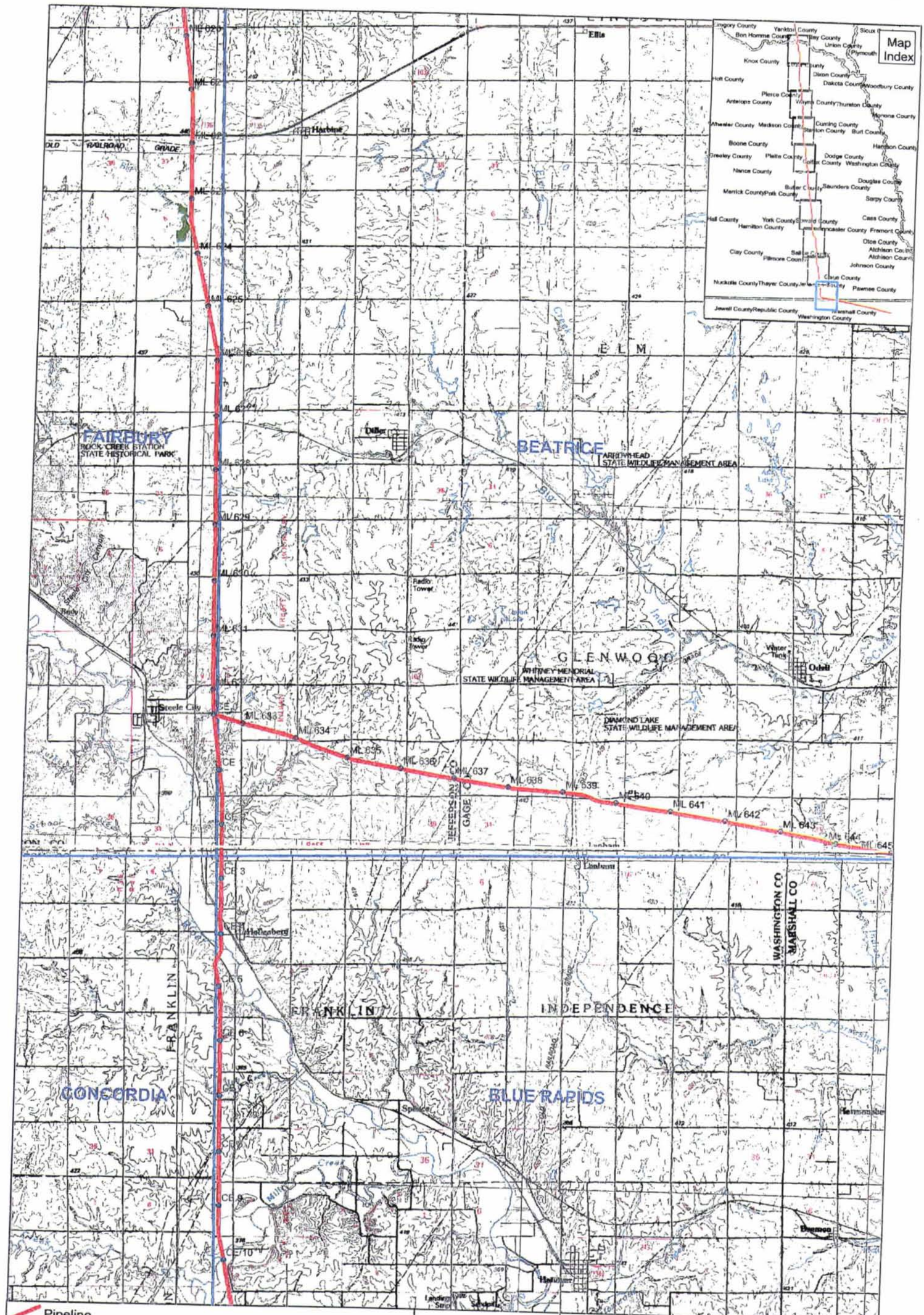

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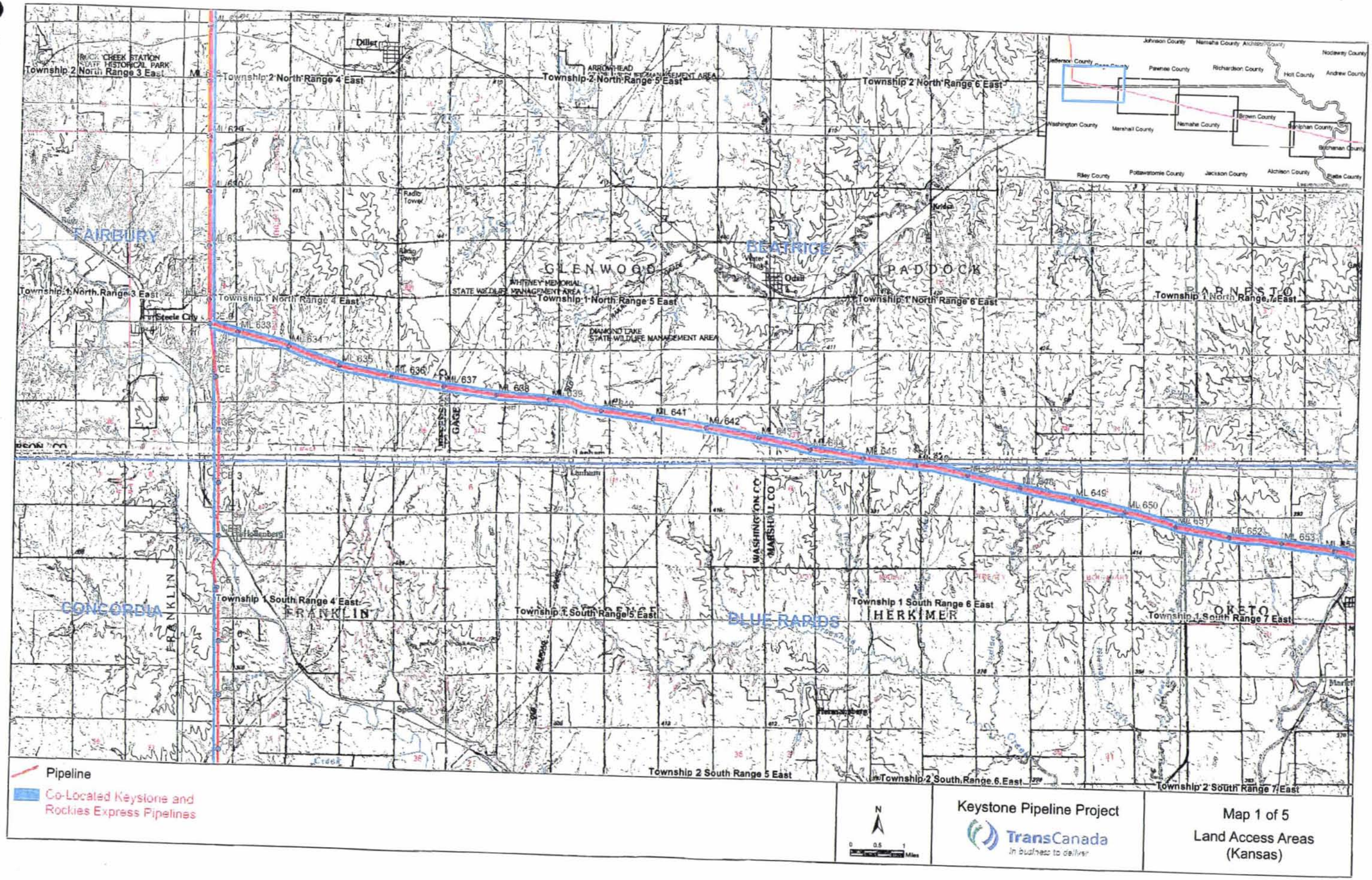

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ENSR
1601 Prospect Parkway, Fort Collins, Colorado 80525-9762
T (970) 493-8878 F (970) 490-2150 www.ensr.aecom.com

March 21, 2006

Mr. Steven Naylor
Regulatory Program Manager
USACE-South Dakota Regional Office
28563 Powerhouse Road, Room 118
Pierre, South Dakota 57501

Subject: Keystone Pipeline Project

Dear Mr. Naylor,

We look forward to meeting with you on Wednesday, March 29 at 10 am in the U.S. Army Corps of Engineers (COE) office in Pierre, South Dakota to provide a project status update on the Keystone Pipeline Project and to discuss our proposed field programs for 2006. Scott Ellis and Karen Caddis with ENSR will be attending. We understand that Russ Rocheford, Keith Tillotson, and Patsy Crooke with the COE will also be attending via phone. The overall purpose of this meeting is to discuss survey and application requirements and the information that Keystone will provide to the U.S. Army Corps of Engineers (COE) so that project-related wetland and water body jurisdictional determinations can be made.

To assist with preparation for the meeting and review of the project, please find the following attachments:

1. Pipeline Route maps. These strip maps illustrate the proposed pipeline alignment on an aerial photo and topographic base at a scale of 1:24,000. The National Wetland Inventory polygons have been included as an overlay on both bases. Also included are preliminary wetland survey areas that were determined by ENSR from aerial photo review.

2. Drainage crossings. A table listing drainage crossings is derived from the USGS watershed drainage GIS layers. Crossing locations are correlated with project mileposts. This table is the starting point for the Waters of the U.S. review.

3. Wetland/waterbody crossing methods. This is a section from the filing that Keystone will submit to the Department of State at the end of March.

4. Draft Survey Protocol. The survey protocol will be provided to you later this week via e-mail.

Preliminary Meeting Agenda

The following is a list of items that we would like to cover. We would appreciate your input on these, and other topics that should be discussed.

1. Introductions
2. Keystone Waterbody and Wetland Crossing Methods
3. Pipeline route review (routing considerations and concerns)
4. Overview of 2006 Field Program
5. Field Survey Technical Issues (definitions and level of survey)

- Waters of the U.S.
- Farmed wetlands
- Prairie potholes

6. Technical reports (content and format).
7. COE expectations, and future communications

If you have questions regarding the attached information prior to the meeting on March 29, please call Karen Caddis or Scott Ellis at 970-493-8878, or contact us by e-mail (kcaddis@ensr.aecom.com or sellis@ensr.aecom.com). We appreciate the opportunity to meet with staff from all the COE offices within the Omaha District with responsibilities for this project.

Sincerely yours,

Karen Caddis

Karen Caddis
Senior Technical Specialist/Wetlands Program Coordinator

Scott Ellis
Environmental Permitting Project Manager

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ıddis, Karen

ject:	TransCanada Keystone Pipeline Project Pre-Application meeting
ation:	USACE office, 28563 Powerhouse Road, Room 118, Pierre, SD 57501
Start:	Wed 3/29/2006 10:00 AM
End:	Wed 3/29/2006 1:00 PM
Recurrence:	(none)
Meeting Status:	Meeting organizer
Required Attendees:	Caddis, Karen; dwight.k.tillotson@usace.army.mil; steven.e.naylor@nwo02.usace.army.mil; russell.w.rocheford@usace.army.mil; patsy.j.crooke@usace.army.mil; Ellis, Scott; Caddis, Karen

This e-mail is being sent to confirm your availability to attend a pre-application meeting for the TransCanada Keystone Pipeline Project on Wednesday, March 29 at 10 am at the USACE's office in Pierre, South Dakota. Steven Naylor and his team will be hosting the meeting. Scott Ellis and Karen Caddis with ENSR will be attending in person to present the project. It is anticipated that Keith Tillotson and Russ Rocheford and their office associates will be calling in. Patsy Crooke and Dan Cimarosti are expected to attend in person. If any of these attendance assumptions are incorrect; please let Karen Caddis know (970-493-8878 or kcaddis@ensr.aecom.com) and we will adjust accordingly. Pre-application informational booklets should be arriving in your various offices the week of March 20 from ENSR to provide you time to review the project prior to the meeting. If you have any questions regarding the project, please contact Karen. Steven: will Keith and Russ need a conference number to call in on? Please confirm with Karen and Steven that you will be able to attend. Thank you for your participation in this project!

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TransCanada – Keystone Pipeline
Contact Summary Form

Location of Meeting	ENSR
Date/Time of Meeting	August 10, 2006
Keystone Team Member(s)	Karen Caddis

Contact Information:

Name	Russ Rocheford
Title	Omaha District Assistant Regulatory Chief
Organization	USACOE
Address	106 S. 15th Street, Omaha, NE 68102
County	
Phone	402-221-4125
e-mail address	russell.w.rocheford@usace.army.mil

Meeting Information:

Type of Contact (phone, in-person, etc.): Phone

Issue: Geotechnical exploration drilling and nationwide permitting

Concern Level: High___Moderate__X__Low__.

