is successful." Do you know if Dakota Access has a quantifiable standard? If so, what is that standard and do you believe it is sufficient?**

A. Yes, Section 5.0 of the Storm Water Pollution Prevention Plan, Dakota Access has identified that the site will be considered "completely stabilized" when the perennial vegetative cover has reached a uniform cover of at least 70 percent of the pre-construction cover. As I mentioned above this is the industry and regulatory standard and is sufficient. This is a very quantifiable and sufficient criteria to identify successful re-vegetation.

Q. On page 6 of her testimony, Ms. Thornton expresses some concern regarding the seed mixture for re-vegetation in grassland areas. What does Dakota Access intend to use as a seed mix? Do you have any concern with Dakota Access' plan?

A. Yes, The current seed mixture in the Dakota Access Storm Water Pollution Prevention Plan indicates that German Foxtail Millett and Bermuda grass. Bermuda grass is not an appropriate grass for the South Dakota. Dakota Access is in the process of working with the NRCS in South Dakota to develop more appropriate seed mixtures for the area. Appropriate seed mixtures at correct rates are a critical aspect of any successful reclamation plan. In my opinion, if Dakota Access works with the NRCS and individual landowners/tenants on developing appropriate seed mixture then reclamation can be successful.

Q. Do you believe site specific measures should be developed at this point in the process as it pertains to fertilizer and agricultural lime?

A. No, I believe that site specific agricultural amendments should not be developed until the construction is underway on the ROW. Many farmers and ranchers have intense and calculated fertilizer and soil amendment programs. If site-specific plans are developed too early Dakota Access could negatively impact these on-going management programs. For instance, if the farmer is an a two year phosphorus program and just applied phosphorus this fall and Dakota Access samples immediately after that application but is performing construction during the next application period they may not apply the appropriate phosphorus during reclamation, and thus decrease crop yields due to phosphorus deficiencies not due to actual construction. Waiting for the construction to begin prior to developing site-specific reclamation plans will allow Dakota Access to

develop appropriate and accurate reclamation plans based on conditions that exist at the time of construction.

Q. Is a winter construction plan necessary? Why or why not?

A. No. I don't know of any South Dakota statute that requires a winter construction plan to be developed or submitted as part of the application. Furthermore, Dakota Access does not plan to engage in mainline conventional construction during the winter.

Q. Did you review the testimony of Ryan Ledin, staff expert?

A. Yes.

Q. Did you review Mr. Ledin's testimony and recommended changes for the SWPPP?

A. Yes

Q. What is your response?

A. Mr. Ledin states multiple times the Storm Water Pollution Prevention Plan is a living document and is intended to be modified in the field as site conditions warrant. Dakota Access is planning on using qualified, professional, and experienced EIs who are expected to understand erosion control and use proper BMPs as necessary. I do not feel as if the addition of standard spacings for these items in the Storm Water Pollution Prevention Plan are required or will enhance environmental compliance and success. Exhibit C as an appendix to the Storm Water Pollution Prevention Plan is not necessary since it is already available to the EIs. The addition of Exhibit C will create an extra layer of administration and could negatively affect the use of Exhibit C because if Exhibit C is updated or modified the document would need to be replaced in multiple documents. If the updates are not all performed on the same time-frame then confusion could occur which could lead to mistakes being made in the field. In my opinion as long as Exhibit C

is available to the EIs then adding it as an appendix to the Storm Water Pollution Prevention Plan is not required.

Mr. Ledin's recommendation that the application of straw mulch should not be delegated to the EI is not warranted. I firmly believe that the EIs are trained professionals and should have some latitude in the field as to when straw mulch is required. It is recommended that the EIs be provided guidance but no mandatory requirements be implemented. Straw mulching should be based on site-specific conditions and used when necessary regardless of the percent slope.

Q. Did you review the recommendation Mr. Ledin made on page 5 of his testimony regarding measures to minimize impacts to vegetation?

A. Yes

Q. What are your thoughts regarding his recommendations?

A. Weed management is always a consideration for pipelines and other disturbed areas. It is my opinion that the use of Integrated Weed Management (IWM) is appropriate for this project. Integrated Weed Management is intended to locate and identify weed populations, develop a treatment plan for noxious and invasive weed management and then implement prescribed treatment plans at appropriate timings to ensure adequate control of the possible undesirable weedy species. Integrated Weed Management evaluates the use of cultural (i.e., using certified straw, reseeding as quickly as possible), biological, mechanical (i.e., mowing, discing) and chemical controls (i.e., herbicides) based on weeds present and their abundance. All decisions under an IWM program are made on site specific conditions. Through the IWM approach it is understood that a

healthy and productive rangeland system is the most effective weed management tool available. Although not although not explicitly stated as such, IWM approaches are being described in section 16.1.1 of the PUC application.

Q. Did you review Mr Ledin's recommendations on page 5 of his testimony regarding mitigation measures to minimize impacts to water bodies?

A. Yes

Q. What are your thoughts regarding his recommendations?

A. Mr. Ledin's recommendations are not required as long as the EIs have access to the information from other sources. Addition of this table to the Storm Water Pollution Prevention Plan is a redundancy could cause inconsistencies, confusion and additional work as the table would need to be replaced in multiple places as updates are required.

