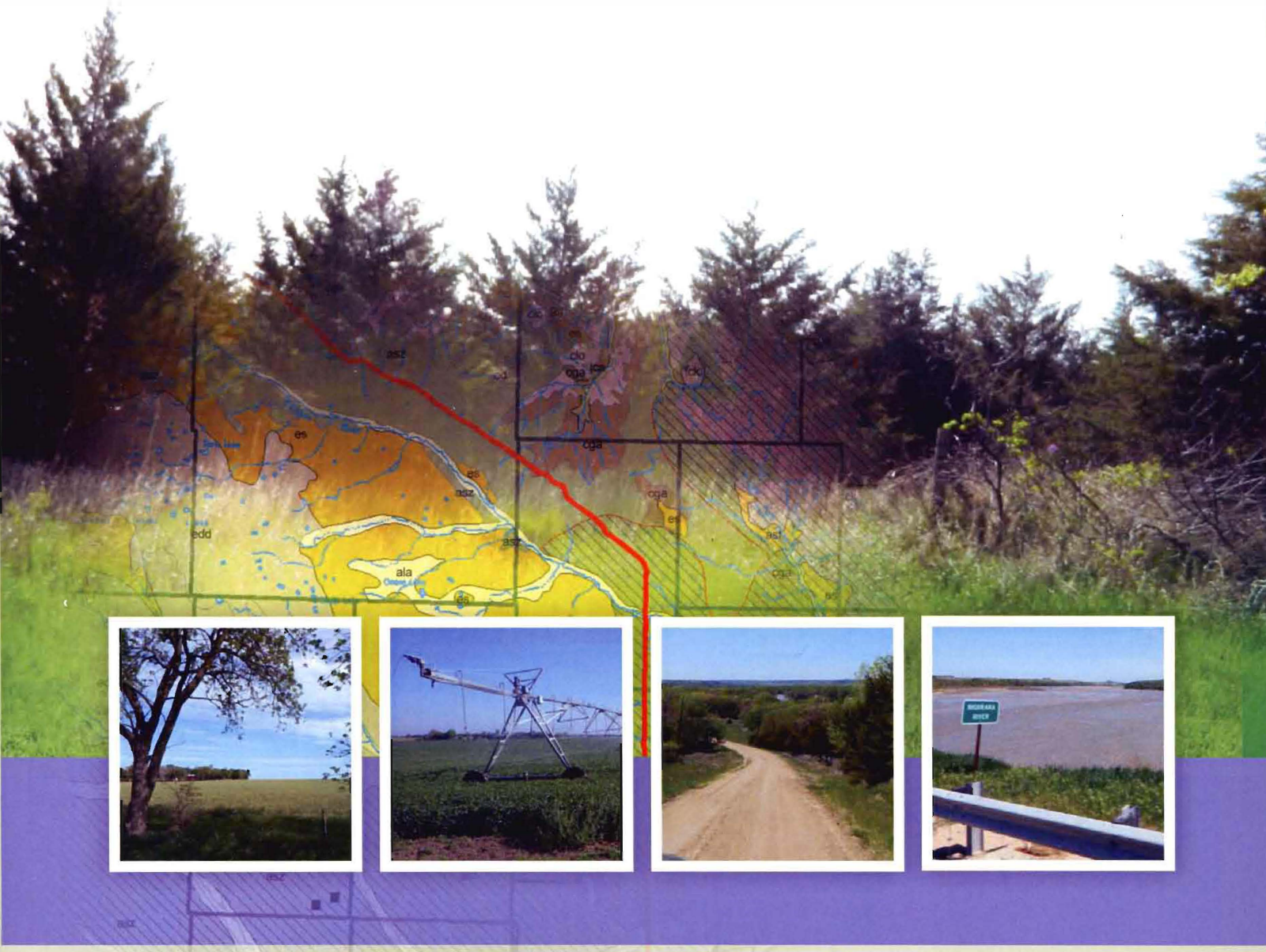
Nebraska Department
of Environmental Quality

NEBRASKA'S Keystone XL Pipeline Evaluation



NEBRASKA'S KEYSTONE XL PIPELINE EVALUATION

FINAL EVALUATION REPORT

VOLUME FOUR | Appendix H

January 2013

Appendix H

NDEQ Requests for Information

Appendix H.1

Feedback Report

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Nebraska's Keystone XL Pipeline Evaluation Feedback Report 7/2012

Nebraska Department
of Environmental Quality

NEBRASKA'S Keystone XL Pipeline Evaluation

NEBRASKA'S KEYSTONE XL PIPELINE EVALUATION

FEEDBACK REPORT

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CHAPTER 1
INTRODUCTION

TransCanada Keystone Pipeline, LP (Keystone) proposes to construct, operate, and maintain a crude oil pipeline and ancillary facilities from Hardisty, Alberta, Canada, to Steele City, Nebraska, referred to as the Keystone XL Pipeline project. The Nebraska Legislature directed the Nebraska Department of Environmental Quality (NDEQ) to evaluate the portion of the Keystone XL Pipeline project that has been rerouted to avoid the Sand Hills in the State of Nebraska (referred to in this document as the Nebraska Reroute or the Project). NDEQ has the authority and general jurisdiction for the administration and enforcement of environmental laws in the State of Nebraska pursuant to Nebraska Revised Statutes 81-1504. NDEQ held public information meetings along the proposed corridor and received feedback from the public. NDEQ compiled the comments to identify the issues important to Nebraskans. Those issues are presented in this Feedback Report.

1.1 PURPOSE OF FEEDBACK REPORT

Legislative Bill (LB) 4 states that "[t]he economic benefits of oil pipeline construction projects are important to the state, including the creation of jobs. Nevertheless, the benefits of any proposed oil pipeline project must be weighed against any concerns brought by the residents of Nebraska." To identify those concerns, NDEQ has held public meetings along the proposed corridor and has reviewed additional information provided in Keystone's *Initial Report Identifying Alternative and Preferred Corridors for Nebraska Reroute* (Reroute Report) to gain further understanding about how the Keystone XL Pipeline would impact Nebraska's resources.

The purposes of this Feedback Report are threefold:

- First, to summarize NDEQ's review efforts accomplished to date, and to identify the issues that Nebraskans are concerned about regarding the Keystone XL Pipeline project.
- Second, to provide Keystone a full disclosure of NDEQ's concerns so that Keystone may address these concerns in its routing decisions, as appropriate.
- Third, to provide Nebraskans with an interim status report on NDEQ's progress in meeting the directives of the Nebraska Legislature.

NDEQ understands that many of the issues identified in this Feedback Report are addressed in previous documents, such as the U.S. Department of State's (DOS's) Draft Supplemental Environmental Impact Statement (EIS) and Final EIS and Keystone's Reroute Report. NDEQ also understands that some of these issues are beyond the scope of NDEQ's evaluation. However, all issues are included here to provide Keystone a full understanding of the public sentiment about the Project and the issues to be addressed in NDEQ's Draft Evaluation Report.

Keystone is anticipated to submit an Environmental Report on the Nebraska Reroute to NDEQ in August 2012. NDEQ expects that Keystone's report will describe the proposed route and the environmental conditions along that route. After that report has been submitted, NDEQ will

review Keystone's Environmental Report and prepare a Draft Evaluation Report that describes the potential impacts of the Project. The questions identified by the public and described in this Feedback Report will be addressed in NDEQ's Draft Evaluation Report.

1.2 BASIS OF REQUIREMENT

LB 1161 directs NDEQ to evaluate Keystone's proposed Nebraska Reroute. Specifically, the required Draft Evaluation Report should "provide opportunities for public review and comment, and include, but not be limited to, an analysis of the environmental, economic, social, and other impacts associated with the proposed route and route alternatives in Nebraska." This Feedback Report is provided to Keystone consistent with the intent of the Nebraska Legislature as defined in LB 1161 and LB 4.

1.3 CONTENTS

This Feedback Report presents background information on the Keystone XL Pipeline project and the Nebraska Reroute (see Chapter 2). This report describes the actions taken by NDEQ to gather input from the public, including conducting public meetings and establishing a Project website with an electronic comment form (see Chapter 3). It also describes efforts to gather other information on the Project, including reviewing Keystone's Reroute Report and meeting with individual landowners, interest groups, and agencies (see Chapter 4). This Feedback Report also identifies the key issues that NDEQ will analyze in its Evaluation Report to the Governor (see Chapter 5) and describes NDEQ's comments regarding Keystone's corridor selection process, the proposed corridor identified in the Reroute Report, and field activities (see Chapter 6). Finally, this Feedback Report lists the additional information that NDEQ will request from Keystone to complete its analyses (see Chapter 7) and describes the activities NDEQ will undertake to complete the evaluation following Keystone's submittal of site-specific environmental data obtained in field surveys during May through July 2012 (see Chapter 8).

CHAPTER 2
BACKGROUND

The original Keystone XL Pipeline was proposed to go through the northeastern corner of the Sand Hills, an environmentally sensitive region in north-central Nebraska. The original alignment was evaluated by DOS in an EIS that was published on August 26, 2011. Based on concerns expressed by Nebraska citizens, the Nebraska Legislature, and the Nebraska Governor, a new alignment was proposed. Keystone has submitted a new proposal that avoids the Sand Hills. This chapter summarizes the project's history, describes Keystone's reroute proposal, and discusses NDEQ's relationship with DOS.

2.1 PROJECT HISTORY

In September 2008, Keystone filed an application with the DOS for a Presidential Permit. The Presidential Permit would authorize the construction and operation of the proposed Keystone XL Pipeline project at the U.S.-Canada border crossing in Montana. At that time, the proposed project consisted of a 2,232-mile-long, 36-inch-diameter pipeline and appurtenant facilities to transport crude oil from Hardisty, Alberta, Canada, to Nederland/Port Arthur, Texas. Upon receipt of Keystone's application, DOS led a comprehensive environmental review of the proposed Keystone XL Pipeline project. DOS's environmental review culminated in the publication of its Final EIS for the project on August 26, 2011.