Description:

I spoke with Russ since Cheryl Goodesberry, our main contact with the Omaha District is out of the office this week. Russ is the main COE lead for Omaha. I told Russ that Keystone is wanting to complete geotechnical studies at major drainage crossings in anticipation of construction and to obtain soils information to assist with design. I asked if this type of work could be permitted under Nationwide Permit 6. He believed it could be and requested that I provide his office with a notification letter describing the work, providing maps, and locational information. Russ also suggested contacting Steve Earle or Bob Wilcutts with their project management division at 402-221-7325 to see if there would be any additional construction requirements for geotechnical activities taking place near levees or dams (such as at the Missouri River at Yankton). I subsequently contacted Steve Earle and left a message with no response as of August 13, 2006.

On another note, Russ indicated that Dan Cimarosti has been selected by the USACOE's Washington, D.C. office to act as their representative for the COE for the entire project. Russ did not think this would affect how we are currently doing business, just who Washington, D.C. would work through.

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Follow-up Required / Requested

I am to provide Russ and Cheryl with a letter notifying the Omaha District of the proposed geotechnical work.

Additional Comments

J:\10000\10623-004-KEYSTONE\Agency Coordination\COE\Communications\phone communications\COErocheford_81006kc.doc

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1601 Prospect Parkway, Fort Collins, Colorado 80525
T 970.493.8878 F 970.493.0213 www.ensr.aecom.com

May 2, 2006

Mr. Russ Rocheford
Assistant Branch Chief
USACE- Omaha District Office
106 South 15th Street,
Omaha, NE 68102

Mr. Steven Naylor and Jeff Breckenridge
USACE –Omaha District, South Dakota Regional Office
28562 Powerhouse Road, Room 118
Pierre, SD 57501

Mr. Dan Cimaroski and Ms. Patsy Crooke
USACE- Omaha District, North Dakota Regional Office
1513 S. 12th Street
Bismarck, ND 58504

Mr. Keith Tillotson
USACE- Kearney Field Office
1430 Central Avenue
Kearney, NE 68847

Re: Keystone Pipeline Project Meeting Concerning Section 404/Section 10 Application Requirements

Dear Omaha District Representatives:

We thank you for your participation and recommendations at the Keystone Pipeline Project introduction and planning meeting at the South Dakota Regional Office in Pierre on March 29, 2006. We appreciate your input regarding regulatory requirements for your District.

We have summarized our understanding of the main meeting points below:

Potential Project Permits

Based on information provided by the Keystone Project to date, the Omaha District expects that pipeline construction disturbance across the Omaha District will be temporary, and will not result in permanent fills within wetlands and Waters of the United States. As a consequence, wetland and waterbody disturbance could be permitted under Nationwide Permit 12 (Utility Line Discharges) if the conditions of the Permit are met.

The Omaha District anticipates that the Missouri River crossing can be permitted under Section 10. The USACE can authorize a crossing if all of the conditions of the Nationwide permit are met, including getting a confirmation in writing from the National Park Service that says that construction techniques will meet the conditions of the Wild and Scenic River designation. The USACE recommends that Keystone ask the National Park Service for written documentation regarding how to comply with the Wild and Scenic River designation. The Omaha District would be interested in participating in an interagency task to discuss the Missouri River crossing.

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1601 Prospect Parkway, Fort Collins, Colorado 80525
T 970.493.8878 F 970.493.0213 www.ensr.aecom.com

May 2, 2006

Mr. Russ Rocheford
Assistant Branch Chief
USACE- Omaha District Office
106 South 15th Street,
Omaha, NE 68102

Mr. Steven Naylor and Jeff Breckenridge
USACE –Omaha District, South Dakota Regional Office
28562 Powerhouse Road, Room 118
Pierre, SD 57501

Mr. Dan Cimaroski and Ms. Patsy Crooke
USACE- Omaha District, North Dakota Regional Office
1513 S. 12th Street
Bismarck, ND 58504

Mr. Keith Tillotson
USACE- Kearney Field Office
1430 Central Avenue
Kearney, NE 68847

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Wetland and Waterbody Crossing Information and USACE Jurisdiction Determinations

Because of the linear nature of the project, and the temporary nature of the expected surface disturbance, wetland delineation in accordance with the 1987 USACE wetlands delineation manual (three parameter method) will not be required in the Omaha District, with the exception of locations where permanent aboveground facilities will be constructed.

In order for the Omaha District to confirm that Nationwide conditions will be met, and to determine USACE jurisdiction, the Omaha District approves of the following methods for describing wetland and waterbody crossings and making USACE jurisdiction determinations:

- An inventory of wetland and waterbody crossings based on data obtained from the USGS/EPA surface water drainage data base, National Wetland Inventory (NWI) mapping, aerial photography and/or topographic map interpretation will be prepared. A preliminary list was provided in the pre-meeting Keystone submittal.
- Keystone Project wetland scientists will visit and describe the wetland and waterbody crossings illustrated on the 1:100,000 scale map set, and crossing tables furnished to the USACE prior to the March 29 meeting. These field survey locations include perennial stream crossings and adjacent floodplains; large wetland complexes; streams that have been identified as containing populations of the Topeka Shiner; other streams called out by agencies as containing sensitive aquatic resources; forested wetlands. These crossings will be described in accordance with the ENSR draft survey protocols previously submitted to the USCOE. These protocols include the use of the 1987 Manual three parameter delineation methods for wetland crossings to insure consistency of description. Sites not requiring field confirmation will include unnamed ephemeral and intermittent drainages and highly modified channels across farmed fields.
- Evidence supporting the project's permitting under Nationwide permits will be provided to the USACE and will include; field delineation, tabular data obtained from National Wetland Inventory (NWI) mapping, aerial photography and/or topographic map interpretation for ROW crossings. This supporting information will be provided in tabular format and will include the location of the feature (UTM or Latitude/longitude); county and state; type of feature (e.g.; intermittent drainage, palustrine emergent wetland); crossing distance and potential temporary disturbance acreage; and proposed crossing methodology (e.g.; open cut, horizontal directionally drilled). Wetlands will also be documented as isolated or not isolated along with the rationale used to make that determination. Direct and indirect impacts from construction will be reviewed, including whether hydrology would be altered.
- To assist the Omaha District with its project review, Keystone will make a preliminary determination of USACE jurisdiction for the project wetland and waterbody crossings. An explanation of the regulatory basis for the jurisdiction determination will be provided (e.g.; intrastate water, Section 10 water, etc.). The preliminary jurisdiction assessment table/report will be provided to the USACE when the project believes it has a firmly defined pipeline route. After Keystone completes its preliminary jurisdiction review and provides its report, Keystone will request a jurisdictional determination from the Omaha District. When the determination from the USACE is received, Keystone will apply for the Section 404 and/or Section 10 Permits.

Other Factors to be Considered Related to Nationwide Permits

- The Nationwide 12 Permit cannot be used to permit crossings on Class 1 or 1A streams in North Dakota. The locations of these streams should be discussed with Mike Sauer with North Dakota Department of Health to determine whether any would be crossed by the project.
- Nationwide permits are expiring in March 2007. Although the Omaha District anticipates that the permits will be renewed, they suggest that Keystone work to get permitted now, so that they can be "grandfathered in" if permit requirements change.
- Regional conditions that may limit the use of Nationwide permits should be reviewed on the USACE's website. These conditions include construction through fens and springs. The USACE in North Dakota has fen and spring locations identified and can provide them to ENSR. The NHP and state agencies have this information in South Dakota and Nebraska.
- The Omaha District indicated that there may be seasonal restrictions on spawning streams in North Dakota. The Maple, Sheyenne, Elkhorn, Missouri, and Platte rivers are of concern and should be field-delineated.
- Cultural resource information should be shared with the USACE as soon as possible after field surveys are completed. No mitigation should begin until the USACE has had time to comment. The USACE needs to be kept apprised of all major project developments and cultural issues and interactions with tribal representives. USACE contacts should be copied on all major communications with other agencies (e.g., USFWS).
- The USACE is interested in the location of farmed and prior converted (PC) wetlands along the ROW. This information may be available from the Natural Resources Conservation Service (NRCS) state office or the various state agencies. The procedure for obtaining this information should be documented, particularly if the information is not available. If PC wetlands are located adjacent to jurisdictional wetlands, the USACE may take jurisdiction on the PC wetlands. If farmed wetlands are isolated, intrastate and can't "float a boat," the USACE will likely not take jurisdiction. Regarding prairie potholes; the Omaha District indicated that if potholes could "float a boat" and are adjacent to or hydrologically influenced by jurisdictional wetlands, the USACE will likely take jurisdiction. Prairie pothole crossings should be included in the table and field-evaluated.
- Cheryl Goode will act as the point of contact between the Omaha District Office and the field offices.

If any of these points are not correct, please let us know and we will work with you to correct our understanding. ENSR anticipates that field surveys will commence in the Omaha District by May 15 (in Nebraska), and later in May in South and North Dakota.

If at any time you have questions or concerns regarding the project, please contact Karen Caddis or Scott Ellis at 970-493-8878 or via e-mail (kcaddis@ensr.aecom.com or sellis@ensr.aecom.com). Thank you again for your assistance with the Keystone Pipeline Project. We appreciate your help.

Sincerely,

Karen Caddis

Karen Caddis
Wetlands Survey Field Coordinator

Scott Ellis
Regulatory Project Manager

KC/SE

Caddis, Karen

From: Crooke, Patsy J NWO [Patsy.J.Crooke@nwo02.usace.army.mil]
Sent: Monday, May 08, 2006 1:26 PM
To: Caddis, Karen
Cc: Cimarosti, Daniel E NWO; Rocheford, Russell W NWO; Goldsberry, Cheryl S NWO; Tillotson, Dwight K NWO
Subject: Keystone Pipeline Comments

Hi, Karen:
Here are some comments we have from the North Dakota Regulatory office regarding your letter of May 2, 2006 :
Nationwide 12 permit can be used for the project, however, individual 401 certification must be obtained for those crossing Class I or 1A rivers, or classified lakes. It is not automatic with the nationwide.

In North Dakota, lists of springs and fens are kept by the Natural Heritage program. Contact would be Kathy Duttenhefner (701) 328-5370. They have a lot of ecological data in their system that would be helpful.

Cheryl Goldsberry will be providing comment regarding the PC issue.

Thank you for the good communication between our offices and you folks. If you have any other questions, don't hesitate to call.

Patsy Crooke

Patsy Crooke
Project Manager
USACE-NDRO
1513 S 12th Street
Bismarck, ND 58504
701-255-0015
FAX 701-255-4917
patsy.j.crooke@usace.army.mil

Caddis, Karen

From: Caddis, Karen
Sent: Wednesday, May 10, 2006 2:24 PM
To: Crooke, Patsy J NWO
Cc: Ellis, Scott
Subject: RE: kKeystone Pipeline Comments

Patsy,

Thank you for the clarifications. As far as we understand, no PC wetlands would be changed from agricultural use as a result of construction of the proposed ROW, so if I understand your comments correctly, no new delineations for PC wetlands would be required. We will be visiting prairie pothole sites that appear to lie within the proposed ROW to complete delineations. Preferably, we will be able to reroute the ROW around these sites to avoid impacts if they do indeed occur in the proposed ROW. Thank you for your continued help with this project.

Karen

From: Crooke, Patsy J NWO [mailto:Patsy.J.Crooke@nwo02.usace.army.mil]
Sent: Wednesday, May 10, 2006 12:59 PM
To: Caddis, Karen
Subject: kKeystone Pipeline Comments

Patsy Crooke

Project Manager

USACE-NDRO

1513 S 12th Street

Bismarck, ND 58504

701-255-0015

FAX 701-255-4917

patsy.j.crooke@usace.army.mil

From: Goldsberry, Cheryl S NWO
Sent: Wednesday, May 10, 2006 1:00 PM
To: 'KCADDIS@ENSR.AECOM.COM"

Cc: Crooke, Patsy J NWO; Cimarosti, Daniel E NWO; Tillotson, Dwight K NWO; Naylor, Steven E NWO; Rocheford, Russell W NWO
Subject: Keystone Pipeline Comments

Karen: This is in response to your letter dated May 2, 2006.