Q. Does this conclude your testimony?

A. Yes.

Dated this _____ day of July, 2015

_____

Aaron DeJoia

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POSITIONS

2014 to Present **Project Manager, Energy Transfer, Dakota Access Pipeline (Consultant)**
Manage the Dakota Access Pipeline Project in South Dakota and Iowa.

- Managing and coordinating with managers of survey, environmental, right-of-way, permitting, engineering, and construction groups.
- Status updates meetings with state and county officials and organizations.
- Reviewing and commenting on applications of state permits.
- Preparing bid documents, evaluating bids, selection of contractors, and negotiating construction costs and contracts.
- Ensure compliance with state and federal regulations, and company specifications.
- Responsible for project cost and to ensure overall schedule is achieved.

2005 to Present **Construction Manager/Project Manager, Energy Transfer (Consultant)**
Manage numerous large-diameter new pipeline projects for Energy Transfer.

- Coordinating with all disciplines: survey, environmental, right-of-way, permitting, engineering, and construction groups.
- Preparing bid documents, evaluating bids, selecting contractors, negotiating construction costs and contracts.
- Ensure compliance with state and federal regulations, and company specifications.
- Responsible for project cost and to ensure overall schedule is achieved.

2002 to 2005 **Construction Manager, El Paso Field Service (Consultant)**
Managed numerous new and maintenance-type pipeline projects.

- Coordinated with environmental group on pipeline routing and evaluated route to eliminate constructability issues.
- Effectively oversaw construction budget, construction schedule, safety, and quality inspections.
- Supervised, coordinated, and inspected all aspects of pipeline and pipeline facilities construction projects.
- Ensured compliance with state and federal regulations, and company specifications.
- Prepared bid documents, evaluated bids, negotiated construction costs and contracts.
- Consulted with Project Managers on pipeline routing, construction bidding, contractor selection, and construction practices.

1998 to 2002 **Senior Construction Specialist, Tejas Pipeline**
Managed numerous new and maintenance-type pipeline projects.

- Coordinated with environmental group on pipeline routing and evaluated route to eliminate constructability issues.
- Effectively oversaw construction budget, construction schedule, safety, and quality inspections.
- Supervised, coordinated, and inspected all aspects of pipeline and pipeline facilities construction projects.
- Ensured compliance with state and federal regulations, and company specifications.
- Prepared bid documents, evaluated bids, negotiated construction cost and contracts.
- Consulted with Project Managers on pipeline routing, construction bidding, contractor selection, and construction practices.

1979 to 1998 **Senior Inspector, Amoco Gas Company**
Last position held at Amoco Gas Company. Started as a Draftsman/Surveyor and worked in pipeline maintenance crew, and then in 1983 transferred to the Inspection Group.

- Supervised, coordinated, and inspected pipelines and pipeline facilities construction projects.
- Ensured company compliance with DOT, Texas Railroad Commission, other professional regulations and company specifications.
- Company Lead on DOT and Texas Railroad Commission Audits.
- Performed cathodic protection survey, maintained rectifiers, performed troubleshooting, and corrected deficiencies found by installing additional CP current, recoating pipeline, and finding the cause of interference.
- Consulted with engineering team on methods of pipeline facility maintenance, construction bidding, contractor selection, and pipeline construction practices.
- Coordinated pipeline and pipeline facility project and effectively oversaw construction budget, time, safety, and quality inspections.

CERTIFICATIONS AND TRAINING

- Certified Welding Inspector (American Welding Society #98120941)
- Certified Welding Inspector for Plants and Pipelines (National Welding Inspection School)
- Coating Inspector Training and Certification (NACE)
- Magnetic Particle Level II Certification (Amoco)
- Welding Visual Inspection Level II Certification (Amoco)
- Excavation Safety/Competent Person Certification (Texas A&M University)
- Regulation Compliance for Pipeline Operators (PHMSA)
- Cathodic Protection Design for Pipelines (NACE)
- Cathodic Protection Theory and Data Interpretation (NACE)
- Corrosion Prevention by Cathodic Protection (NACE)
- Basic Corrosion (NACE)

EDUCATION AND MILITARY SERVICE

- Graduated High School, Dickinson, TX, 1971
- U.S. Coast Guard, 1971 to 1975, achieved rank Second Class (E-5) Engineman

DAPL Centerline from Residence

Tract	Distance (Feet)
SD-CA-006.000	376
SD-MC-010.000	195
SD-MC-012.000	412
SD-FA-058.501	398
SD-SP-053.501	337
SD-SP-099.501	586
SD-BE-004.501.526	570
SD-BE-010.000	487
SD-BE-033.501.300	497
SD-MN-004.000	420
SD-MN-009.000	300
SD-MN-016.102	280
SD-MN-017.000	348
SD-MN-032.000	269
SD-LA-048.200.100	418
SD-MK-002.000	450
SD-MI-010.511	408
SD-MI-015.511.300	518
SD-MI-023.511.220	473
SD-MI-042.511.230	525
SD-MI-057.511	320
SD-MI-071.511	328
SD-MI-075.511.310	431
SD-MI-076.511.300	248
SD-TU-009.511	360
SD-LI-007.519	244
SD-LI-015.519.310	453
SD-LI-027.519.300	281
SD-LI-027.519.330	197
SD-LI-031.519.200	224
SD-LI-065.100	462
SD-LI-067.300	365
SD-LI-071.000	382
SD-LI-074.000	513

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