Based on the concerns about the pipeline passing through the Sand Hills in Nebraska, LB 4 was enacted on November 22, 2011. The bill directed NDEQ to analyze the Keystone XL Pipeline within the State of Nebraska and to "ensure adequate information gathering, full and careful agency and public review, objective preparation of a supplemental environmental impact statement, adherence to a defined schedule and an appropriate role for a pipeline carrier which avoids the appearance of conflicts of interests." Based on this review, the Governor would indicate "whether he or she approves any of the routes reviewed in the supplemental environmental impact statement."

Keystone agreed to reroute the Nebraska portion of the Keystone XL Pipeline to avoid the Sand Hills and requested that the State of Nebraska define the limits of the Sand Hills for that purpose. On December 29, 2011, NDEQ provided Keystone with a Sand Hills definition based on the map titled "Ecoregions of Nebraska and Kansas." This map had been completed in 2001 as a 7-year collaboration of multiple state and federal agencies, including, but not limited to, NDEQ, the Nebraska Game and Parks Commission, the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), the U.S. Environmental Protection Agency, the U.S. Forest Service, the U.S. Geological Survey (USGS), the University of Nebraska, and the University of Kansas.

On January 25, 2012, Keystone's Presidential Permit application was denied without prejudice, and NDEQ halted active review of the pipeline in Nebraska.

In response to Keystone's expressed intent to reapply for a Presidential Permit and to affirm the Legislature's desire to have NDEQ continue its evaluation of certain pipeline projects, the Nebraska Legislature in April 2012 passed LB 1161, which the Governor signed on April 17, 2012. LB 1161 modified LB 4 and directed NDEQ to evaluate Keystone's proposed reroute of the Keystone XL Pipeline in Nebraska, to provide "an analysis of the environmental, economic, social and other impacts," and to "collaborate with a federal agency or agencies and set forth the responsibilities and schedules that will lead to an effective and timely evaluation."

On April 18, 2012, Keystone submitted a report titled *Initial Report Identifying Alternative and Preferred Corridors for Nebraska Reroute* (Reroute Report) to NDEQ. The Reroute Report provided an analysis of six alternative 2,000-foot-wide pipeline corridors that avoid the areas of the Sand Hills as illustrated on the 2001 map and identified a proposed corridor. On May 4, 2012, Keystone filed a new application for a Presidential Permit for the Keystone XL Pipeline project, reconfigured as the portion of the original project extending from the U.S.-Canada border east of Morgan, Montana, to an existing tank farm near Steele City, Nebraska.[1]

2.2 RECONFIGURED KEYSTONE XL PIPELINE

The currently proposed Keystone XL Pipeline project would consist of an approximately 854-mile-long, 36-inch-diameter pipeline to transport crude oil from Hardisty, Alberta, Canada, to Steele City, Nebraska. At Steele City, the project would connect with the Keystone Pipeline Cushing Extension. At the terminus of the Cushing Extension, the oil would be delivered into a new 36-inch-diameter pipeline to be constructed as the Gulf Coast Project for transportation to refinery markets in the Gulf Coast. The Keystone XL Pipeline would have an initial nominal throughput capacity of 700,000 barrels per day (bpd) and could be expanded to an ultimate nominal capacity of 830,000 bpd through the installation of additional pumping capacity.

The proposed project would transport crude oil extracted from the Athabasca oil sands[2] areas in Alberta, Canada, and crude oil from the oil shale taken from the Bakken Formation in Montana and North Dakota. The types of Canadian crude oil to be transported by the proposed project would consist of synthetic crude oil and diluted bitumen. Diluted bitumen, often termed dilbit, consists of bitumen mixed with a light hydrocarbon liquid such as natural gas condensate or refinery naphtha. The bitumen is diluted to improve its viscosity,[3] making it a more liquid form that can be transported via pipeline. According to Keystone, the dilbit is not heated prior to transportation through the pipeline.[4] Both synthetic crude oil and dilbit are similar in composition and quality to the crude oils currently transported in pipelines in the U.S. and refined in the Gulf Coast refineries.

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1 On January 31, 2012, Keystone informed DOS that the portion of the Keystone XL Pipeline from Cushing, Oklahoma, to the Gulf Coast would be developed as the stand-alone "Gulf Coast Project."

2 Oil sands (which are also referred to as tar sands) are a combination of clay, sand, water, and bitumen, which is a material similar to soft asphalt. Only the crude oil extracted from the oil sands would be transported.

3 Viscosity is a fluid's resistance to flow. A viscous fluid, such as crude oil, is thick and syrupy.

4 The normal operating temperature of the pipeline is between 120 and 150 °F. As the oil moves through the pipeline, friction occurs, which generates heat. According to DOS's Final EIS, Section 3.5-30, pipeline operations would result in increased soil temperatures: a 4 to 8 °F increase at the soil surface, a 10 to 15 °F increase 6 inches below the surface, and up to a 40 °F increase near the pipe.

Details about the proposed Nebraska Reroute portion of the proposed Keystone XL Pipeline project are provided below. These details are preliminary and based on information in Keystone's Reroute Report and DOS's EIS documents.

2.2.1 Facilities

Keystone's Reroute Report identified a proposed corridor that starts about 1 mile south of the Nebraska-South Dakota border in Keya Paha County, Nebraska, and terminates near Central City in Merrick County, Nebraska. The Reroute Report defined a corridor that is 2,000 feet wide, is about 174 miles long, and passes through Keya Paha, Holt, Antelope, Boone, Nance, and Merrick counties (see Figure 2-1). Keystone will select the specific pipeline route from within or near that corridor[5] based on the results of field surveys that began in May 2012 and are anticipated to be completed in July 2012.

The maximum operating pressure for the pipeline will be 1,440 pounds per square inch gauge[6] (psig).[7] The pipeline will be made of high-strength steel pipe that will be tested to American Petroleum Institute specifications. Cathodic protection measures will be used to protect the pipeline against corrosion. In addition, Keystone will apply an external coating of fusion-bonded epoxy to the pipeline to help prevent corrosion.

Pumping stations will be required approximately every 50 miles along the pipeline, with the specific locations determined in part through hydraulic analysis. At least three pumping stations are anticipated along the Nebraska Reroute. Each pumping station will require an electrical substation and power line with voltage of 69 kilovolts (kV) or 115 kV. Mainline valves will be installed a minimum of every 20 miles, at pumping stations, and at environmentally sensitive locations such as certain waterbody crossings. Mainline valves can be electronically closed when a leak is detected in order to limit the volume of the oil leak. The pumping stations would include launchers and receivers for in-line inspection tools, which are used for pipeline evaluation and maintenance operations. Additional components of the proposed Project would include temporary access roads for construction, permanent access roads for operation, pipe storage sites, contractor yards, and railroad sidings.

2.2.2 Construction

The construction right-of-way (ROW) will be 110 feet wide in most areas. In certain sensitive areas, which may include wetlands, cultural or historic sites, shelterbelts, residential areas, or commercial/industrial areas, the construction ROW will be reduced to 85 feet. Additional temporary workspace will be needed for some construction staging areas and where special construction techniques are used, such as at waterbody crossings. Pipeline construction will generally proceed as a moving assembly line composed of specific activities, including surveying and staking of ROW, clearing and grading, trenching, pipe stringing, bending, welding, installing, backfilling, testing, and cleaning up. The typical construction sequence is shown in Figure 2-2. Keystone proposes dividing the Project into three manageable segments that separate crews can work on at the same time.