A certified PC determination made by the NRCS remains valid as long as the area is devoted to an agricultural use. Valid PC wetlands are not jurisdictional under the Clean Water Act. If the land changes to a non-agricultural use, the PC determination is no longer applicable and a new wetland determination is required for Clean Water Act purposes.

Prairie potholes do not need to be adjacent to or hydrologically influenced by jurisdictional wetlands in order to be jurisdictional. However, prairie potholes must be used by interstate travelers for recreational boating before we would consider them to be jurisdictional.

Keystone Project Meeting: NDEQ, National Park Service.

Date: February 14, 2006 (3 PM – 4PM)

Keystone Attendees: M. Schmaltz, S. Ellis, A. Prenda

Agencies:

Mike Fritz, Natural Heritage Program
Carey Grell, Nebraska Game and Parks (Environmental Analyst)
Hugh Stirts, NDEQ
Donna Luckner, NDEQ, NPDES Permits
Clark Smith, NDEQ, Supervisor Air Quality Permitting
Dick Ehrman NRD/DEQ Liaison, Nebraska Association of Resource Districts
Nick Chevance, National Park Service.

Introduction

- Schmaltz: Background on TransCanada and the project, TransCanada environmental philosophy and commitments.

- Ellis: Status of NEPA process (State Dept. is lead agency, Project recently met with the State Dept.; EA vs. EIS decision to be made soon; future federal agency coordination at the Washington DC level; Keystone represents a unique project for the State Dept because of large size, and no other major federal land management agency involved; schedule discussion with November 07 as the target date to obtain all permits).

NEPA discussion:

Stirts wanted to know why the State Dept. wouldn't prepare a programmatic EIS, and then the states ?? would do site specific analysis. Ellis – Not enough time to do such a process, and no logical step-down federal agency to implement site specific analysis.

Air quality – emissions, fugitive dust (Smith).

- No combustion emissions at pump stations, no storage tanks, no back up pump power source.
- NE in attainment for PM 10– no issues with construction equipment emissions or dust (no permit needed). Technically, fugitive dust emissions can't leave the property on which they are generated – not enforced. NE AQ has BMPs for dust control – can obtain by asking.

Water Resources (Luckner)

- Hydrostatic Test Water Discharge/Trench dewatering . General permits, less than a month for approval. Take a look at discharge standards. May require testing for certain parameters- residual chlorine, suspended solids, hydrocarbons.
- Stormwater – Construction. General Permit – 7 days prior to construction. Inspection requirements. Stormwater- Industrial permit (pump stations). Will need a Stormwater Pollution Prevention Plan. Certification of no effect on listed species.
- Pre-existing soil contamination. DEQ wants to understand how TransCanada plans to address pre-existing contamination in the trench. DEQ maintains records of known contaminated sites – petroleum (mostly underground tanks). Contact ? McBryde – DEQ Manager of Records.
- Water Supply – General discussion of potential water sources. In eastern Nebraska, it would be possible to get a temporary well approved. Permit application to DEQ stating gpm requested. May have to coordinate with affected Natural Resource Districts.
- 401 Water Quality Certification. State agencies (DEQ, NGFD) only review individual permit applications – nationwides covered by blanket agreement with COE.

Wildlife/Wetlands (Fritz, Carey)

- Wetland/ Prairie Protection Programs. Wetland reserve program - Potential for easements to be crossed throughout the length of the pipeline corridor in NE. Waterfowl production areas – low potential for encountering. Most likely in Jefferson and Saline Counties. Permanent easements will be filed with title; term easements not likely to be filed. There will be both FWS and NGPD leases – all were established with federal funds. NGPD has CRP lands in GIS – ENSR GIS staff to check. NGPD also holds some native prairie easements – If these are crossed, there may be easement conditions to revegetate with native species from local seed sources. NGPD is responsible for easements across the lands they administer; school board lands are handled separately by State Lands.
- Sensitive Species/habitats. Potential for bald eagle nests, Topeka shiner (unlikely, but may require checking); Jefferson County – Massagua rattlesnake associated with remant tall grass prairie – will recommend surveys.
- NHP/NGPD response to ENSR data request. State will provide an overall letter that address general wildlife and habitats, and sensitive species. Should see letter in the next week – verify.

National Park Service (Chevance)

- Chevance stated that he had learned of a meeting between NPS superintendent and the TransCanada project letter this month. Comments offered here will likely be provided again at the NPS meeting.

- By legislation, NPS can't authorize a pipeline across NPS lands. However, the NPS owns virtually no land along this segment of the Missouri – they administer the Wild and Scenic designation. For external projects, all Wild and Scenic river categories are the same (recreational category is treated the same as Wild and Scenic).

- Crossing approach. NPS recommends an HDD that would avoid the bed and banks of the Missouri River. "Bank" is defined as the highwater mark. Further efforts may be needed to define the highwater mark (the proposed crossing is downstream of a major dam at Yankton, and there the active floodplain is now much smaller than before the dam was built). NPS thinks they may not have jurisdiction over the crossing if the bed and bank avoidance citeria are met. Need to check with COE re buried crossings. NPS concerned about activities that involve excavation on the "bank", i.e. geotechnical borings to determine HDD feasibility.

Action Items:

- ENSR obtain list of known contamination sites that proposed pipeline ROW might intercept from DEQ Manager of Records.
- Trow/UEI - Insure we have a plan to address unanticipated trench soil contamination.
- ENSR obtain CRP land GIS shape file from NGPD.
- ENSR check on status of NGPD data response letter.

Keystone Project Meeting: Corps of Engineers, USFWS, Nebraska Dept. of Roads Lincoln, NE.

Date: February 15, 2006 (9 AM-11 AM)

Keystone Attendees: M. Schmaltz, S. Ellis, A. Prenda

Agency Attendees:

USFWS

John Cochnar, Assistant Field Supevisor, Grand Island Field Office
Brooke Stansberry, USFWS biologist, Liaison with NE Dept. of Roads

COE

Keith Tillotson, Project Manager

N Dept. of Roads

Art Yonkey, Planning and Project Development

Gary Prey, District 1 Permit Officer
Mark Otteman, Utilities Engineer
Sandy Wojtasek, Utilities Coordinator
Gary Britton, Assistant ROW manager.
Frank Blankenal, Property Management

Introduction

- Schmaltz: Background on TransCanada and the project, TransCanada environmental philosophy and commitments. .

- Ellis: Status of NEPA process (State Dept. is lead agency, Project recently met with the State Dept., EA vs. EIS decision to be made soon, future federal agency coordination at the Washington DC level; Keystone represents a unique project for the State Dept because of large size, and no other major federal land management agency involved; schedule discussion with November 07 as the target date to obtain all permits).

USFWS (Cochnar)

- Consultation Process. In response to the NEPA discussion, Gary stated that FWS didn't want to go through a species list/data request twice, per the FERC process for REX (Once for the FERC resource reports, then again when the EIS contractor comes on board). Ellis – we will try to avoid a second round of data requests by making this one adequate for the EIS process. FWS has decided that Grand Island Office will be the central point of contact for all input from the affected FWS Regions and offices. The letter will address migratory bird issues (easements, waterfowl production areas) as well as the species to be addressed in the consultation.

- Species. Primarily river dependent species: least tern, piping plover, pallid sturgeon, bald eagle. Also mentioned Massagua rattlesnake. Cochnar thought we were outside habitat for prairie fringed orchid and burying beetle.

COE

- Primary feedback was that the Omaha District needs to figure out its approach to both NEPA and the 404/10 process. Said he would go back to his Branch Chief to discuss. From remarks, it sounds like the District will want to set consistency standards across the Omaha District for 404 process, but 404 applications by state may be required. Commented that District needs to get its strategy together before Washington tells them what to do. Tillotson will be point of contact for time being. Ellis – we will be getting back shortly to Omaha because we need to discuss the 2006 field program.

- Wetlands Mitigation. Omaha has a SOP for mitigation – can obtain from COE website.

NE Department of Roads

- Expect road crossing permit applications late in process. Project should be aware of State Highway 2006-2011 year plan for highway improvements. Copy of plan provided to ENSR at meeting.

Action Items:

- ENSR provide FWS with 1:24,000 and 1:100,00 sheets for NE.
- ENSR check on status of NGPC data response letter.
- ENSR provide copies of the 2006 – 2011 NE DOT Plan book to Engineering and Lands.
- ENSR monitor the Omaha District (Tillotson) to find out how COE will organize itself for this project.

Keystone Pipeline Project – Interagency Meeting on the Proposed Horizontal Directional Drill of the Missouri River at Yankton, South Dakota.

Date: May 19, 2006 10:00 AM to 12:30 PM

Location: Yankton Chamber of Commerce Visitors Center (Paddle Wheel Park).

Participants:

Paul Hedren, National Park Service, P.O. Box 591, O'Neill, NE, paul_hedren@nps.gov

Wayne Werkmeister, National Park Service, P.O. Box 591, O'Neill, NE
wayne_werkmeister@nps.gov

Lee Dickinson, National Park Service, 1849 C St. NW, Washington, DC 20240
lee_dickinson@nps.gov

Tyler Cole, National Park Service, P.O. Box 591, O'Neill, NE tyler_cole@nps.gov

Tim Cowman, Natural Resources Adminstrator, South Dakota Department of Environment and Natural Resources -Geological Survey, 414 Clark St. USD Science Center, Vermillion, SD, 57069.. tcowman@usd.edu 605-677-6151, 605-677-5895 fax.

Jim Heisinger, Sierra Club, Chair-Living River Group, Missouri River Basin Task Force Chair jheising@usd.edu 605-624-3170

Mike Koski, Keystone Project, U.S. Project Manager Trow Engineering, 1300 Metropolitan Blvd, Suite 200. Tallahasseee, Florida 32308 mike.koski@trow.com

Scott Ellis U.S. Regulatory Manager. ENSR, 1601 Prospect Parkway, Fort Collins, CO 80525 sellis@ensr.aecom.com 970-493-8878.

1. Introductions

2. Project Overview (Mike Koski)

   Project consists of a 30-inch and 24-inch pipeline that connects the oil sands region of northern Alberta with oil refining centers in the United States. Conoco-Phillips has indicated a firm interest in shipping crude on the pipeline.. The project in Canada includes new pipeline, but primarily an existing natural gas pipeline between Alberta and Manitoba that would be converted to crude service. Orientation of the pipeline is north-south in the states of North and South Dakota and Nebraska. In southern Nebraska, the pipeline would split into two legs: one leg would traverse eastward parallel to the existing Platte Pipeline to Wood River Illinois, and from Wood River to an interconnection with existing pipelines at Patoka, Ilinois. A second proposed

leg would extend from the Nebraska/Kansas border southward to Cushing, Oklahoma, a major crude oil storage and pipeline transportation hub. A firm commitment to construct the Cushing Extension would depend on the results of an open season for subscribers scheduled for fall 2006.

At a regional scale, the proposed Missouri River crossing is largely dictated by the Project's intention to supply crude oil to both Wood River, Illinois and Cushing, Oklahoma,(ie. a crossing of the Missouri River at Yankton would represent the shortest distance between the Canadian border and Cushing). At a local scale, the crossing at Yankton would be located where two existing pipelines are already installed; the proposed crossing would be located in a stable section of the river (downstream of the Gavin's Point Dam, highway bridges, and the Yankton municipal sewage treatment plant); and the crossing would be located in an area with minimal topographic and riparian vegetation constraints.

The lead U.S. federal agency is the State Department (DOS) because the State Department is responsible for issuing a Presidential Permit for the pipeline border crossing. Keystone met with the DOS and other federal agency representatives in Washington DC on March 16, 2006 to discuss the EIS process and federal agency involvement (Lee Dickinson represented the NPS at this meeting). Keystone filed a Presidential Permit application and Environmental Report to the DOS on April 19, 2006. The Environmental Report includes currently available environmental information and a preliminary construction, mitigation, and reclamation plan that includes typical best management practices. The DOS will prepare an EIS (likely with the assistance from another federal agency or a third-party contractor).

Keystone's proposed schedule is to receive federal and state permits and approvals by November 2007; pipeline and pump station construction during 2008 and 2009, with crude oil delivery service beginning in the 4th quarter of 2009. The Keystone Project has met with representatives of the US Fish and Wildlife Service (John Cochnar in the Grand Island, Nebraska Office is the point of contact), and the Corps of Engineers (Steve Naylor in Pierre, SD, and Keith Tillotson in Grand Island, NE are the points of contact).

3. River Crossing Methods and Plans

A review of river crossing methods was presented. Two overall methods could potentially be used:1) trenching/dredging the channel to install the pipeline, or 2) a trenchless method consisting of a directional drill, or a straight-line bore (limited to very short-length crossings). Trenching methods would involve backhoes or clamshells excavating channel material, and depositing the spoil material either in the channel, or on shore. For larger crossings, backhoes or clamshells would be mounted on barges. Spoil material would either be deposited in the channel, or placed on shore. Spoil

material would then be used to backfill the trench over the pipeline. Based on comments from the landowner south of the crossing, the existing Kaneb pipeline was installed in a trench excavated in the channel. Spoil was placed in a pile on the south shore of the river (still visible today). The extent to which this pipeline is currently buried, or exposed is unknown. Assuming that underlying geologic conditions are suitable, Keystone proposes to construct this crossing using a horizontal directional drill. The details of this plan are discussed in the next section.

The proposed Keystone directional drill of the Missouri River at Yankton would be approximately 3000 feet in length. The drill entry side would be located on the north shore of the river on Yankton city land (east of Paddlewheel Park) about 500 feet from the river shoreline; the exit side would be located in an agricultural field on the south side. Based on a preliminary review of the underlying geology (based on geologic logs for a bridge constructed upstream adjacent to downtown Yankton), the curve of the directional drill would descend steeply to a depth of 60 to 70 feet below the depth of the river channel, would extend horizontally under the channel, and then would ascend steeply to the exit point, which is set back approximately 1,000 feet from the south shore. The proposed depth under the river was based on the expectation that the drill hole could be cut through bedrock shale, based on an extrapolation of the upstream bedrock depth at the Yankton bridge crossing. One entry drill site would be located on the north side of the river, and one exit drill site would be located on the south side of the river. Each site would be about one acre plus room to lay out pipe strings. The intent is to have the drill site workspaces located outside of the NPS jurisdictional limits associated with the river at the crossing location.

Pipeline installation under the river would consist of the following steps:

1) A pilot hole would be drilled along the proposed curvature under the river. The angle of the drill head would be remotely guided from the drill site. Drilling fluids consisting primarily of water with natural bentonite clay would be used for lubrication, cutting circulation, and physical support for the drill hole. Drill cuttings would be circulated back to the surface and stored in holding tanks. The pilot hole would measure approximately 9 inches in diameter.

2) The initial hole would be enlarged with a reaming bit. The reaming bit would be pulled from the exit side of the crossing toward the entry side Multiple passes with increasingly larger diameter reaming bits would be completed until the hole reached a diameter of 42 to 50 inches.

3) The pipe needed for the entire crossing would be welded together on the south side of the river, and pressure tested prior to installation. The pipeline would then be pulled through the reamed-out hole under the river.

4) The directionally drilled segment of pipe would be connected to mainline pipeline sections on each side of the river. All pipe would be buried to a depth of four feet. Drilling fluids would be disposed at an approved location. Drill sites would be graded and replanted. Block and check valves would be installed on either side the Missouri River outside the floodplain.

3. Additional Studies for the HDD crossing.

To verify the feasibility of the proposed pipeline crossing, Keystone will conduct additional site-specific studies at the proposed crossing locations. These studies will include geotechnical borings to document the underlying geological material; channel scour studies to estimate the potential channel incision as the result of upstream sediment trapped in the reservoir; and potential for lateral channel migration. Based on a preliminary review of the available geotechnical data, the project proposes to drill boreholes near each bank of the Missouri River. While it would be preferable to drill a hole in the center of the river, the permitting process to accomplish this objective may be difficult, given that this reach is occupied by the pallid sturgeon and other sensitive species. The NPS commented that boreholes were recently completed within the channel for the bridge upstream at Yankton. Studies were required for mollusks, and timing restrictions were implemented for threatened and endangered species (least tern, piping plover, and pallid sturgeon).

4. Issues and Concerns

1. Special Use Permit. The Park Service will require a Special Use permit application for the surface/subsurface activities associated with geotechnical drilling. Keystone should submit a letter and drawings that provide details about the drilling program. The letter and drawings should be submitted to the NPS O'Neill Nebraska office. Based on the meeting discussion, it appears that NPS would require about 60 days for review and potential approval of a letter application submitted by Keystone.

2. Geotechnical conditions. Keystone assumed that the HDD would encounter shale bedrock at 50 to 60 feet below the river channel based on upstream boreholes completed for the new bridge at Yankton. Tim Cowman commented that bedrock may be deeper than 50 to 60 feet at the proposed drilling location because geologic investigations indicate that bedrock dips steeply to the east (downstream from Yankton). Mr. Cowman provided the reference for a recent geological map of Yankton County: Geology of Yankton County, SDGS Bulletin 34, Johnson and McCormick, 2005. The report can be downloaded from the SD Geological Survey website: www.sdg.usd.edu. , or can be ordered as a hard copy directly from the Geological Survey

3. Keystone cannot refine the drill design until the geotechnical investigation and bank and channel surveys are completed.

4. Setbacks. NPS would like to see if there are some options for greater setbacks for the directional drilling sites from the river bank to reduce the risk of releases into the river. Keystone will investigate this possibility once the above noted information is known.

5. Mitigation. Mr. Heisinger and Mr. Hedren commented that while it appears that an HDD crossing will greatly reduce potential environmental impacts, and would not be within NPS jurisdiction, there is a desire to obtain project mitigation that would benefit the Missouri River ecological and recreational values that both the NPS and the Sierra Club want to protect. They want ways to develop project mitigation in the context of corporate citizenship, rather than through permit conditions. Mr. Koski responded that TransCanada's philosophy is to become an active and responsible member of the communities where its facilities are located. The extent to which the project can assist with mitigation will depend on all the mitigation issues that the project needs to address throughout the entire pipeline route. TransCanada is open to ongoing discussions with interested communities, and Mr. Koski will advise TransCanada of this matter and suggest that an early dialogue commence.

6. Leak Detection. There was a general discussion about leak detection and emergency response. Mr. Koski provided a summary of the pipeline design factors, operational controls (pressure monitoring and valves), emergency response planning (the project is preparing a detailed emergency response plan), and the USDOT mandated pipeline inspection and maintenance requirements. Information on these topics is contained in the Environmental Report submitted to the Department of State, and further information will be provided in supplemental submittals. It was requested that Keystone review South Dakota Bill 19JJ that addresses the consequences of environmental damage and the need to pay for these damages.

7. Related Projects. It was suggested that the Keystone Project gain an understanding of a major proposed alluvial groundwater pumping program downstream on the Missouri River (Lewis and Clark Pipeline). The purpose of this project is to increase municipal water supplies for Sioux Falls.

8. Pallid Sturgeon. The USFWS and COE are conducting a program to determine if pallid sturgeon will spawn in response to a "spring rise" – a simulation of historic higher flow conditions that no longer occur because of upstream dams. Potential spawning locations were marked with buoys

above the proposed Keystone crossing location when the group walked down to the river.

9. Other agencies. It was requested that Nebraska Game and Parks be provided the meeting notes, and notification of future meetings and other correspondence related to the proposed crossing plan. Point of contact: Carey Grell. Carey.grell@ngpc.ne.gov. Work phone: 402-471-5423.

5. Future Steps

Mike Koski offered to host future interagency meetings as additional engineering and environmental studies are initiated and completed and revised design can be presented. No specific future meeting dates were established.

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Trow

Trow Engineering Consultants, Inc.

1300 Metropolitan Boulevard, Suite 200
Tallahassee, Florida
32308

Telephone: (850) 385-5441
Facsimile: (850) 385-5523

DCN: KMLO1-00249-01-AA-0649-R01

August 17, 2006

Mr. Tyler Cole
National Park Service
114 North 6th Street
O'Neill, Nebraska 68763

Dear Mr. Cole:

RE: Geotechnical Investigation, Proposed Keystone Missouri River Crossing at Yankton, Request for a Special Use Permit

Please find enclosed, a work plan for the completion of a geotechnical investigation at the Missouri River near Yankton SD. The geotechnical investigation is required for the on-going design and permitting work associated with the proposed crossing of the river by the Keystone Pipeline Project. This plan identifies the nature of the investigation and the locations of the proposed boreholes.

Keystone asks that the NPS issue a special use permit for this work in order to allow us to complete our activities as outlined.

Given the time critical nature of the crossing assessment with respect to on-going NPS and agency discussion, Keystone respectfully requests the expeditious review of this request.

If there are any questions with respect to the enclosed information or if additional information is needed, please contact the undersigned at your convenience.

Yours truly,

Trow Engineering Consultants, Inc.

Mike Koski, P. Eng
Vice President
Energy Services

Richard Gale
Branch Manager
Energy Services

Enclosures: KML01-00199-01-AA-0649-R01-060726 Keystone Yankton Geotech NPS rdg Rev 8-9-2006

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TransCanada

In business to deliver

KEYSTONE PIPELINE PROJECT

MISSOURI RIVER AT YANKTON
PROPOSED GEOTECHNICAL
BOREHOLES

Trow Engineering Consultants, Inc.

1300 Metropolitan Boulevard, Suite 200
Tallahassee, Florida 32308
Telephone: (850) 385-5441
Facsimile: (850) 385-5523

Project No: THES0050388E
Issue Date: August 17, 2006

Document Control No.: KML01-00199-01-AA-0649-R01

Table of Contents

1. Background

TransCanada Keystone Pipeline LLC ("Keystone") will construct and operate a crude oil pipeline and related facilities from Hardisty, Alberta, Canada to Patoka, IL. This project will initially have the capacity to deliver approximately 435,000 barrels per day of crude oil from an oil supply hub near Hardisty to existing terminals in Salisbury, Missouri and Wood River and Patoka, Illinois.

In total, the Keystone Pipeline Project will consist of approximately 1,833 miles of pipeline, including about 760 miles in Canada and 1,073 miles within the U.S. The U.S. portion of the pipeline will consist of approximately 1018 miles of 30 inch pipeline between the U.S./Canadian border and Wood River, Illinois, and a 55 mile section of 24 inch pipeline between Wood River and Patoka, Illinois.

The proposed route of the Keystone pipeline crosses the Missouri National Recreational River from within the city limits of Yankton, South Dakota to unincorporated farmland on the southern, Nebraska, side of the river (Fig 1). It is anticipated that horizontal directional drilling (HDD) will be utilized during construction of the crossing.

2. Purpose and Description

In order to assess engineering conditions at the pipeline crossing for the proposed HDD, soil conditions must be fully characterized so that optimal alignment and profile can be determined. Four soil borings are proposed to be advanced to a depth of 100' below grade as part of this characterization process. Upon completion of boring activities, the drill holes will be backfilled with borehole spoil and capped with grout to within two feet of the ground surface. Native material will be used as a backfill for the interval from the ground surface to a depth of two feet and any excess bentonite derived drilling fluids or borehole spoil will be removed from the site. All waste generated by this investigation will be removed from the site

Keystone is requesting a special use permit to allow the completion of the four soil borings at the proposed crossing location as shown in Figure 1. Two of these borings will located near the entrance and exit points of the HDD installation respectively and will not be located within the NPS jurisdictional limits. Two borings will be advanced on each side of the river as close to the water edge as practicable. These boreholes will be within the NPS jurisdictional limits. No boreholes are proposed in-stream.

Keystone is aware of the environmental sensitivity of the crossing location and is committed to minimal environmental impact. Keystone will adhere to a "Spill Prevention and Containment Program" provided in Appendix A. The program will involve preventative measures with respect to the potential for soil loss from disturbed areas and management of fuels and drilling fluids (water and possibly bentonite clay).

All bentonite drilling fluid will be stored off grade (on pallets or on a trailer). If stored in the open, the bentonite and/or polymer drilling fluid will be covered with visqueen or a similar material.

Keystone will control runoff and minimize erosion during construction. The "Sediment Control Measures" described in Appendix B will be implemented as necessary.

At the conclusion of this investigation, the site will be restored to minimize evidence of human impact.

The boring process will require the work of drillers and an engineer/geologist. Keystone will provide a Company Representative for inspection and oversight of the project. The work will require a drill rig and approximately two support vehicles (Figure 2). All boreholes will be installed with a truck mounted drill rig while one support vehicle will be either a water truck or a truck the size of a Ford F-350 pulling a trailer with a water wagon. Water from this tank will lubricate downhole equipment. Bentonite clay may be used to enhance the lubricating capabilities of the water and to keep the borehole open if necessary. Steel casing may also be installed to prevent sloughing, if necessary. Any steel casing used will be removed upon completion of the borehole. Drilling will be discontinued and grout or bentonite seals will be placed in all open borings if the river is approaching flood stage. Borings will not be left unattended for more than 24 hours. Borehole sealing materials and equipment will be on hand at the site before drilling begins.