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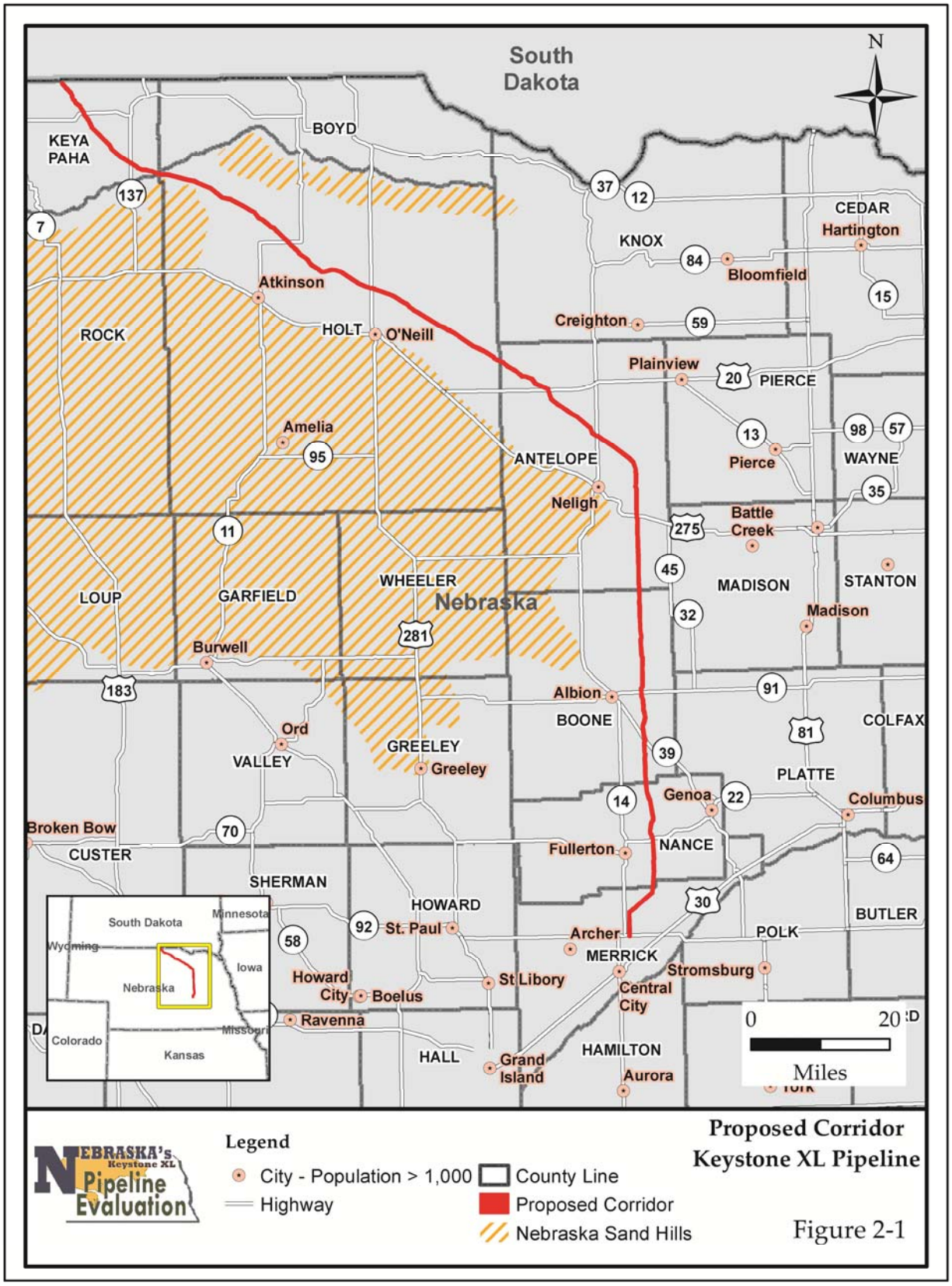
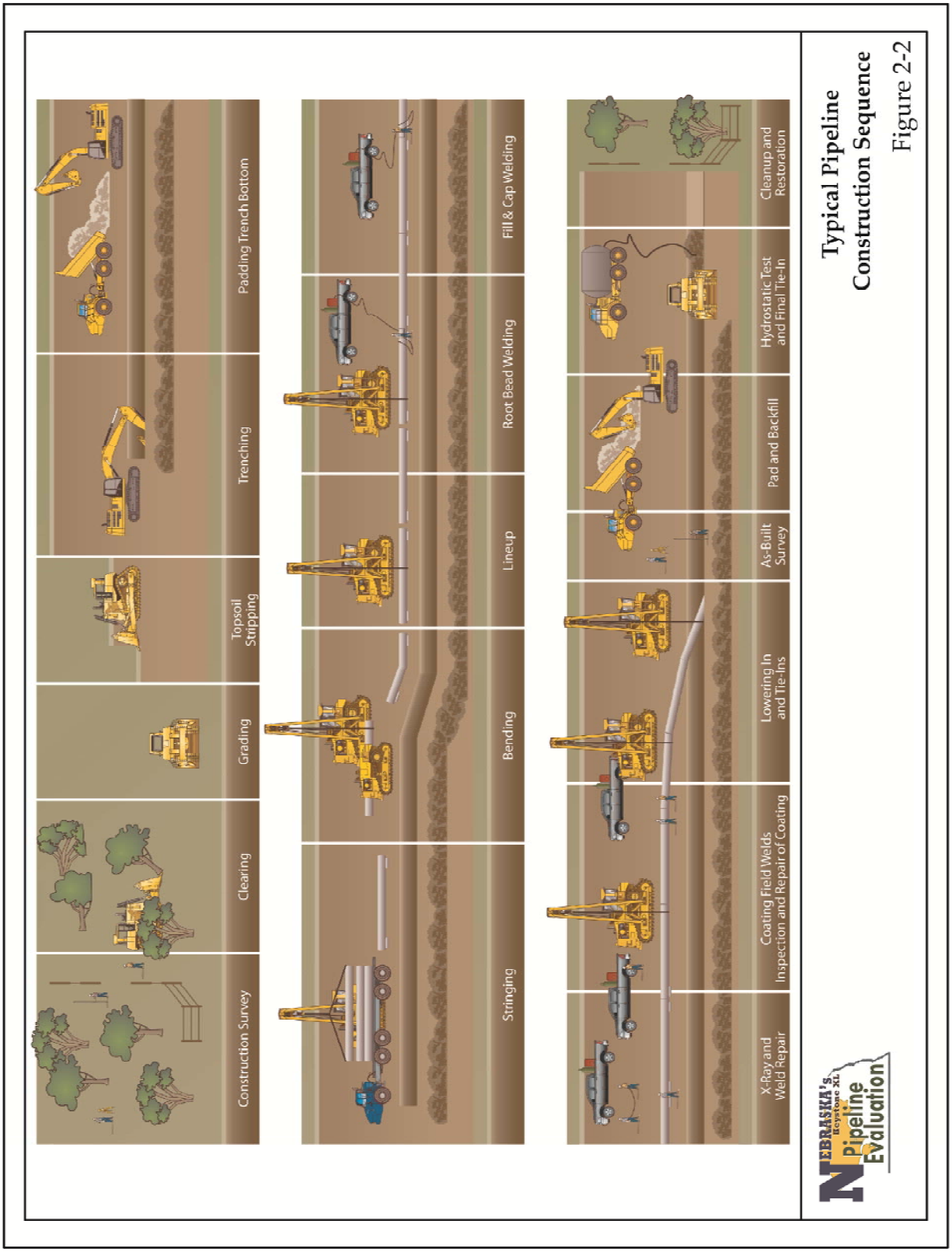
5 In some cases, the pipeline may be outside of that corridor to avoid specific physical or environmental constraints.

6 According to DOS's Final EIS, Appendix V, Keystone Response to PHMSA Comments.

7 Psig (pounds per square inch gauge) is a unit of pressure relative to atmospheric pressure at sea level and is the pressure of a system measured by a gauge above atmospheric pressure.


South Dakota
N
KEYA PAHA
BOYD
KNOX
CEDAR
Hartington
Bloomfield
Atkinson
HOLT
O'Neill
ROCK
Creighton
Plainview
PIERCE
Amelia
ANTELOPE
Pierce
WAYNE
Neligh
Battle Creek
LOUP
GARFIELD
WHEELER
Nebraska
MADISON
STANTON
Madison
Burwell
Albion
BOONE
COLFAX
Ord
VALLEY
GREELEY
Greeley
PLATTE
Genoa
Columbus
Broken Bow
CUSTER
Fullerton
NANCE
SHERMAN
HOWARD
St. Paul
BUTLER
Archer
POLK
MERRICK
Stromsburg
Howard City
Boelus
St Libory
Central City
Ravenna
HALL
Grand Island
HAMILTON
Aurora
0 20
Miles
South Dakota
Minnesota
Wyoming
Iowa
Nebraska
Colorado
Kansas
Missouri
NEBRASKA's Keystone XL Pipeline Evaluation
Legend
City - Population > 1,000
Highway
County Line
Proposed Corridor
Nebraska Sand Hills
Proposed Corridor
Keystone XL Pipeline
Figure 2-1



Typical Pipeline Construction Sequence
Figure 2-2

The pipeline will have a minimum of 5 feet of cover at waterbodies and drainage ditches adjacent to roadways, a minimum of 3 feet of cover in areas of consolidated bedrock, and a minimum of 4 feet of cover in other areas. During trenching, topsoil (up to 12 inches) will be segregated and stockpiled for subsequent reclamation. At areas of shallow groundwater, the pipeline would be weighted (such as by a concrete coating) to counteract buoyancy effects.

Waterbodies that are dry at the time of construction will be crossed using dry open-cut trench methods. In general, major waterbodies and environmentally sensitive waterbodies will be crossed using horizontal directional drilling (HDD), dry-flume, or dam and pump methods. The remaining waterbodies will be crossed using the flowing open-cut method.

The pipeline will be pressure tested for integrity after construction work is completed. Water will be used for this testing; however, the sources of this water are yet to be determined. This hydrostatic test water typically would be discharged to surface waters under a temporary National Pollutant Discharge Elimination System (NPDES) discharge permit issued by NDEQ.

After construction, the temporary ROW will be restored consistent with applicable federal and state regulations and permits, the easement agreements negotiated between Keystone and individual landowners, and Keystone's Construction, Mitigation, and Reclamation (CMR) Plan (which was provided in DOS's Final EIS as Appendix B).

2.2.3 Operation

A 50-foot-wide permanent ROW will be maintained along the proposed route during operation of the pipeline. Most agricultural crops could be grown within this permanent ROW, but structures, trees, and certain other deep-rooted vegetation will not be allowed.

Periodic in-line inspections and aerial and ground surveillance will be conducted to monitor pipeline conditions and integrity. A supervisory control and data acquisition (SCADA) system will also be used to remotely control and monitor the pipeline system. Keystone will develop an Emergency Response Plan to address potential pipeline leaks or spills.

2.2.4 Mitigation

Keystone will be required to implement mitigation designed to avoid or reduce impacts. Keystone has indicated that it will incorporate the 57 project-specific Special Conditions developed by the Pipeline and Hazardous Materials Safety Administration (PHMSA). NDEQ will require Keystone to provide a CMR Plan and a Spill Prevention, Control, and Countermeasure Plan similar to those plans provided in DOS's Final EIS (August 26, 2011). Further, NDEQ may develop additional mitigation measures applicable to the Nebraska Reroute during its environmental evaluation.

2.3 RELATIONSHIP WITH DEPARTMENT OF STATE

The Nebraska Legislature enacted LB 4 in November 2011 and amended it through LB 1161 in April 2012. These bills authorized NDEQ to collaborate with DOS on the Project and to enter into a Memorandum of Understanding (MOU) with DOS that sets forth the responsibilities and schedules that will lead to an effective and timely review of the environmental document under the National Environmental Policy Act (NEPA). NDEQ and DOS finalized an MOU on May 24, 2012. The MOU established NDEQ as a cooperating agency in the environmental review

process and DOS's commitment to fully consider the views of the State of Nebraska in conducting its environmental review consistent with NEPA.