Water will not be drawn from the Missouri River. An SUV (or equivalent) type vehicle will also be present on site and used for staff transport.

This investigation is expected to take approximately 9 days or less.

Table 1 Boreholes drilled at Yankton Crossing

ID	Depth	Diameter	Sampling	Casing	Comments
DB-1	100'	up to 6"	Continuous	Steel if needed	Proposed entry point
DB-2	100'	up to 6"	Continuous	Steel if needed	North bank of river
DB-3	100'	up to 6"	Continuous	Steel if needed	South bank of river
DB-4	100'	up to 6"	Continuous	Steel if needed	Proposed exit point

NOTE: As shown in Figure 1, DB-1 and DB-2 are not located within the Missouri MN59BNDP.E.00 jurisdictional limits.

3. Conclusion

The geotechnical investigation proposed by Keystone will allow the project to obtain the data needed to assess the HDD crossing. The data obtained from these borings will be used to prepare an HDD design of the Missouri River for NPS and other agency review. Keystone will work with the NPS to assure that the work is conducted in a safe, efficient and professional manner.

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Figure 2

Typical Drilling Rig

Water Wagon

Appendix A

SPILL PREVENTION AND CONTAINMENT

Spill prevention and containment applies to the use and management of hazardous materials on the construction right-of-way and all ancillary areas during construction. This includes the refueling or servicing of all equipment with diesel fuel, gasoline, lubricating oils, grease, hydraulic and other fluids during normal upland applications and special applications within 100 feet of perennial streams or wetlands.

1.1 Drillsite Activities and Spill Prevention

- All vehicles will be refueled offsite
- Contractors shall routinely keep all tanks under close surveillance
- Potential leaks or spills shall be quickly detected;
- Visible fuel, lubricant or other leaks shall be reported to the Contractors' designated representative and corrected as soon as conditions warrant. Keystone's designated representative shall also be informed.

Keystone may allow modification of the above specifications as necessary to accommodate specific situations or procedures. Any modifications must comply with all applicable regulations and permits.

1.2 Equipment

The Contractor shall retain emergency response equipment that shall be available at all areas where hazardous materials are handled or stored. This equipment shall be readily available to respond to a hazardous material emergency. Such equipment shall include, but not be limited to, the following:

- first aid kit/supplies
- phone or communications radio
- protective clothing (tyvek suit, gloves, goggles, boots)
- hand held fire equipment
- absorbent material and storage containers
- non-sparking bung wrench and shovel
- brooms and dust pan

Hazardous material emergency equipment shall be carried in all mechanic and supervisor vehicles. This equipment shall include, at a minimum:

- first aid kit/supplies
- phone or communications radio
- 2 sets of protective clothing (tyvek suit, gloves, goggles, boots)
- 1 non-sparking shovel
- 6 plastic garbage bags (20 gallon)
- 10 absorbent socks and spill pads
- hand held fire extinguisher
- barrier tape
- 2 orange reflector cones

The Contractor shall inspect emergency equipment weekly, and service and maintain equipment regularly. Records shall be kept of all inspections and services.

1.3 Emergency Notification

Emergency notification procedures between the Contractor and Keystone shall be established in the preplanning stages of the work, and the Keystone representative shall be identified to serve as contact in the event of a: spill during drilling activities. In the event of a spill which meets government reporting criteria, the Contractor shall notify the Keystone representative immediately who, in turn, shall notify the appropriate regulatory agencies. If a spill occurs into navigable waters of the United States, Keystone shall notify

the National Response Center (NRC) at 1.800-424-8802. For spills which occur on public lands, into surface waters or into sensitive areas the appropriate governmental agency's district office shall also be notified.

1.4 Spill Containment and Countermeasures

In the event of a spill of hazardous material, Contractor personnel shall:

- notify the appointed Keystone representative;
- identify the product hazards related to the spilled material and implement appropriate safety procedures, based on the nature of the hazard;
- control danger to the public and personnel at the site;
- implement spill contingency plans and mobilize appropriate resources and manpower;
- isolate or shutdown the source of the spill;
- limit spill travel;
- initiate containment procedures to limit the spill to as small an area as possible, to prevent damage to property or areas of environment concern (e.g., watercourses);
- commence recovery of the spill and clean-up operations.

When notified of a spill, the Keystone representative shall immediately ensure that:

- action is taken to control danger to the public and personnel at the site;
- spill contingency plans are implemented and that necessary equipment and manpower is mobilized;
- measures are taken to isolate or shutdown the source of the spill;
- all resources necessary to contain, recover and clean up the spill are available;
- any resources requested by the Contractor from Keystone are provided;
- the appropriate agencies are notified. For spills which occur on public lands, into surface waters or into sensitive areas the appropriate federal or state managing office office shall also be notified and involved in the incident.

On a land spill, berms shall be constructed with available equipment to physically contain the spill. Personnel entry and travel on contaminated soils shall be minimized. Sorbent materials shall be applied or, if necessary, heavily contaminated soils shall be removed to an approved facility. Contaminated sorbent materials and vegetation shall also be disposed of at an approved facility.

On a spill threatening a water body, berms and/or trenches shall be constructed to contain the spill prior to entry into a water body. Deployment of booms, skimmers and sorbent materials shall be necessary if the spill reaches the water.

The spilled product shall be recovered and the contaminated area shall be cleaned up with in consultation with spill response specialists and appropriate government agencies.

Appendix B

Sediment Control Measures

Sediment Control Measures will be implemented to minimize the potential for erosion and soil loss at the drillsite and to facilitate restoration of the work area to antecedcent conditions upon completion of the investigation.

Keystone will employ the following erosion and sediment control measures at the worksite:

- Access to the work area will be limited to one route, if possible
- Sod will be salvaged from the drillsite and, if applicable, stored on location.
- Runoff will be directed around exposed soils, if possible. This may be accomplished through the use of slope management, hay bales and filter fabric fences
- Sediment barriers will be constructed between the drillsite and the water body. These barriers will be made of materials such as silt fence, staked hay, straw bales or sand bags. The barriers will be placed between the disturbed area and the water body. All silt fences and other barrers will be installed at a mmaximum distance of 50 feet from the boring location.
- Temporary sediment barriers will be installed at appropriate locations to prevent siltation in waterbodies or wetlands crossed by or near the drilling work area.
- All sediment barriers will be inspected and maintained on a daily basis.
- Any temporary barriers will be maintained until permanent revegetation measures are successful or the upland areas adjacent to wetlands, waterbodies or roads are stabilized unless otherwise requested by the landowner.
- Upon completion of the work, any separated sod will be returned.

Environmental Permitting Coordination for the Keystone Pipeline Project

Coordination Summary – Cultural Resources and Tribal Consultation

The Keystone Project initiated discussions with State Historic Preservation Offices (SHPO) of the seven states (North Dakota, South Dakota, Nebraska, Kansas, Missouri, Illinois, and Oklahoma) that would be crossed by the project to determine cultural resources survey and reporting requirements specific to each state. The same overall coordination process was used in each state, which consisted of: 1) a search for previously recorded sites within a specified distance of the proposed route; 2) preparation of a research design and protocols for pedestrian surveys, based on the results of records search and preliminary discussions with the SHPO in each state; and 3) documentation of review and approvals by the SHPO for the these two phases. The SHPO coordination is discussed by state, from north to south.

With respect to tribal consultation, Keystone sent consultation letters to selected tribes to provide notice of project activities, and to solicit input from individual tribes potentially affected by the project.

North Dakota (Volume 1)

In January 2006, a research design for the cultural resources field inventory to be conducted along the proposed pipeline corridor in North Dakota was submitted to and approved by the NDSHPO. The ideas and concept underlying the research design were the result of discussions with the Chief Archaeologist of the NDSHPO. The research design was intended only for the cultural resources field inventory phase of the proposed pipeline project. Issues such as open trench monitoring, site evaluative testing, and mitigation/data recovery would be addressed separately following the field inventory. The procedures for monitoring or evaluative testing (if necessary) will be determined following the field inventory in consultation with the NDSHPO.

A sampling strategy comprised of five levels of investigation was proposed for the North Dakota segment. Two of these levels applied to the entire proposed pipeline route through North Dakota, while the remaining three applied only to selected areas. The first level, a literature and file search of an area 1 mile wide centered on the proposed pipeline route, was completed in January 2006. The second level of investigation was a reconnaissance of the proposed pipeline route by a geomorphologist, who identified areas that required closer investigation and conversely areas that were not archaeologically sensitive. The third level was an intensive pedestrian field inventory of selected segments of the proposed pipeline route in areas with high potential to contain archaeological resources. The fourth level was a reconnaissance inventory of approximately 41 miles of the proposed pipeline corridor. The fifth level was no survey, which applied only to areas determined to have essentially no potential for the presence of cultural resources. These areas were determined by the results of the previous four types of investigations.

The geomorphological investigation initially consisted of a study of existing geologic and soil maps and a review of the literature and file search data followed by a reconnaissance drive-by of the entire proposed pipeline route in order to determine areas that had the potential for archaeological sites, in particular, buried sites. At the time of the reconnaissance inventory, specific areas were identified where more detailed investigations (e.g., intensive pedestrian survey, soil coring) were recommended.

Approximately 49.5 miles of the proposed 215-mile pipeline corridor was selected for intensive field inventory. These areas were identified based on the results of the literature and files search and review of the various land forms crossed by or adjacent to the proposed pipeline corridor. The intensive field inventory consisted of close inspection of a 300-foot-wide corridor centered on the proposed pipeline centerline.

Approximately 41 miles of the proposed pipeline route was subject to a reconnaissance drive-by inventory. In forested areas or where the proposed pipeline route is generally over 0.25 mile from the road, the proposed pipeline route was inspected with a single transect (i.e., archaeologist). Specific areas that appear to be sensitive (e.g., locally prominent rises, areas near good sources of potable water) were subject to an intensive field inventory.

South Dakota (Volume 1)

In January 2006, a research design for the cultural resources field inventory to be conducted along the proposed pipeline corridor in South Dakota was submitted to and approved by the South Dakota SHPO. The ideas and concept underlying the research design were the result of informal discussions with the Review and Compliance Officer at the SDSHPO. The research design was intended only for the field inventory phase of the project and any issues such as open trench monitoring, site evaluative testing, and mitigation/data recovery will be addressed after completion of the field inventory in consultation with the SDSHPO.

A sampling strategy comprised of five levels of investigation was proposed for the pipeline corridor in South Dakota. The five levels of investigation were similar to those described for North Dakota with the exception of the number of miles recommended for the intensive pedestrian field survey and reconnaissance drive-by inventory. Approximately 38.5 miles of the proposed 223-mile pipeline corridor in South Dakota were selected for an pedestrian field survey and approximately 52 miles of the proposed pipeline route were subject to a reconnaissance drive-by inventory. These areas were identified based on the results of the literature and files search.

Nebraska (Volume 1)

In February 2006, a research design for the cultural resources field inventory to be conducted along the proposed pipeline corridor in Nebraska was submitted to and approved by the Nebraska SHPO. The ideas and concept underlying the research design were the result of informal discussions with the Historic Preservation Officer at the NSHPO. The review of the files and records maintained by the NSHPO indicated that 1 percent of the Nebraska segment of the proposed pipeline corridor had been previously surveyed; therefore, the NSHPO recommended an intensive pedestrian field inventory of the entire proposed pipeline corridor in Nebraska. The intensive field inventory consisted of close inspection of a 300-foot-wide corridor centered on the proposed pipeline centerline. Issues such as open trench monitoring, site evaluative testing, geomorphological investigations, and mitigation/data recovery will be addressed separately following the field inventory in consultation with the NSHPO.

Kansas (Volume 2)

In January 2006, a research design for the cultural resources field inventory to be conducted along the proposed pipeline corridor in Kansas was submitted to and approved by the Kansas SHPO. The sampling strategy proposed in the research design included a probabilistic survey of a random transect of the proposed pipeline corridor through Kansas. The areas to be surveyed were identified through a literature and files search, an examination of the site distribution patterns documented by previous archaeological research conducted in the region, past geomorphological investigations in the project area, and topographic map review.