DOS has jurisdiction for authorizing Presidential Permits for the crossing of the U.S. international border pursuant to Executive Order 11423 (33 Federal Register [FR] 11741), as amended, and Executive Order 13337 (69 FR 25299), as amended. As part of the permitting process, DOS will conduct an environmental review of the reconfigured Keystone XL Pipeline project consistent with NEPA, the National Historic Preservation Act (NHPA), and other relevant statutes.

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CHAPTER 3
PUBLIC OUTREACH EFFORTS

LB 4 calls for a "full and careful agency and public review," and LB 1161 directs NDEQ to "provide opportunities for public review and comment." This chapter summarizes the public outreach efforts NDEQ has taken to gather public input on the Project. As of June 15, 2012, NDEQ's outreach program has received over 900 comments from the public.

3.1 PRESS RELEASES

NDEQ issued three press releases about the Nebraska Reroute between April 19 and June 4, 2012. The information covered in these press releases included:

- April 19, 2012: PIPELINE ROUTE CORRIDOR REPORT FROM TRANSCANADA. This press release announced that NDEQ had received the Reroute Report from TransCanada. It described NDEQ's public involvement process and the process for developing a Final Evaluation Report that will be presented to the Governor. The press release also explained that information regarding the evaluation process would be made available to the public on NDEQ's website.
- April 26, 2012: FOUR PIPELINE INFORMATION SESSIONS TO BE HELD. This press release announced that public information open-house meetings would be held in May 2012. The press release described the purpose of the meetings and reiterated the process of the corridor evaluation.
- June 4, 2012: PIPELINE CORRIDOR MAP BOOKS LOCATED AT SIX LIBRARIES. This press release informed the public that map books of the proposed pipeline corridor were placed in six libraries located along the proposed corridor. The press release also announced the opening of the online public information meeting.

3.2 WEBSITE

NDEQ established a Project website titled "Nebraska's Keystone XL Pipeline Evaluation" at https://ecmp.nebraska.gov/deq-seis. The website includes the following pages—Welcome, Frequently Asked Questions, Public Documents Search, Meeting Documents Search, and Press Releases—and features a searchable comment function. NDEQ has also posted a file that can display geographic information using Google Earth™, the MOU between NDEQ and DOS, and a link to the Online Public Information Meeting. As of June 15, 2012, the website has been accessed on over 5,450 occasions. These visits have resulted in 120 comments. An additional 25 comments have been submitted through NDEQ's email address.

3.3 PROJECT INFORMATION LINE

A project information line (800-295-8912) was created and made available to the public on April 24, 2012. As of June 15, 2012, the project information line has received 687 telephone comments.

3.4 PUBLIC INFORMATION MEETINGS

NDEQ held four public information meetings over the course of two weeks during May 2012 to provide information to the public about NDEQ's review process and to gather public input. As a result of these meetings, NDEQ received 78 letters or written comments.

Locations for each meeting were determined by their proximity to the proposed corridor and access to community facilities capable of hosting a large gathering of citizens. Table 3-1 lists the dates, times, and locations for these meetings as well as the estimated attendance.

Table 3-1. Public Information Meetings

Date and Time	Venue Name and Address	Estimated Attendance*
May 9, 2012 4:00–7:00 p.m.	O'Neill Community Center 501 South 4th Street O'Neill, Nebraska	215
May 10, 2012 4:00–7:00 p.m.	Neligh-Oakdale High School 600 J Street Neligh, Nebraska	121
May 16, 2012 4:00–7:00 p.m.	Boone County Fairgrounds, Casey's Building 11th & Fairview Avenue Albion, Nebraska	173
May 17, 2012 4:00–7:00 p.m.	Central City Community Room (at City Hall) 1515 17th Street Central City, Nebraska	161

Note:

* *Attendance estimates include only those who registered at the sign-in table. Some attendees chose not to register and therefore are not included in the estimated attendance.*

3.4.1 Meeting Format and Materials

The meetings were conducted in the format of an open house; no formal presentations were given. The meetings provided an opportunity for the public to review Project information, speak with NDEQ officials, and submit written comments. Representatives from NDEQ and two representatives from DOS were available to answer questions and receive comments from participants. In addition, several representatives from Keystone were available during the meetings to answer questions on subjects such as ROW acquisition.

A variety of communication tools were used at each meeting, including the following:

- Informational display boards – Display boards were presented that explained NDEQ's objectives and process. Information was also presented that explained NDEQ's identification of the Sand Hills.

- Informational handouts – Informational handouts were made available to all participants. The handout included general information about the evaluation process, a list of methods available for submitting comments, a map showing the proposed corridor, and a timeline of the evaluation process.
- Scroll maps – NDEQ representatives worked with members of the public to receive input regarding specific locations on the corridor maps. Large scroll maps were laid across tables and were used to plot comments that were later recorded using geographic information system (GIS) coordinates. Each dot marked on the map was associated with a specific comment. This information was recorded and is presented in the Appendix to this Feedback Report.
- Two map books – Maps of the proposed corridor were presented at a very large scale, enabling individuals to clearly identify property features.
- Map request cards – At the Albion and Central City public information meetings, map request cards were made available to participants who expressed interest in having a map of a specified location sent directly to them. These requests cards were made available at only the final two meetings based on feedback received at the first two meetings that some participants were experiencing difficulty locating and acquiring the maps on their own. Seven map requests were received at the Albion meeting, and seven map requests were received at the Central City meeting.
- iPad Stations (2 to 4 units) – These stations were provided to allow people to submit a comment electronically during the meeting.
- Paper comment forms – Paper comment forms were made available to all participants and could be submitted during the meeting or mailed to NDEQ at a later date.

3.4.2 Participation

The public meetings were advertised in area newspapers and on NDEQ's website. As shown in Table 3-1, over 670 persons attended the four public meetings.

Representatives from the media were also invited, and many attended the meetings. Table 3-2 lists the media affiliates that attended each meeting.

Table 3-2. Media Affiliates Attending Public Information Meetings

O'Neill	Neligh	Albion	Central City
DTN/The Progressive Farmer	KOLN/KGIN-Channel 10/11 (Lincoln/Grand Island)	Albion News	Aurora News-Register
Frontier and Holt County Independent	Nebraska Public Radio Network	Columbus Telegram	Central City Republican Nonpareil
Lincoln Journal Star		NTV News	Hastings Tribune
Norfolk Daily News			KHAS-TV
			KRGI-AM
			NU Press

Representatives of several organizations were also present at all of the public information meetings. These groups were allowed by NDEQ to place copies of one handout at a table provided in the entryway at each meeting location. Table 3-3 lists organizations that attended the public information meetings.

Table 3-3. Organizations Attending Public Information Meetings

Organization Name
Americans for Prosperity-Nebraska
BOLD Nebraska
Energy Citizens
National Wildlife Federation
Nebraska Watchdog
Nebraskans for Jobs & Energy Independence
Pipeline Safety Trust

3.4.3 Map Book Availability

After the close of the public informational meetings, map books were placed in six local libraries along the proposed pipeline corridor, as listed from north to south in Table 3-4.

Table 3-4. Area Libraries with Map Books

Community	Library Address
Springview	Keya Paha County Library 118 South Main Street Springview, NE
O'Neill	O'Neill Public Library 601 East Douglas Street O'Neill, NE
Neligh	Neligh Public Library 710 Main Street Neligh, NE
Albion	Albion Public Library 437 South 3rd Street Albion, NE
Fullerton	Fullerton Public Library 903 Broadway Street Fullerton, NE
Central City	Central City Public Library 1604 15th Avenue Central City, NE

NDEQ representatives met with library staff members and instructed staff how to help the public use the map books and website and provided each library with map request cards (similar to what was distributed at the final two public meetings).

3.5 ONLINE PUBLIC INFORMATION MEETING

A self-guided online public information meeting has been established to provide electronic versions of the information available at the traditional public information meetings held during May 2012. The online public information meeting can be accessed through NDEQ's Project website at https://ecmp.nebraska.gov/deq-seis. The virtual forum includes a welcome and introductory comments from NDEQ Director Mike Linder, meeting boards, maps that can be enlarged to show detailed areas for easier viewing, methods for public comment, and an electronic comment form that can be completed while viewing the meeting materials and submitted at any time during the session. As of June 15, 2012, the site has been accessed on 198 occasions, with 165 unique visits.

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CHAPTER 4
NDEQ'S ACTIONS TO GATHER INFORMATION

In addition to holding public information meetings, NDEQ met with agencies and landowners, observed Keystone's field activities, and independently reviewed information provided by Keystone so that a complete understanding of the Project can be established. This chapter summarizes the activities undertaken thus far during NDEQ's independent review.

4.1 AGENCY COORDINATION

NDEQ has coordinated with state and federal agencies. Coordination letters were sent to seven state agencies, nine local Natural Resources Districts (NRDs), and four federal agencies. To help facilitate coordination with the NRDs, NDEQ also invited comments from the Nebraska Association of Resources Districts (NARD). NARD is the professional association for Nebraska's 23 NRDs.

NDEQ met with seven of the nine NRDs crossed by Keystone's proposed corridor. At this meeting, held in early May 2012, NDEQ gathered information from NRD managers about the potential concerns and impacts of the Project. Following the public information meetings described in Chapter 3, NDEQ met with representatives from the Nebraska Department of Health and Human Services, the Nebraska Department of Natural Resources, the Nebraska Game and Parks Commission, the Nebraska State Historic Preservation Office, the Lower Niobrara NRD, and USDA NRCS.

NDEQ anticipates meeting with the U.S. Environmental Protection Agency in the near future. NDEQ would provide any relevant information from that meeting to Keystone for consideration in its Environmental Report.

4.2 NDEQ MEETINGS WITH LANDOWNERS

During the public information meetings, six landowners met with or wrote to NDEQ and asked to meet with NDEQ representatives on their properties so that NDEQ could gain first-hand knowledge of the site conditions and understand the individual landowner's concerns. Two of the meetings were at properties in Keya Paha County and four were in Holt County. These meetings provided information regarding the proposed corridor that could not be obtained from aerial photography or observations from county road ROW.

Concerns expressed during the landowner meetings are reflected in NDEQ's comments presented in Chapter 6 and in NDEQ's requests for additional information listed in Section 7.5.

4.3 FIELD ACTIVITIES

NDEQ viewed portions of the proposed corridor in early May 2012 and during the period when the public information meetings were held. These inspections were conducted from county road ROW; no private property was entered. Additional visual inspection was conducted during the on-site meetings with individual landowners.

Keystone has been collecting environmental and other resource data since late May 2012 from landowners who allowed access to their properties. Data collection by Keystone was accomplished using survey teams experienced in several disciplines. These disciplines and survey objectives are the following:

- Construction Reclamation – Collecting data on areas where reclamation may be challenging, on noxious weed locations, on threatened and endangered plant species locations, and on soil characteristics to determine restoration limitations/revegetation potential
- Biology – Collecting data on wetlands and other waterbodies, on noxious weed locations, and on man-made features
- Cultural Resources – Conducting pedestrian survey for archaeological and paleontological features
- Civil Survey – Surveying man-made features, such as roadways and bridges
- Geotechnical – Detailing geological evaluation at select locations
- American Burying Beetle – Conducting surveys for presence of American burying beetle

Keystone determined that a 500-foot-wide corridor would be used for the Study Area for data collection. In addition, roads that would serve as construction access roads were examined to determine if roadway improvements would be needed.

NDEQ participated in Keystone's safety training for the field activities, and NDEQ's contractor observed a representative sample of Keystone's data collection. NDEQ's comments on these observations are presented in Chapter 6 of this Feedback Report.

4.4 REVIEW OF KEYSTONE AND OTHER PUBLISHED MATERIALS

NDEQ has reviewed Keystone's Reroute Report and DOS's Draft Supplemental EIS and Final EIS. In addition, NDEQ has reviewed relevant information available from the Nebraska Conservation and Survey Division, the Nebraska Department of Natural Resources, and USDA NRCS as well as data available from NDEQ databases. These data have included registered well data, soil surveys, water table elevation data, and aquifer data.

The purpose of this review was to determine if the conclusions stated by Keystone in its Reroute Report were adequately supported, and if the Reroute Report provided sufficient information for NDEQ to complete its Draft Evaluation Report in a timely and cost-effective manner. Results of this review are presented in Chapters 6 and 7 of this Feedback Report.

CHAPTER 5
ISSUES IDENTIFIED BY NEBRASKANS

NDEQ has initiated a comprehensive effort to gather public input regarding the Project. This effort has revealed that Nebraskans are divided about the proposed Keystone XL Pipeline. Some Nebraskans said they were in support of the project and to "get it done," adding that the jobs it could create are important to Nebraska's economy. Others expressed the opinion that the pipeline should not be built at all or should be built "somewhere else" because of concerns about sandy soils or the Ogallala Aquifer. The full range of comments that identify the various issues of importance to Nebraskans will be addressed in NDEQ's Draft Evaluation Report.

NDEQ understands that some of these issues are addressed in previous documents, such as DOS's Draft Supplemental EIS and Final EIS, and Keystone's Reroute Report. NDEQ also understands that some of these issues may be beyond the scope of NDEQ's evaluation. However, all issues are included here to provide Keystone and the public with a full narrative of the public's concerns as of June 15, 2012.

NDEQ categorized approximately 19 topics and 67 unique issues. These topics and issues are described below.

5.1 ECONOMIC BENEFITS AND CONCERNS

The potential impacts on Nebraska's economy were one of the issues raised. Some commenters argued that the pipeline would bring economic benefits to Nebraska while others argued that any short-term benefits would be outweighed by potential environmental damages. Specific concerns focused on how Keystone will work with landowners to ensure that they do not experience any economic hardships as a result of the pipeline. Other concerns included the potential effects on existing irrigation systems, wells, and crops; tax implications to individuals as well as counties; and short- and long-term employment opportunities. Questions commonly asked by the public included:

- How many short-term and long-term jobs will the Project create?
- Will farmers be compensated for loss of income that may occur as a result of a leak?
- What tax benefits will befall county and local governments? Will loss of income to area landowners during construction result in tax hardships?
- What are the rights of the landowners if Keystone transfers pipeline ownership to another company?
- If Keystone defaults on construction loans or sells the pipeline to others, what instruments would be in place to hold the landowners and State of Nebraska harmless from any financial obligations resulting from such default?

5.2 ALTERNATIVE CORRIDORS

Many commenters questioned why the Keystone XL Pipeline cannot be located parallel to the existing Keystone Oil Pipeline, which became operational in June 2010 and runs through eastern

Nebraska, or other existing utility corridors instead of on a new alignment. Commenters also expressed the belief that there are other, safer alternatives than crossing the Ogallala Aquifer, such as through Boyd County, where the soils have a greater percentage of clay and where the Sand Hills can be more easily avoided.

5.3 SAND HILLS

Commenters expressed concern about how the Sand Hills were defined, especially because attributes of the Sand Hills, including fragile soils, can be found in areas beyond that defined as the Sand Hills by NDEQ in December 2011. Many of these areas were identified by commenters during the public information meetings. NDEQ will address these concerns further in Section 6.2. Questions frequently asked by the public included:

- What process did NDEQ use to define the Sand Hills?
- How will Keystone ensure that sandy soils are stabilized and restored to a condition that will enable vegetation to quickly re-establish?
- How will Keystone deal with wetlands, wet meadows, and sub-irrigated meadows?

5.4 OGALLALA AQUIFER AND WATER QUALITY

Concerns for the Ogallala Aquifer were paramount to Nebraskans. Damage to this "precious resource" would be "devastating" (in the words of some commenters) to Nebraska's economy and livelihood. Commenters were also very apprehensive that a spill above the Ogallala Aquifer could not be fully remediated and that the quality of drinking water for humans and livestock would be substantially impacted for this and future generations. NDEQ is well aware of the importance of groundwater quality and will address this concern further in Section 6.2. Concerns commonly expressed by the public included:

- Will portions of the pipeline that are constructed in the Ogallala Aquifer receive special protection, such as a double wall or a heavy thickness pipe, to protect this "precious resource" against leaks and potential groundwater contamination?
- If a leak occurs into the Ogallala Aquifer, how will it be cleaned up? Can it be fully cleaned up? Who will pay for the cleanup? Will farmers be compensated for long-term damages if the leak results in loss of crops?
- Will Keystone monitor the water quality of wells that are in the Ogallala Aquifer and within the Project corridor? How long will Keystone monitor water quality? If Keystone does not propose to monitor water quality, will NDEQ conduct this monitoring?
- Keystone has stated that it will avoid wellhead protection areas. Is there a minimum horizontal distance that will separate the pipeline from domestic or irrigation wells? Is there a distance that will separate the pipeline from municipal well fields?

- In the areas where the pipeline intersects groundwater, will the pipeline and associated trench alter groundwater flow? How will the pipeline and trench intersecting groundwater-fed springs affect their flow? If groundwater flow is affected, how will that be mitigated?

5.5 PIPELINE CONSTRUCTION, OPERATION, AND MAINTENANCE

Construction impacts of the proposed pipeline were of major concern to many commenters. For example, commenters were concerned about the area's water supply during construction, operation, and maintenance of the pipeline. Questions frequently asked by the public included:

- How will the pipeline be constructed through areas of hilly terrain, wetlands, and shallow water tables?
- How much water will be needed during construction to ensure proper compaction? What will be the source of that water?
- How will construction materials be delivered to the construction site? How will yard sites for materials storage be identified? Will landowners be compensated for allowing materials storage? Will these areas be restored to their previous use following construction?
- How many pumping stations will be needed, and where will they be located? What security measures will be taken to prevent vandalism at these stations? What measures will Keystone take to ensure that stream channel degradation does not result in exposure of or damage to the pipe?
- How much water will be needed at pumping stations?
- How much noise would occur from pumping station operation, and will this noise be mitigated?

5.6 WATERBODIES

Commenters expressed concern about damage to waterbodies during construction and operation of the proposed pipeline, and asked how crossings would be constructed and rehabilitated. Commonly asked questions from the public included:

- How will Keystone cross important rivers such as the Niobrara, Elkhorn, Loup, and Platte? How will river, stream, and other waterbody crossings be restored after construction? Will Keystone monitor this restoration for long-term success?
- In streams where Keystone proposes to cross using an open cut, what measures will be taken to prevent damage from flash flooding? What measures will be taken to restore stream bed and banks?
- At waterbody crossings where Keystone proposes to use HDD techniques, how much water will be needed and what will be the source of that water?

5.7 CORROSION

Many commenters are concerned about the integrity of the pipe because of the shallow water tables and prolific farming operations. Commenters cited the pipeline ruptures in the Kalamazoo and Yellowstone Rivers, specifically. Questions asked by the public included:

- How will Keystone prevent corrosion of a steel pipe when it is immersed in water?
- Farmers will use chemicals extensively during the growing season. Will these chemicals accelerate corrosion? Will run-off or seepage from feedlots accelerate corrosion?

5.8 SPILLS, CONTAMINATION, AND CLEANUP

The proposed pipeline would pass through some of Nebraska's most valuable resources, and commenters were concerned about the consequences of a minor leak or an even more serious event that could impact those resources. Commenters wanted to know what safeguards will be in place to prevent or detect leaks, the historical effectiveness of these safeguards, and how the industry incorporates "lessons learned" from spills. Commenters asked about response protocols and the level of training needed for emergency responders. Frequently asked questions from the public included:

- Who will conduct and pay for emergency responder training? Will Keystone provide the necessary equipment to emergency responders and to nearby hospitals who may have to treat victims of exposure to product spills?
- How will spills be cleaned up? Who will pay for cleanup and the damages that may result? Will the landowner bear any liability or responsibility for cleanup?
- What provisions are included to prevent pipeline rupture in the event of a sudden, unexpected valve closure?
- What methods does the industry use to ensure incorporation of lessons learned? For example, the spills into the Kalamazoo and Yellowstone Rivers made national headlines. What lessons did Keystone take from these accidents, and how are they incorporated into the proposed design of the pipeline and in its Spill Prevention, Control, and Countermeasure Plan?