Based on review of USGS topographic maps of the proposed pipeline corridor, 16 stream valley locations on 16 different drainages were evaluated as having the potential for containing buried cultural features; therefore, they were selected for geomorphological investigations. Three of the selected drainages are rivers: Big Blue River, South Fork Big Nemaha River, and Delaware River. Twelve of the remaining drainages are perennial streams and one is an intermittent creek. The geomorphological investigations entailed visiting the identified locations and testing the soil with a sampling tube. For those areas that

produce evidence of buried cultural deposits, the location will be further evaluated using backhoe trenching.

Approximately 39.56 miles of the proposed 98.4-mile pipeline corridor in Kansas were selected for intensive field inventory. These areas were identified based on the results of the literature and files search conducted through the Kansas State Historical Society's website and review of historic maps, atlases, and GLO plats. The intensive field inventory will consist of close inspection of a 200-foot-wide corridor centered on the proposed pipeline centerline. The inventory will include areas recognized to be archaeologically sensitive, including stream valleys and adjacent uplands and areas with previously documented sites.

Missouri (Volume 2)

In January 2006, a research design for the cultural resources field inventory to be conducted along the proposed pipeline corridor in Missouri was submitted to and approved by the Missouri SHPO. The sampling strategy proposed in the research design is the same as described above for the proposed pipeline corridor in Kansas with the exception of the number of miles selected for an intensive pedestrian field survey. Approximately 153.8 miles of the 273-mile proposed pipeline corridor in Missouri were selected for intensive field survey.

Based on review of USGS topographic maps of the proposed pipeline corridor, 52 stream valley locations on 49 different drainages were evaluated as having the potential for containing buried cultural features; therefore, they were selected for geomorphological investigations. Eleven of the selected drainages are rivers: Missouri River, Platte River, Little Platte River, Grand River, Mussel Fork River, Chariton River, Middle Fork Little Chariton River, East Fork Little Chariton River, South Fork Salt River, West Fork Cuivre River, and Mississippi River. All of the remaining drainages are perennial streams. The geomorphological investigations entailed visiting the identified locations and testing the soil with a sampling tube. For those areas that produced evidence of buried cultural deposits, the location will be further evaluated using backhoe trenching.

Illinois (Volume 2)

In January 2006, a research design for the cultural resources field inventory to be conducted along the proposed pipeline corridor in Illinois was submitted to and approved by the Illinois SHPO. The survey strategy proposed in the research design included an intensive field inventory and geomorphological investigations of the entire 56 miles of proposed pipeline corridor in Illinois. The intensive field inventory consisted of close inspection of a 200-foot-wide corridor centered on the proposed pipeline centerline.

Based on review of USGS topographic maps of the proposed pipeline corridor, 18 stream valley locations were evaluated as having the potential for containing buried cultural features; therefore, they were selected for geomorphological investigations. Two of the selected stream valleys are rivers: Mississippi River and Kaskaskia River. Thirteen of the remaining drainages are perennial streams and three are intermittent tributaries. The geomorphological investigations entailed visiting the identified locations and testing the soil with a sampling tube. For those areas that produced evidence of buried cultural deposits, the location will be further evaluated using backhoe trenching.

CUSHING EXTENSION

Nebraska (Volume 1)

The survey protocol for the Nebraska segment of the Cushing Extension would be the same as described above for the proposed pipeline corridor through Nebraska.

Kansas (Volume 2)

The inventory and geomorphological investigations protocols are the same as those described above for the proposed pipeline corridor through Kansas with the exception of the number of miles recommended for intensive pedestrian field survey and number of stream valley locations identified for geomorphological investigations. Approximately 85.3 miles of the proposed 209.2-mile pipeline extension in Kansas have been selected for the field survey and 39 stream valley locations have been selected for geomorphological investigations.

Oklahoma (Volume 2)

In February 2006, a research design for the cultural resources inventory and geomorphological investigations to be conducted along the Oklahoma segment of the proposed Cushing Extension was prepared and submitted to the Oklahoma SHPO. Preparation of the research design involved the identification of previously recorded sites and previously conducted inventories in the vicinity of the proposed pipeline corridor, a geomorphological reconnaissance along the proposed pipeline corridor, construction of a GIS layer including topographic features, and probability modeling.

A geomorphological windshield reconnaissance was conducted along the proposed pipeline route for the purposes of assessing the potential for buried cultural resources. As a result of the geomorphological reconnaissance, 15 areas were identified as having "good" potential for buried archaeological sites, 14 were identified as having "good to fair" potential, 25 were identified as having "fair" potential, and 20 areas along the proposed pipeline corridor were identified as having "poor" potential for buried archaeological sites.

Thirteen of the 15 areas identified during the geomorphological reconnaissance as having "good" potential for buried archaeological sites are recommended for backhoe trenching. These areas correspond with the floodplains of Bois d' Arc Creek, the Salt Fork River, Red Rock Creek, Black Bear Creek, Long Branch Creek, and Cimarron River. The total number of miles recommended for backhoe trenching is approximately 9.4 miles of the proposed extension in Oklahoma.

Based on the results of the literature and files search and geomorphological reconnaissance, an intensive cultural resources field inventory is recommended for the entire 128.2 miles of the proposed Cushing Extension in Oklahoma. The intensive field inventory will consist of close inspection of a 300-foot-wide corridor centered on the proposed pipeline centerline. Shovel testing is recommended along moderate probability segments (approximately 16.5 miles) of the proposed pipeline corridor (see attached maps). Moderate probability segments are defined as those areas that are within 650 feet of a previously identified site and/or 1,312 feet of a secondary tributary crossing.

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Contents of Binder 1 of 2

CULTURAL COORDINATION PACKET 082506

Note: maps and milepost information based on March, 2006 centerline

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1601 Prospect Parkway, Fort Collins, Colorado 80525
T 970.493.8878 F 970.493.0213 www.ensr.aecom.com

Memorandum

Date: August 21, 2006

To: Mike Koski

From: Kim Munson

Subject: Strategy for remaining cultural resources investigations

Distribution: S. Ellis B. Hope

TRANSCANADA KEYSTONE PIPELINE PROJECT
STRATEGY FOR REMAINING CULTURAL RESOURCES WORK

ENSR's archaeological subcontractors completed the pedestrian field surveys along the majority of the proposed Keystone ROW in North and South Dakota, Nebraska, Missouri, and Illinois. Several segments of the pipeline ROW were not surveyed because of denied access or because reroutes were under consideration at the time of the field surveys. It is anticipated that these segments will be surveyed in the fall after the crops have been harvested, and if the weather is suitable for survey.

The following is a strategy summary for the remaining work:

SURVEY – Remaining surveys will be conducted as soon as reroutes are finalized and access is obtained. The following are factors to consider for these remaining surveys:

- Weather – Remaining surveys most likely will be finished in fall 2006. If they are not completed in the fall, there is a slight possibility that if surface visibility is not hampered by snow and the weather is agreeable, surveys could be conducted in the winter. If surveys cannot be completed this year, they would be finished in early to late spring 2007, weather permitting.
- Crops – Remaining surveys in active cropland will be conducted after the crops are harvested in late September to early November, depending on the crop.
- Survey Report – It would be best if the entire ROW was surveyed prior to submitting the survey report to the SHPOs. However, since the majority of the ROW has been surveyed, it is anticipated that most, if not all, of the SHPOs will allow the report to be submitted prior to completed surveys. Submittal time for the reports is tentatively planned for early to late December 2006. After the survey report is submitted, any outstanding field surveys of the ROW, access roads, contractor/pipe yards, and extra workspace would be included in an addendum report.

SHOVEL PROBES – Shovel probes were conducted in areas that had low surface visibility during survey and moderate to high site potential, primarily at stream crossings. The majority of these were done in July and August. Additional shovel probes still need to be conducted at selected stream crossings. These will be completed in fall 2006, weather permitting.

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TESTING – Several sites will require evaluative testing to make a definitive determination of NRHP-eligibility. Factors to consider:

- Weather – Evaluative testing consists of digging several 1 x 1 meter test pits in the ground and backhoe trenching (only in Nebraska, Missouri, and Illinois). Evaluative testing is tentatively scheduled for September, October, and November 2006, weather permitting.
- Crops – If testing were done prior to harvest, TransCanada would have to pay for crop damage. However, since testing disturbs a relatively small area and can be done within a reasonable timeframe, it would be preferable to wait until the crops are harvested.
- SHPO guidelines – The timing of evaluative testing is different for each state. The ND/SD SHPOs prefer that evaluative testing be done prior to submitting the survey report. This enables the SHPO to make a more informed decision when determining site significance. Nebraska and Missouri SHPOs are open to testing before the report is submitted. The Illinois SHPO requests that testing not occur until after the report is submitted to them.
- Evaluation – Following evaluative testing, if a site is determined eligible for the NRHP, and the SHPO/DOS agrees with the evaluation, avoidance most likely would be recommended. If avoidance is not feasible, the SHPO/DOS would recommend mitigation (e.g., data recovery, historical research, photo-documentation, signs/kiosks). The type of mitigation would depend on the site type.
- Treatment Plan – If avoidance is not feasible and mitigation is recommended, a treatment plan would be prepared and submitted to the SHPO/DOS for review and concurrence. Review of a treatment plan could take up to 30 days. Note: Tribes involved in the consultation process may request review of the treatment plan.
- Mitigation – Mitigation as described in the treatment plan would be conducted in summer 2007.

CORE SAMPLING – The drive-by reconnaissance of stream crossings was completed in early summer. Shovel probes at selected stream crossings were conducted in July and August 2006. As a result of the drive-by reconnaissance and shovel probes, several stream crossings were selected for core sampling. Core sampling will be conducted in fall 2006 or spring 2007. Results of the core sampling will determine the need for any additional investigations (e.g., open trench inspection).

SURVEY REPORT – The tentative submittal date for the survey report is mid- to late-December 2006. The SHPO/DOS will have 30 days to review and comment. Any outstanding surveys or testing to be done after the survey report is submitted would be included in an addendum report. Review and comment on addendum reports also is 30 days. Note: The Tribes may request copies of the survey report, but are not involved in review and concurrence.

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1601 Prospect Parkway, Fort Collins, Colorado 80525
T 970.493.8878 F 970.493.0213 www.ensr.aecom.com

GENERAL CONCERNS:

- THE SHPO WILL NOT REVIEW THE REPORT UNTIL SECTION 106 HAS BEEN INITIATED BY THE DOS.
- IF ANY OF THE CONTACTED TRIBES WANT TO MEET WITH THE AGENCIES OR VISIT ANY OF THE SITES, THE DOS MUST INITIATE GOVERNMENT-TO-GOVERNMENT CONSULTATION.
- THE ILLINOIS SHPO REQUIRES THAT ALL TESTING BE DONE AFTER THEY HAVE REVIEWED THE SURVEY REPORT AND EITHER AGREED OR DISAGREED WITH THE ELIGIBILITY FINDINGS. IF THE ILL SHPO AGREES THAT A SITE IS POTENTIALLY ELIGIBLE, THEY WILL REQUIRE TESTING TO MAKE A DEFINITIVE DETERMINATION. IF THE SITE IS TESTED AS ELIGIBLE, THEN THE SHPO WILL RECOMMEND AVOIDANCE. IF AVOIDANCE IS NOT FEASIBLE, THEN MITIGATION WOULD FOLLOW.
- THE ILLINOIS SHPO REQUIRES THAT THE ENTIRE ROW BE SURVEYED PRIOR TO SUBMITTING THE SURVEY REPORT. ARG IS DISCUSSING THIS ISSUE WITH THE SHPO TO SEE IF THE SHPO WOULD ACCEPT THE REPORT ONCE A CERTAIN PERCENTAGE OF THE ROW IS SURVEYED.

Schedule for Completing the Remaining Cultural Resouces Investigations within the Keystone Pipeline Corridor

State	Remaining Survey Mileage/Sites to Test	Fieldwork Dates	Report Completion Date
North Dakota	*Phase I Survey (reroutes)*		
	Approximately 10 miles	Oct. 2	Preliminary Report Submitted December 1, 2006
	Geomorph coring	Oct. 2	
	Phase II Testing		
	Four sites	Sept. 18-27	
South Dakota	*Phase I Survey (reroutes)*		
	Approximately 15 miles	Oct. 2	Preliminary Report Submitted December 1, 2006
	Geomorph coring	Oct. 2	
	Phase II Testing		
	One site	Oct. 15-20	
Nebraska	*Phase I Survey*		
	Approximately 36 miles*	October 30-November 8, 2006	Draft Phase I Report Submitted December 22, 2006
	*Phase II Testing***		
	None (all sites will be avoided)	n/a	
Missouri	*Phase I Survey*		
	Approximately 44 miles*	Oct. 2-12	
		Oct 16-27	First Interim Report (including Phase I results) Submitted December 22, 2006
	*Phase II Testing***		
	JM-5	Sept. 5-9	
	JM-9	Sept. 10-14	
	JM-10	Sept. 18-22	
	JM-11	Sept. 23-28	
	JM-12	Oct. 2-6	
	JM-13	Oct. 7-12	
	JM-15	Oct. 16-20	
	JM-16	Oct. 21-26	
	JM-20	Oct. 30-Nov. 2	
	JM-21	Nov. 3-7	
	JM-22	Nov. 8-11	Second Interim Report (including Phase I and II results) Submitted February 23, 2007
Illinois	*Phase I Survey*		
	Approximately 15 miles*	Sept. 25- Oct. 2	Draft Phase I Report Submitted December 22, 2006
	Additional Survey to Avoid JM-13	Oct. 2	
	*Phase II Testing***		
	JM-2	Sept 5-9	
	JM-3	Sept. 10-14	
	JM-9	Sept. 18-22	
	JM-17	Sept 23-28	
	JM-18	Oct. 2-6	
	JM-19	Oct. 7-12	
	JM-20	Oct. 16-20	
	JM-28	Oct 21-26	
	JM-13 (If Necessary)	Oct. 30-Nov. 2	Draft Phase II Report Submitted Spring 2007

*Assuming all mileage is cleared for survey, and not considering potential reroutes, etc.

** The formal evaluation of the National Register eligibility of a site through Phase II testing typically entails use of each of the following field-investigation methods: the hand excavation of two to six test units in order to document the horizontal and verticle distribution pattern of cultural material across the site; the mechanical removal of theplow zone/A horizon along a number of widely distributed stripping trenches in order to determine whether subplow zone features are present; the hand excavation of a sample of subsurface features identified in the test units and stripping trenches; and, the preparation of a detailed contour map showing the location of test units, stripping trenches, and features in relation to cultural landmarks and project boundaries.

TransCanada Keystone Pipeline Project
Cultural Resources Selected Survey Protocol in North Dakota, South Dakota, and Missouri

Cultural Resources Investigations Prior to the Field Survey

Initially, ENSR's archaeological subcontractors contacted the State Historic Preservation Officers (SHPOs) in North and South Dakota, Nebraska, Kansas, Missouri, and Illinois to discuss the possibility of surveying only those segments of the proposed Keystone ROW with the potential for cultural resources. North and South Dakota, Kansas, and Missouri SHPOs were open to the idea of a sampling survey; however, Nebraska and Illinois SHPOs requested that the entire pipeline ROW be surveyed for cultural resources. Following these discussions, a records and files search was conducted by the subcontractors to identify previously conducted cultural resources inventories and previously documented cultural resources within the proposed pipeline ROW. Using the results of the records and files search, along with topographical maps and information obtained from discussions with the SHPOs, a research design was developed for each state and submitted to the SHPOs for review and concurrence. The following paragraphs summarize consultation with the individual SHPOs and the research designs for those states that allowed a sampling strategy approach to the field surveys. Kansas has been omitted from the summaries since the Keystone ROW parallels the REX-West ROW, which was previously surveyed within the last 9 months.

North Dakota

In January 2006, Metcalf Archaeological Consultants, Inc. (Metcalf) prepared a research design for the cultural resources field inventory to be conducted along the proposed pipeline corridor in North Dakota. The ideas and concept underlying the research design were the result of informal discussions with the Chief Archaeologist of the North Dakota SHPO. In a letter dated February 23, 2006, the SHPO concurred with the cultural resources inventory protocol as presented in the research design (see attached PDF). The research design was intended only for the cultural resources field inventory phase of the proposed pipeline project. Issues such as open trench monitoring, site evaluative testing, and mitigation/data recovery will be addressed separately following the field inventory. The procedures for monitoring or evaluative testing (if necessary) will be determined following the field inventory in consultation with the SHPO and the North Dakota Public Service Commission (PSC).

A sampling strategy comprised of five levels of investigation was proposed for the project. Two of these levels applied to the entire proposed pipeline route through North Dakota, while the remaining three applied only to selected areas. The first level, a literature and files search of an area 1 mile wide centered on the proposed pipeline route, was completed in January 2006. The second level of investigation was a reconnaissance of the proposed pipeline route by a geomorphologist, who identified areas that required closer investigation and conversely areas that were not archaeologically sensitive. The third level was an intensive pedestrian field inventory of selected segments of the proposed pipeline route in areas with high potential to contain archaeological resources. Approximately 51.8 miles of the proposed 215-mile pipeline corridor was selected for intensive field inventory (see attached table). The fourth level was a reconnaissance (drive-by) inventory of approximately 42.3 miles of the proposed

pipeline corridor. The fifth level was no survey, which applied only to areas determined to have essentially no potential for the presence of cultural resources. These areas were determined by the results of the previous four types of investigations.

The geomorphological investigations consisted of a study of existing geologic and soil maps and a review of the literature and file search data followed by a reconnaissance drive-by of the entire proposed pipeline route in order to determine areas that may have the potential for archaeological sites, in particular, buried sites. At the time of the reconnaissance inventory, specific areas were identified where more detailed investigations (e.g., intensive pedestrian survey, soil coring) were recommended.

Approximately 42.3 miles of the proposed pipeline route were inspected through reconnaissance or drive-by inventory. In forested areas or where the proposed pipeline route was generally over 0.25 mile from the road, the proposed pipeline route was inspected with a single transect (i.e., archaeologist). Specific areas that appeared to be sensitive (e.g., locally prominent rises, areas near good sources of potable water) were inspected by intensive field inventory.

South Dakota

In January 2006, Metcalf prepared a research design for the cultural resources field inventory to be conducted along the proposed pipeline corridor in South Dakota. The ideas and concept underlying the research design were the result of informal discussions with the Review and Compliance Officer at the South Dakota SHPO. In a letter dated March 28, 2006, the SHPO concurred with the cultural resources inventory protocol as presented in the research design (see attached PDF). The research design was intended only for the field inventory phase of the project and any issues such as open trench monitoring, site evaluative testing, and mitigation/data recovery will be addressed after completion of the field inventory in consultation with the SHPO and the South Dakota PSC.

A sampling strategy comprised of five levels of investigation was proposed for the pipeline corridor in South Dakota. The five levels of investigation are similar to those described for North Dakota with the exception of the number of miles recommended for the intensive pedestrian field survey and reconnaissance drive-by inventory. Approximately 43.3 miles of the proposed 223-mile pipeline corridor in South Dakota were selected for an intensive pedestrian field survey (see attached table) and approximately 52.3 miles of the proposed pipeline route were selected for reconnaissance drive-by inventory.

Missouri

In January 2006, ARG prepared a research design for the cultural resources field inventory to be conducted along the proposed pipeline corridor in Missouri. ARG developed the research design in consultation with the Missouri SHPO. In a letter dated March 15, 2006, the SHPO concurred with the cultural resources inventory protocol as presented in the research design (see attached PDF). The sampling strategy proposed in the research design included a probabilistic survey of a random transect of the proposed pipeline corridor through Missouri. Those areas to be surveyed were identified through the literature and files search, an examination of the site distribution patterns documented by previous archaeological research conducted in the region, past

geomorphological investigations in the project area, and topographic map review. Approximately 153.8 miles of the 273-mile proposed pipeline corridor in Missouri were selected for intensive field survey. Subsequent to the research design, it was determined that the segment of the Keystone ROW that parallels the REX-West ROW would not require survey; therefore, the miles of proposed pipeline corridor selected for survey was reduced to 78.0 miles (see attached table).

Based on review of USGS topographic maps of the proposed pipeline corridor, 52 stream valley locations on 49 different drainages were evaluated as having the potential for containing buried cultural features; therefore, they were selected for geomorphological investigations. Eleven of the selected drainages are rivers: Missouri River, Platte River, Little Platte River, Grand River, Mussel Fork River, Chariton River, Middle Fork Little Chariton River, East Fork Little Chariton River, South Fork Salt River, West Fork Cuivre River, and Mississippi River. All of the remaining drainages are perennial streams. The geomorphological investigations entailed visiting the identified locations and testing the soil with a sampling tube. For those areas that produce evidence of buried cultural deposits, the location will be further evaluated using backhoe trenching.

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A sampling strategy comprised of five levels of investigation was proposed for the project. Two of these levels applied to the entire proposed pipeline route through North Dakota, while the remaining three applied only to selected areas. The first level, a literature and files search of an area 1 mile wide centered on the proposed pipeline route, was completed in January 2006. The second level of investigation was a reconnaissance of the proposed pipeline route by a geomorphologist, who identified areas that required closer investigation and conversely areas that were not archaeologically sensitive. The third level was an intensive pedestrian field inventory of selected segments of the proposed pipeline route in areas with high potential to contain archaeological resources. Approximately 51.8 miles of the proposed 215-mile pipeline corridor was selected for intensive field inventory (see attached table). The fourth level was a reconnaissance (drive-by) inventory of approximately 42.3 miles of the proposed

pipeline corridor. The fifth level was no survey, which applied only to areas determined to have essentially no potential for the presence of cultural resources. These areas were determined by the results of the previous four types of investigations.

The geomorphological investigations consisted of a study of existing geologic and soil maps and a review of the literature and file search data followed by a reconnaissance drive-by of the entire proposed pipeline route in order to determine areas that may have the potential for archaeological sites, in particular, buried sites. At the time of the reconnaissance inventory, specific areas were identified where more detailed investigations (e.g., intensive pedestrian survey, soil coring) were recommended.

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In January 2006, Metcalf prepared a research design for the cultural resources field inventory to be conducted along the proposed pipeline corridor in South Dakota. The ideas and concept underlying the research design were the result of informal discussions with the Review and Compliance Officer at the South Dakota SHPO. In a letter dated March 28, 2006, the SHPO concurred with the cultural resources inventory protocol as presented in the research design (see attached PDF). The research design was intended only for the field inventory phase of the project and any issues such as open trench monitoring, site evaluative testing, and mitigation/data recovery will be addressed after completion of the field inventory in consultation with the SHPO and the South Dakota PSC.

A sampling strategy comprised of five levels of investigation was proposed for the pipeline corridor in South Dakota. The five levels of investigation are similar to those described for North Dakota with the exception of the number of miles recommended for the intensive pedestrian field survey and reconnaissance drive-by inventory. Approximately 43.3 miles of the proposed 223-mile pipeline corridor in South Dakota were selected for an intensive pedestrian field survey (see attached table) and approximately 52.3 miles of the proposed pipeline route were selected for reconnaissance drive-by inventory.

Missouri

In January 2006, ARG prepared a research design for the cultural resources field inventory to be conducted along the proposed pipeline corridor in Missouri. ARG developed the research design in consultation with the Missouri SHPO. In a letter dated March 15, 2006, the SHPO concurred with the cultural resources inventory protocol as presented in the research design (see attached PDF). The sampling strategy proposed in the research design included a probabilistic survey of a random transect of the proposed pipeline corridor through Missouri. Those areas to be surveyed were identified through the literature and files search, an examination of the site distribution patterns documented by previous archaeological research conducted in the region, past

geomorphological investigations in the project area, and topographic map review. Approximately 153.8 miles of the 273-mile proposed pipeline corridor in Missouri were selected for intensive field survey. Subsequent to the research design, it was determined that the segment of the Keystone ROW that parallels the REX-West ROW would not require survey; therefore, the miles of proposed pipeline corridor selected for survey was reduced to 78.0 miles (see attached table).

Based on review of USGS topographic maps of the proposed pipeline corridor, 52 stream valley locations on 49 different drainages were evaluated as having the potential for containing buried cultural features; therefore, they were selected for geomorphological investigations. Eleven of the selected drainages are rivers: Missouri River, Platte River, Little Platte River, Grand River, Mussel Fork River, Chariton River, Middle Fork Little Chariton River, East Fork Little Chariton River, South Fork Salt River, West Fork Cuivre River, and Mississippi River. All of the remaining drainages are perennial streams. The geomorphological investigations entailed visiting the identified locations and testing the soil with a sampling tube. For those areas that produce evidence of buried cultural deposits, the location will be further evaluated using backhoe trenching.