5.9 LEAK DETECTION

Several commenters expressed concern that pipeline leaks are inevitable. Many cited the leaks that occurred on the existing Keystone Oil Pipeline. Questions commonly asked by the public included:

- How quickly can leaks be detected? How much product might be lost during the time between breach and response? How quickly and to what extent would such a leak contaminate an aquifer or waterbody given the site conditions in the proposed corridor?
- What safeguards are present to detect and prevent leaks? What is the history of the effectiveness of these safeguards? How often have these safeguards failed?
- What was the response time for leaks that occurred on the Keystone Oil Pipeline? Do any cleanup or remediation activities remain to be completed?

5.10 PRODUCT CHARACTERISTICS AND HEALTH EFFECTS

Commenters expressed concern that it is not only the oil itself, but also the dilutants and other constituents in the oil that are potentially harmful to human health and the environment. Of further concern was the potential for water soluble chemicals (such as benzene, toluene, ethylbenzene, and xylene) to contaminate the water supply in the event of a spill or undetected leak. Concerns expressed by the public included:

- What are the characteristics of the products being transported? What chemicals will be added to facilitate movement through the pipeline?
- How toxic are the products being moved through the pipeline? What are the health risks from exposure? Will emergency responders receive specific training to diagnose and treat exposures to dilutants and other chemicals in the oil?
- Are any of the dilutants that are added to the crude oil water-soluble? How would these chemicals be removed from groundwater in the event of a spill or leak?
- Will Keystone or NDEQ regularly monitor rural water wells for the chemicals that may enter the water supply as a result of an undetected leak?

5.11 TEMPERATURE

Crop production is a dynamic activity that is dependent on a number of factors, including rainfall and temperature. Area farmers expressed concern about high temperatures in the pipeline affecting the productivity of their farms and ranches. Also, the corridor crosses a stream that is known for its trout habitat, and commenters were concerned that increased temperatures from the pipeline could affect fish productivity. Questions asked by the public included:

- What will the temperature of the product be? Will a higher temperature affect the freeze-thaw cycle?
- How will a higher temperature affect seed germination, crop growth, and water evaporation?
- Will the higher temperature of the ground surrounding the pipeline translate to increased temperatures of streams and other waterbodies? If yes, could these temperatures result in degraded fisheries?

5.12 SOILS AND EROSION

Commenters expressed concern that the proposed corridor still crosses areas of sandy and highly erodible soils. Commenters also asked about impacts to shelter belts and how those impacts would be mitigated and remediated. Commenters were uncertain of Keystone's ability to remediate the natural vegetation that protects sandy, erodible soils in a timely and effective manner. Commonly asked questions from the public in this category included:

- How will the pipeline be constructed through loose and sandy soils? How will trench cave-ins be avoided? How will construction be accomplished when these soil conditions occur in areas of shallow water table (that is, 2 feet or less)?
- How will construction affect shelterbelts and the effectiveness of these areas in reducing wind erosion?

- How will Keystone ensure the success of soil stabilization and vegetation reclamation following construction?
- Will Keystone monitor the post-construction area for obvious signs of wind and water erosion? If so, for how long? What remedies will be available to the landowner where erosion has occurred outside of the ROW but is nevertheless a direct result of the pipeline construction?
- If an area has to be fenced off to allow for revegetation, how will erosion due to increased cattle movement along the fence line be addressed?

5.13 GEOLOGY

Commenters expressed concerns that the pipeline could be affected by seismic activity or unusual geologic phenomenon. Specific questions from the public included:

- How could earthquakes affect pipeline integrity? The area north of the Niobrara River has experienced earthquakes in recent memory. What special measures will be taken to prevent earthquakes from damaging the pipeline?
- Will the pipeline be constructed in areas of karst topography? If yes, what measures will be taken to ensure safe construction and operation?

5.14 PROPERTY VALUES

A common concern was that the pipeline would decrease property values. Some commenters questioned whether potentially diminished property values would make future generations reluctant to invest in farming in the area.

5.15 EASEMENTS

Uncertainty exists surrounding the easements needed for pipeline construction and operation. Commonly asked questions included:

- Who is responsible for maintaining the easement? For example, who would remove trees?
- Can the landowner irrigate over the pipeline construction area?
- What is the width and depth of the easement? Does the landowner relinquish his or her mineral rights?
- Is it appropriate to give the power of eminent domain to a foreign company?

5.16 FARM OR RANCH OPERATIONS AND ASSOCIATED INFRASTRUCTURE

Many farmers and ranchers expressed concerns about how the pipeline would limit or impact their farming operations during construction and operation. Frequently asked questions included:

- Where the pipeline crosses through existing farmland, how will Keystone work with landowners during the growing season? How will Keystone avoid impacting irrigation systems, particularly pivot and gravity-fed systems, and their supporting infrastructure?

- How will construction be performed to avoid or minimize impacts on existing irrigation infrastructure, such as electrical power?
- Will Keystone compensate farmers for loss of income when their fields cannot be farmed, such as during construction?
- Will a permanent access road be needed? If so, who will maintain that road, and who will pay for the maintenance?
- How will construction affect drain tiles? Will Keystone restore the drainage where it is impacted?
- What provisions will be taken to prevent impacts on livestock during construction? For example, will Keystone ensure that construction crews close gates or that damaged fences are repaired or that activities are done at times that would avoid sudden or disturbing noises?
- What measures will Keystone take to ensure that topsoil that is removed for trench construction is replaced in the correct order? How will Keystone ensure the success of soil stabilization following construction and that the construction site is restored to a condition that will enable pasture or crops to quickly re-establish?

5.17 PUBLIC SERVICES

Some commenters expressed concern about impacts on rural, farm-to-market roads as a result of heavy construction traffic. Concerns frequently expressed by the public included:

- Will roads be improved prior to construction? How will Keystone compensate local governments for damages done to roads during construction? Will roads be improved prior to construction?
- What special measures will Keystone use to avoid underground electrical cables, telephone lines, and fiber optic cables?

5.18 SPECIAL LAND DESIGNATIONS

Specific concerns were raised about lands that are registered in federal programs for wetlands, grasslands, or other conservation reserve programs. Commenters asked if the pipeline would avoid these areas and, if not, how Keystone will compensate landowners for leaving the programs. Commenters also asked about properties that are now administered by the Nebraska Land Trust. Additional concerns of the public included:

- Will lands that are currently registered with USDA NRCS under the Conservation Reserve Program (CRP), the Wetlands Reserve Program, or the Grassland Reserve Program be avoided? Will lands under similar programs with the Nebraska Game and Parks Commission be avoided? If not, how will the landowners be compensated for the loss of revenue from these programs?
- Will the landowners also be compensated for any penalties for leaving these programs?
- Will lands that are held in permanent easement for other uses, such as wetland mitigation, be avoided? If not, what provisions will be taken to compensate for the loss of use?
- Will lands administered by the Nebraska Land Trust be avoided?

5.19 NATIVE AMERICAN AND CULTURAL RESOURCES

Some commenters indicated that sensitive cultural and Native American sites are located within the corridor. Specific questions asked by the public included:

- Will the pipeline avoid areas of Native American burials, traditional cultural properties, and other archaeological sites?
- How will accidental discoveries of paleontological or archaeological sites during construction be handled? What procedures or mitigation measures will be in place to ensure the integrity of such discoveries?

5.20 OTHER ISSUES

Several commenters raised questions about the mining of tar sands and the effects of this activity on global climate change. Others asked about the ultimate market for the oil, questioning why Nebraskans should bear the environmental burden of a product "just so they can sell it to China." While these issues may be important, they will not be discussed in NDEQ's Draft Evaluation Report. In LB 1161, the Legislature directed NDEQ to evaluate the impacts on Nebraska of any route for an oil pipeline within, through, or across the state. The questions about tar sands, the end use of the oil, and the future use of the pipeline are beyond the scope of NDEQ's authority and legislative charge.

CHAPTER 6
NDEQ COMMENTS

In addition to public comments received, NDEQ has reviewed pertinent environmental data that is publically available as well as information provided by Keystone. This chapter describes NDEQ's comments regarding Keystone's corridor selection process, the proposed corridor identified in the Reroute Report, and field activities conducted between May and July 2012.

6.1 CORRIDOR SELECTION PROCESS

NDEQ has reviewed Keystone's Reroute Report, which describes the route identification process and the criteria used during the corridor selection. From this review, NDEQ has found several items requiring clarification, as follows:

- In Section 2.9.4.1, Avoidance Areas – Large Scale, the conservation easements administered by the Nebraska Land Trust along the route appear to have been omitted. Keystone should explain how conservation easements were treated in its routing evaluations.
- Section 3.3, Geology, states that the geology beneath the Nebraska Reroute study area is detailed in Table 2; however, Table 2 is titled Constraints Analysis for Corridor Segments. Where is the corridor geology detailed?
- Section 3.7, Groundwater, mentions a 10-mile portion of the pipeline corridor where "no identified aquifer exists." However, there are a number of registered wells within and immediately adjacent to the corridor. How will aquifers not identified on reference material be identified by Keystone?
- In Table 2, Constraints Analysis for Corridor Segments, Option G is shown to be over 72 miles long but crossing only 0.1 mile of "Land use, Herbaceous/River/open water wetlands." Keystone should clarify this conclusion and provide the methodology used to determine this and other data in that table.
- What criteria, such as National Hydrologic Data criteria, were used to calculate the open water miles crossed?
- What criteria and methodologies were used to differentiate between pasture/hay, a forage crop, and the grassland/herbaceous group? The estimates for grasslands appear to be excessively high when compared to pasture.
- Regulatory criteria are offered as a factor in the selection of the preferred option; however, these criteria do not appear to be addressed in Section 5.0, Recommendation. What criteria were considered, and how were they used in the selection process?