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Research Design for the TransCanada Keystone Pipeline Cultural Resource Inventory in South Dakota

Prepared for:
ENSR International
Fort Collins, Colorado

Prepared by:
Ed Stine
Metcalf Archaeological Consultants, Inc.
Bismarck, North Dakota

January 2006

CONFIDENTIAL

Research Design for the TransCanada Keystone Pipeline Cultural Resource Inventory in South Dakota

Prepared for:
ENSR International
Fort Collins, Colorado

Prepared by:
Ed Stine
Metcalf Archaeological Consultants, Inc.
Bismarck, North Dakota

January 2006

Introduction

TransCanada intends to construct a 30" crude oil pipeline (Keystone Pipeline) that crosses through portions of eastern South Dakota. As planned the pipeline will have a 125' wide construction corridor with extra workspace needed at stream crossings. It will enter South Dakota, from North Dakota, approximately 3/4 mile east of the Brown/Marshall county line and travel south approximately 96 miles and then heading south-southeast (slightly east of the juncture of Clark, Spink, and Beadle counties), for an additional approximately 127 miles, leaving South Dakota at Yankton on the Missouri River. The 223 mile long corridor will pass through portions of Marshall, Day, Clark, Beadle, Kingsbury, Miner, Hanson, McCook, Hutchinson, and Yankton counties (Figure 1 and Appendix B). The lead Federal agency for this project is the U.S. Department of State. The lead State agency is the South Dakota State Historic Preservation Office (SDSHPO).

The purpose of this document is to provide a research design for a cultural resource inventory of the proposed pipeline corridor in South Dakota, which will be implemented in 2006. The ideas and concepts underlying this document are the results of informal discussions with the SDSHPO Review and Compliance Officer Paige Hoskinson and ENSR International. This research/survey design is intended only for the inventory phase of the pipeline project. Issues such as open trench monitoring, site evaluative testing, and site mitigation/data recovery will be addressed following the inventory phase, in consultation among MAC, ENSR staff, and SDSHPO archaeologists.

Five levels of investigation are proposed for this project. The first, a literature and files search of the entire pipeline route covering a two mile wide corridor, is included within this document. The second is a reconnaissance of the route by a geomorphologist who will identify areas that may need closer investigation, and conversely areas that are not archaeologically sensitive. The third is a Level III intensive pedestrian survey. The fourth is a reconnaissance inventory by MAC archaeologist(s). The fifth, based on some of the above investigations is no survey. A sampling strategy, based in part on the results of a literature search (Level I records search) of the South Dakota Archaeological Research Center's site and manuscript files, is proposed. The sampling strategy also takes into account the various land forms, crossed by or adjacent to the corridor. Under this strategy an intensive pedestrian inventory of a 300' wide corridor, centered on the proposed pipeline centerline, will be undertaken along approximately 38.5 miles (17%) of the overall length in South Dakota. This inventory will include areas recognized to be archaeologically sensitive, including river crossings, and areas with documented sites, as determined by the Level I records search. There may be some small individual areas along glacial lake beach lines, fan alluvium, playa lakes, or other areas identified during geomorphological investigations. This additional inventory will probably total less than ten miles. Approximately 52 miles (23%) will be subject to a Class II reconnaissance level (drive-by) inventory. Most of this length will be covered during the geomorphological survey and some may not need re-walking. Metcalf Archaeological Consultants, Inc. will coordinate the Class II reconnaissance inventory with the geomorphological survey since each may provide useful information and observations to the other. The segments to be covered by the pedestrian inventory are depicted on the project corridor maps in Appendix B.

Environmental Setting

The proposed pipeline corridor passes through four Archaeological Regions in South Dakota, the Upper James (Region #18), the Middle James (Region #17), the Lower James (Region #16), and the Yankton (Region #15) *South Dakota State Plan for Archaeological Resources* (SDSHS 1991: 38.1-41.5). Other than two major river valleys the 220 mile pipeline does not pass through any dramatic topographical land forms.

The north end of the line passes through Marshall, Day, and Clark counties in the Upper James Archaeological Region. The topography is generally flat to gently rolling and was once covered by glacial Lake Dakota. The James River valley is broad and generally featureless, essentially the bed of Lake Dakota. The corridor has the potential to cross beach ridges in all three counties and it crosses the base of the Coteau Des Prairies (the high water shore line of glacial Lake Dakota) in Day and Clark counties. A portion of the Coteau Des Prairies, passed closely by the corridor, rises dramatically (over 200') to the east. [redacted] ions. In Day and Clark counties numerous small streams draining into the James River are crossed by the corridor. Most are small ephemeral drainage and it is unclear if these streams were a draw for utilization by past populations.

The corridor bends to the south-southeast as it enters the Middle James Archaeological Region at the north edge of Beadle County. At this point it is approximately seven miles west of the coteau base and still within the glacial lake bed. The corridor continues through Kingsbury and Miner counties with little evident topographic change. It continues to cross various ephemeral streams and beach lines. As it leaves Miner County the corridor is approximately 22 miles west of the coteau base.

Within the Lower James Archaeological Region the corridor passes through Hanson, McCook, Hutchinson, and a portion of Yankton counties. Topography remains flat to gently rolling although the Wolf Creek crossing in northern Hutchinson County and the James River crossing in northern Yankton County provide some topographic relief. The James River trench is steep sided (approximately 100' deep) and flat bottomed at the crossing. Wolf Creek is a major tributary of the James River. [redacted] sites.

The corridor leaves South Dakota after passing through the Yankton Archaeological Region which consists of the Missouri River Valley in Yankton County. The Missouri River has a broad flat valley with steep breaks overlooked by rolling uplands. The corridor loops around the east side of Yankton and crosses the river south of the city. [redacted]

Results of Level I Records Search

Cultural Resources

The search, in Rapid City, of the South Dakota Archaeological Research Center's site files revealed 30 cultural resources documented within one mile of the project corridor centerline (Table 1). Included among these are ten prehistoric sites, 17 historic sites, and three sites that can be best described as site leads as their exact locations are unknown (Appendices A and B). With the exception of railroad lines none of the sites are directly crossed by the proposed pipeline corridor as currently mapped. There are [redacted] There have been few inventories in these two project areas. [redacted]

Table 1: Cultural Resources by Region and County

County	Prehistoric	Site Lead Prehistoric	Historic	Architectural	Multi-Comp	Total
Upper James Archaeological Region (#18)						
Brown	-	-	-	2	-	2
Clark	1	-	2	2	-	5
Day	1	1	-	-	-	2
Marshall	2	-	6	-	-	8
Total	4	1	8	4	-	17
Middle James Archaeological Region (#17)						
Beadle	-	-	-	-	-	-
Kingsbury	-	-	3	34	-	37
Miner	-	-	3	1	-	4
Total	-	-	6	35	-	41
Lower James Archaeological Region (#16)						
Hanson	-	-	1	2	-	3
Hutchinson	-	-	-	105	-	105
McCook	1	-	-	7	-	8
Yankton [redacted]	5	2		77	-	84
Total	6	2	1	191	-	200

ratio but in addition to the increased survey in the Lower James area the line crosses areas (Wolf Creek and the James River) [redacted] Ultimately the eastern part of South Dakota does not appear to have been heavily investigated.

Inventory Recommendations

The proposed pipeline route, documented sites, previous inventories, and areas recommended for pedestrian inventory are depicted on USGS 7.5' (1:24,000) quadrangle maps in Appendix B. In addition to the areas marked for inventory, all railroads crossed by the line will be recorded and site forms or site form updates will be filed. We recommend Level III inventory of 38.5 miles of the 223-mile-long corridor. In addition we recommend that another 52 miles be covered by a Level II reconnaissance survey. The Level III and Level II inventory lengths are provided by county in the following table (Table 2). These segments are not final as the recommended geomorphological reconnaissance will probably identify additional areas with moderate to high site potential and segments within the areas recommended for Level II inventory will ultimately be investigated to Level III standards.

Table 2: Pipeline Corridor Proposed Level of Inventory

County	Miles of Corridor	Level II mi.	Level II%	Level III mi.	Level III%	Previous Survey mi.	Previous Survey %
Upper James Archaeological Region (#18)							
Clark	36	12.5	35	2	6	-	-
Day	30	10	33	9	30	-	-
Marshall	24	2.5	10	1	4	2.25	9
Total	90	25	28	12	13	2.25	3
Middle James Archaeological Region (#17)							
Beadle	16	2	12.5	6	38	-	-
Kingsbury	16	-	-	1	6	-	-
Miner	24.5	7	29%	1	4	-	-
Total	56.5	9	16	8	14	-	-
Lower James Archaeological Region (#16)							
Hanson	19	-	-	2	11	-	-
Hutchinson	23.5	3	13	5.5	23	-	-
McCook	11	7	64	2	18	-	-

Table 2: Pipeline Corridor Proposed Level of Inventory							
County	Miles of Corridor	Level II mi.	Level II%	Level III mi.	Level III%	Previous Survey mi.	Previous Survey %
[redacted]	19.5	6	31	8	41	-	-
Total	73	16	22	17.5	24	-	-
Yankton Archeological Region (#15)							
[redacted]	3.5	2	57	1	29	.5	14
Grand Total	**223**	**52**	**23**	**38.5**	**17**	**2.75**	**1**

Field Methods

Geomorphological Investigations will initially consist of a study of existing geologic and soil maps and a review of the Level I files search (site and inventory locations) followed by a reconnaissance drive-by of the entire pipeline route in order to determine areas that may have the potential for the presence of archaeological sites, particularly deeply buried sites. At that time specific areas will be identified where more detailed investigations, including intensive pedestrian survey and soil coring are recommended. Areas with low potential for the presence of archaeological sites will also be identified with no further investigations resulting in those areas. [redacted]

Pedestrian Survey will be the primary focus of the cultural resource inventory of the 300' wide pipeline corridor. Portions of the mapped pipeline corridor, based on the results of the literature search and geomorphological investigations, will be inspected employing parallel zig-zag pedestrian transects spaced at no more than 20 meter intervals. When an artifact or feature is encountered the pedestrian transects will be collapsed to approximately five meter intervals in the area of the find and the area will be closely scrutinized to determine the nature of the find. Temporally diagnostic artifacts such as hafted stone tools and rim sherds may be collected for further analysis and will, at a minimum be sketched and photographed in the field. Site boundaries and center points will be recorded with a Trimble GeoExplorer (or equivalent) GPS unit. The Level III inventory, site recording, and documentation will conform to the standards and guidelines of the SDSHPO and those of any involved Federal agencies.

Shovel probes will augment the pedestrian survey in areas where surface visibility is inadequate and/or where cultural material is suspected to be within one meter of the ground surface. Shovel probes will be approximately 40 cm in diameter and will be excavated into pre-Holocene soils or up to one meter deep, whichever comes first. The geomorphological investigations will aid in determining the depth of Holocene soils. Probes will generally be spaced at ten meter intervals in multiple transects. All fill from the probes will be screened through 1/4" mesh. Probe locations will be recorded with a Trimble GeoExplorer (or equivalent) GPS unit.

Reconnaissance for this project is defined as a windshield/drive-by survey of the corridor when it, and topography, are clearly visible from the road. In cases where the area is forested or a distance from the road (generally over 1/4 mile) is too great to clearly see the corridor, it will be walked with a single transect (one archaeologist). Specific areas that appear to be sensitive, e.g., locally prominent rises, areas near good sources of potable water etc., will be marked on maps and then intensively inspected. Metcalf Archaeological Consultants, Inc. will coordinate the reconnaissance inventory with the geomorphological survey since each may provide useful information and observations to the other.

Native American Consultation

Metcalf Archaeological Consultants will first contact all involved Federal agencies and confirm that we should initiate consultation on their behalf (Federal agencies are restricted in delegating that responsibility). For those agencies that do request the proponent (TransCanada) initiate consultation, SHPOs and any appropriate Federal agencies will be contacted and requested to provide information about appropriate tribes to contact along with individual contact names and address for those tribes. We will also research appropriate literature, including the Smithsonian Handbook of North American Indians, to help determine tribes that may have an interest in the project area. We will contact those tribes by mail (certified, return requested) inviting them to be consulting parties under Section 106 of the NHPA for the project. We will address any responses from tribes as they are received, in consultation with ENSR, SHPO, etc.

Appendix A
Records Search Results

Confidential Information removed from document

Appendix B
Project Corridor Maps

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