6.2 PROPOSED CORRIDOR

NDEQ finds that the proposed corridor as shown in the Reroute Report meets the intent of the Nebraska Legislature in avoiding the Sand Hills as defined by NDEQ in its press release dated December 29, 2011. However, there are areas along the proposed corridor where fragile soils and aquifer protection are concerns, as detailed below.

6.2.1 Fragile Soils

NDEQ notes that the proposed corridor still crosses areas of fragile, sandy soils that are outside of the Sand Hills ecoregion but that have surface features very similar to the Sand Hills. These soils are identified as USDA NRCS Soil Survey wind erodibility groups 1 and 2, having wind erosion potential of greater than 134 tons per acre per year. Because of the erodibility of these soils, Keystone should carefully consider route variations that will avoid these areas. Keystone should also document and describe these considerations for NDEQ. Where avoidance is not possible, Keystone should document why avoidance is not possible and describe for NDEQ the measures that it will take to minimize disturbance to these areas. For unavoidable impacts, Keystone should describe the measures it intends to use to restore these areas to their original condition. This request is further discussed in Section 7.4.1 of this Feedback Report.

6.2.2 Aquifer Protection

There are areas along the corridor in which only thin unconfined aquifers exist and contain no developed cropland (mainly north and west of Stuart, Nebraska). These aquifers often provide the only source of drinking water for local residents and livestock. Several of these areas approach the definition of Unusually Sensitive Areas as provided in 49 Code of Federal Regulations (CFR) 195.6 regarding Transportation of Hazardous Liquids by Pipeline. The Clarks Wellhead Protection Area, which is downgradient of the proposed corridor, also exists in a thin, unconfined aquifer.

Keystone should carefully consider route variations that will avoid these thin, unconfined aquifers. Keystone should also document and describe these considerations for NDEQ. Where avoidance is not possible, Keystone should document why avoidance is not possible and describe for NDEQ the measures that it will take to protect groundwater quality in these areas. Where avoidance is not possible, Keystone should describe the measures it intends to use during and after construction to minimize impacts on groundwater supplies for human and livestock consumption. This request is further discussed in Section 7.4.2 of this Feedback Report.

In areas adjacent to perennial streams (for example, Beaver Creek and the Elkhorn River), there are alluvial aquifers consisting of sandy soils and shallow depth to groundwater that provide the primary source of drinking water for livestock as well as for private drinking water wells. Keystone should describe the measures it intends to use during and after construction to protect these alluvial aquifers.

6.3 FIELD ACTIVITIES

Keystone is conducting surveys of the proposed corridor to collect environmental resource data that will be used to determine the final route alignment. NDEQ conducted periodic observations of these field activities to determine that proper data collection and reporting techniques were used.

NDEQ finds that Keystone has conducted its field data collection efforts in a manner consistent with the standards of the industry. The environmental data collected and reported to date appear to be reliable and of acceptable quality. In addition, NDEQ noted that Keystone's field crews appeared sensitive to the public regarding access onto private property. For example, NDEQ observed that Keystone's crews verified through a land agent that access was granted prior to entering onto a tract of land.

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CHAPTER 7
INFORMATION REQUESTED FROM KEYSTONE

Keystone's Reroute Report identified a 2,000-foot-wide proposed corridor that avoids the Sand Hills. This corridor has been refined to a 500-foot-wide corridor and is now being studied through field surveys for construction reclamation constraints, cultural resources, and biological resources (including wetlands). The results of these field surveys and related additional studies will be presented by Keystone in an Environmental Report that defines a proposed pipeline route. NDEQ anticipates that the information provided in Keystone's Environmental Report will, at a minimum, be similar in content to the information provided in its Reroute Report but will provide greater detail.

NDEQ's Draft Evaluation Report will focus on resources and issues of concern to the State of Nebraska and its residents, especially affected landowners. To that end, NDEQ has identified the following information that will be needed for its evaluation. This is not intended to be a comprehensive list, but rather a specific list of items that are of particular interest at this time. NDEQ expects to have further requests following Keystone's submittal of its Environmental Report in August 2012.

7.1 FACILITIES

In its Draft Evaluation Report, NDEQ will describe the pipeline, including its configuration, construction methods, and related facilities. NDEQ requests the following information to prepare this description:

- Mapping of the proposed alignment that shows preliminary mileposts (MPs), construction ROW, and additional temporary workspaces
- A table listing the additional temporary workspaces by preliminary MP and the reason why each is necessary
- A table indicating by preliminary MP where Keystone deviated from the corridor presented in the Reroute Report and the rationale for each deviation
- Preliminary locations and sizes of pipe storage yards, contractor yards, and railroad siding locations superimposed on USGS 7.5-minute quadrangle maps
- Preliminary locations of construction work camps, if any, and the associated infrastructure that would be required for operation of these camps
- Electronic submittal of shapefiles with pipeline centerline and preliminary MP as well as construction ROW, additional temporary workspaces, and pipe storage yards
- A table indicating the land requirements for construction, including pipeline construction ROW, pipe storage yards, contractor yards, railroad sidings, and additional temporary work spaces
- Identification of existing roads used for construction access that would require modification, and what modifications are required

- Preliminary locations of pumping station facilities, including access roads, and power supplies
- Preliminary locations of new temporary and permanent access roads not associated with pumping stations, if any
- Preliminary locations of main line valves and in-line inspection facilities
- Approximate start and end points of construction spreads by preliminary MP
- Preliminary plan and profile drawings for each of the pumping stations illustrating noise attenuation and visual screening plans

7.2 CONSTRUCTION METHODS

The Final EIS, published by DOS on August 26, 2011, contains information on standard construction methods. NDEQ requests that any changes to these methods pertaining to the Nebraska Reroute be identified and described in Keystone's Environmental Report along with an updated construction schedule. Additionally, NDEQ requests the following information associated with special construction methods:

- Provide a table indicating those areas (by preliminary MP) that Keystone anticipates will be marked for special construction techniques, such as wetland crossings or steep terrain.
- In Keystone's CMR Plan (which was provided in DOS's Final EIS as Appendix B), Section 4.3 states, "The objective of topsoil handling is to maintain topsoil capability by conserving topsoil for future replacement and reclamation and to minimize the degradation of topsoil from compaction, rutting, loss of organic matter, or soil mixing so that successful reclamation of the right-of-way can occur." Additionally, Keystone states, "In the process of constructing a pipeline, TransCanada takes great care to maintain the productive capability of all lands disturbed by construction by implementing topsoil conservation procedures. This activity supports reclamation and helps to maintain the land's productive capability." Confirm that Keystone will conserve topsoil in the following situations or provide environmental reasoning why topsoil will not be preserved:
    - Actively row-cropped agricultural fields
    - Non-active agricultural lands enrolled in CRP
    - Alfalfa fields, hayfields, orchards, tree farms, and silvicultural areas
    - Pasture, grassland, and prairie
    - Sand-Hills-like areas outside the defined Sand Hills area
    - Non-inundated wetlands and riparian areas
    - Prior to grading
    - Where necessary for weed control
    - Developed areas with lawn or landscaping
    - Where requested by landowner, tenant, or land-managing agency

- Provide a copy of each type of Construction Reclamation sheet.
- Address waterbody crossings as follows:
  - List waterbodies crossed by preliminary MP, including crossing method, waterbody type, water quality information, and whether the waterbody is fish-bearing.
  - Provide preliminary site-specific crossing plans for perennial streams.
  - Indicate whether riparian topsoil will be conserved, as noted in the CMR Plan (which was provided in DOS's Final EIS as Appendix B), Detail 11, at all stream crossings or only at drainages that have no flow at the time of the crossing. Provide environmental reasoning if topsoil will not be preserved above the Ordinary High Water Mark.
  - The following statement is found on the Keystone website in the Environmental Responsibility section: "TransCanada is committed to minimizing its environmental impact along the proposed route." Provide justification for crossing flowing waterbodies by wet-trenching methods when flume or pump-around methods are feasible and would minimize environmental impacts associated with interruption of water flow and increased sediment-loading.
- Address HDD crossings as follows
  - Provide an HDD plan for HDD crossings in Nebraska, including a frac-out contingency plan.
  - The CMR Plan (which was provided in DOS's Final EIS as Appendix B), Detail 15, shows a typical drawing of an HDD river crossing. It shows "access for fresh water collection" paths on each side of the river, extending from the HDD workspace to the water's edge. Provide the following information about these paths:
    - Establish the proposed footprint for each water access location on plan sheets defining the corridor width, dimensions and location, relative to water's edge, of any workspace needed at the river.
    - For access locations that cannot be defined by the time of submittal, describe the criteria that will be used to establish these paths in the field.
    - Describe clearing and grading that might be necessary to establish these access routes, and how clearing and soil disturbance will be avoided or minimized.
    - Describe the impacts and acres of disturbance at each HDD crossing.
    - At each HDD crossing, list the amount of river water that will be used for purposes other than mixing bentonite and hydrostatic testing.
    - Describe any fuel tanks that will be positioned at the river and how long they will be deployed.
    - Describe the measures to be implemented to prevent and respond to spills.
  - Provide an HDD Mitigation Plan that outlines steps that Keystone would implement if an HDD crossing failed.

- Clarify the depth of cover that will be used. DOS's Final EIS, Appendix V, Item 19 indicated that 42 inches would be used at times. Other statements indicated that 48 inches would be the minimum in non-consolidated bedrock situations.

7.3 RESOURCES

Keystone's Environmental Report should describe existing conditions and impacts for all resources that could potentially be affected by the Project. Items of specific interest to NDEQ include the following:

- Land use categories, including number of miles crossed, acres affected by construction, and acres affected by operation
- Location, by preliminary MP, of the following:
  - Churches, residences, schools, daycare facilities, and other high consequence areas within 500 feet of the construction ROW
  - Residences within 0.5 mile of HDD locations
  - Water supply wells within 500 feet of the construction ROW (to the extent such information is made available by Nebraska Department of Health and Human Services or from civil survey or landowner negotiations)
  - Springs that are used as a water source within 500 feet of the construction ROW
  - Wellhead protection areas, sole source aquifers, or other sensitive groundwater areas crossed
  - Major roadway and rail crossings
- Site-specific construction plans for residences within 50 feet of the construction ROW
- Water well plan describing methods to protect wells and monitor impacts, and a contingency plan in the event that a well is damaged or water quality is affected by the Project
- Identification of recreation or special interest areas crossed or within 0.25 mile of construction ROW
- Preliminary hydrostatic test plan to include the following:
  - Each test water source
  - The specific discharge location for each intake
  - Measures that Keystone will implement to prevent intake or impingement of fish during intake, and to prevent erosion and scour during discharge
  - A description of how the pipeline is cleaned by the manufacturer and if any cleaning will take place in the field prior to hydrostatic testing
  - A description of any additives (such as antifreeze) that might be introduced into test water
  - Specific measures that Keystone will implement to prevent the spread of potential aquatic-borne invasive species, to the Project and within the Project, via construction equipment, including pumps, hoses, piping, splash pups, and other water-conveyance equipment

7.4 MITIGATION

NDEQ expects that Keystone's Environmental Report will clearly demonstrate that Keystone has followed the process of avoidance, minimization, and mitigation. Specifically, NDEQ requests mitigation measures as discussed in the following sections.

7.4.1 Sand-Hills-Type Conditions

Chapter 6 of this Feedback Report notes that although the rerouted pipeline would not be in the formally designated Sand Hills ecoregion, certain characteristics of the Sand Hills may be present along some portions of the proposed pipeline alignment. These include the presence of a drinking water aquifer near the surface, very sandy soils, and poor revegetation potential. As such, Keystone should provide a detailed description of the measures that will be taken to ensure stabilization and restoration of these areas, as follows:

- Keystone should clearly demonstrate the process for avoiding, minimizing or mitigating impacts in areas comprised of fragile soils or other features similar to the Sand Hills. Keystone should document the locations where variations have been made to the corridor submitted in its Reroute Report.
- Keystone should document why avoidance of these conditions is not possible and take every measure to minimize impacts and to monitor and continue to maintain reclamation areas until soil stability is returned to pre-construction conditions. These measures should be described in Keystone's Environmental Report.
- Keystone should describe the type and sourcing of seed mixes and soil amendments that will be applied annually to provide interim stabilization. Descriptions should include the frequency and methods of application and the criteria that will be used to measure success.
- Where the construction corridor crosses areas of native prairie, Keystone should describe seed mixes that will restore native grasses and forbs. The description should include the frequency and method of application, the criteria that will be used to measure success, and the methods that will be used to capture native seeds from the disturbed area.
- The sandy soils, coupled with high groundwater tables, suggest that trench instability could be challenging. Keystone should describe the construction measures to be taken to ensure trench stability.
- Keystone should describe its plans to control access in sensitive areas and to train construction personnel on the measures necessary to minimize impacts.
- Keystone should describe Best Management Practices that will be used for construction in the Sand Hills.
- Keystone should provide a fire management plan for construction in the Sand Hills.

7.4.2 Groundwater Quality

Chapter 6 of this Feedback Report notes that the pipeline will cross areas having a thin, unconfined aquifer, or an aquifer that has sandy soils and a shallow depth to groundwater. In areas adjacent to perennial streams (for example, Beaver Creek and the Elkhorn River), there are alluvial aquifers consisting of sandy soils and shallow depth to groundwater that provide the

primary source of drinking water for livestock as well as for private drinking water wells. As such, Keystone should provide a detailed description of the measures that will be taken to ensure groundwater protection in these areas. In addition:

- Keystone should carefully consider route alterations that will avoid these thin, unconfined aquifers. Keystone should also document and describe these considerations for NDEQ. Where avoidance is not possible, Keystone should document why avoidance is not possible.
- Where avoidance is not possible, Keystone should describe in its Environmental Report the measures it intends to use during and after construction to minimize impacts on groundwater supplies for human and livestock consumption.
- Keystone should describe the measures it intends to protect the Clarks Wellhead Protection Area.

7.4.3 Agricultural Areas

Keystone should describe measures it will implement to mitigate impacts on agricultural facilities specific to Nebraska, including windbreaks, irrigation systems, electrical power, and drain tile.

7.4.4 Cultural Resources

Keystone should provide a plan for the unanticipated discovery of cultural and paleontological resources during construction. Keystone should also indicate whether it intends to provide tribal monitors when construction occurs on traditional tribal lands.

7.4.5 Spills

The potential for spills from the pipeline is a major concern expressed by the public. To better assess spill risk and potential impacts, NDEQ requests the following:

- Details regarding frequency and types of inspections to monitor pipeline integrity and conditions
- Spill risk assessment, including a worst case spill scenario (for example, the likely maximum volume of material that would be spilled and the distance it would spread on the surface and in the subsurface) and cleanup measures
- Description of the impacts (such as toxicity, difficulty in cleanup, and persistence in the environment) of a dilbit or synthetic crude spill compared to a spill of crude oil from sources other than oil sands
- Material Safety Data Sheets (MSDS) for the materials to be transported through the pipeline, including diluents
- Keystone's record for construction mitigation, environmental compliance, and incident reporting on the existing Keystone Oil Pipeline in eastern Nebraska
- Description of a spill response plan to include staging areas and how Keystone will interface with Local Emergency Planning Committees (LEPCs) and local first-responders.

7.4.6 Environmental Monitoring

NDEQ anticipates two major elements that will require monitoring following construction. The first of these is the success of Keystone's reclamation efforts on fragile soils, wetlands, stream bed and banks, and areas of steep terrain. The second is to determine if there are any post-construction effects on local and regional groundwater. Keystone's Environmental Report should include a preliminary plan for monitoring the corridor following construction. The plan should identify the following:

- Resources to be monitored
- Analytical methodology
- Quality control requirements
- The minimum number of years monitoring will occur
- The frequency of monitoring
- A definition of success of restoration for the types of agricultural areas encountered along the alignment
- A definition of success in natural areas, especially in wetlands, areas of fragile soils, and in shelterbelts
- A commitment to achieve the stated definitions of success prior to termination of continued restoration and monitoring activities

7.5 ADDITIONAL INFORMATION NEEDS ARISING FROM PUBLIC COMMENTS

To satisfactorily address concerns expressed by the public, NDEQ requests that Keystone provide the following additional information in its Environmental Report:

- Perhaps the most frequently asked question was: why didn't Keystone follow the same corridor as its first Keystone Oil Pipeline? Keystone should provide a clear and concise explanation of why this alternative was rejected.
- Keystone should avoid sensitive areas at perennial streams and stream banks wherever possible.
- Keystone should provide a summary of the construction mitigation and environmental compliance records for the first Keystone Oil Pipeline in eastern Nebraska.
- Keystone should describe the effects that the first Keystone Oil Pipeline may have had on property values along or adjacent to the pipeline. If such information is not readily available, Keystone should provide references of studies that speak to the effect of utility pipelines on adjacent land values.
- Keystone should describe the Incident Command System (ICS) used for its emergency response activity and should fully describe response times associated with personnel and caches of equipment along the proposed corridor.

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CHAPTER 8
FUTURE STEPS

This Feedback Report provides Keystone with a synopsis of issues that Nebraskans have shared with NDEQ about the Keystone XL Pipeline to consider as it plans its final proposed route. This Feedback Report also identifies issues that NDEQ will consider in its Draft Evaluation Report. A number of steps remain before NDEQ can present the Governor with an appropriate recommendation, as discussed in the following sections.

8.1 KEYSTONE'S ENVIRONMENTAL REPORT

Keystone is currently conducting field surveys to determine existing environmental conditions, such as the location of wetlands, types of vegetation cover, and existing land use (see Section 4.3 of this Feedback Report for a more comprehensive list of types of data gathered). Keystone will use these baseline data to inform its route selection process. Keystone's Environmental Report will identify the proposed route and the potential environmental effects of the Project.

Additionally, Keystone should use the information provided in this Feedback Report to enhance its understanding of the public's concerns about the pipeline and, where appropriate, incorporate those concerns in its discussion of the proposed route of the pipeline. NDEQ has asked Keystone to avoid sensitive resources as it plans its proposed route. Where this is not possible, Keystone should document why avoidance is not possible and should specifically outline measures to minimize harm and/or provide appropriate mitigation.

Keystone is expected to provide its Environmental Report to NDEQ in August 2012. Once Keystone provides this information, NDEQ will make it available to the public by posting it on the Project website.

8.2 NDEQ'S DRAFT EVALUATION REPORT

NDEQ will review the information contained in Keystone's Environmental Report and will ultimately conduct an independent evaluation of the proposed route. This evaluation will be presented to the public as NDEQ's Draft Evaluation Report. The Draft Evaluation Report will assess the environmental, economic, social, and other impacts of the proposed Nebraska Reroute as prescribed by LB 4 and LB 1161. The report will also address concerns expressed by the public during the public information meetings held in May 2012.

After the Draft Evaluation Report is published, NDEQ will conduct a public open house, followed by a public hearing, to solicit formal testimony regarding the Project. All comments received on the Draft Evaluation Report will be evaluated for consideration in NDEQ's Final Evaluation Report.

8.3 GOVERNOR'S DECISION

The Final Evaluation Report along with NDEQ's recommendation on the proposed pipeline reroute will be submitted to the Governor and will serve as the foundation of his recommendation to DOS regarding the Keystone XL Pipeline in Nebraska. DOS will use NDEQ's Final Evaluation Report as one of its resources in preparing its environmental documentation and will consider the Governor's recommendation in its decision to issue or deny Keystone's application for a Presidential Permit.

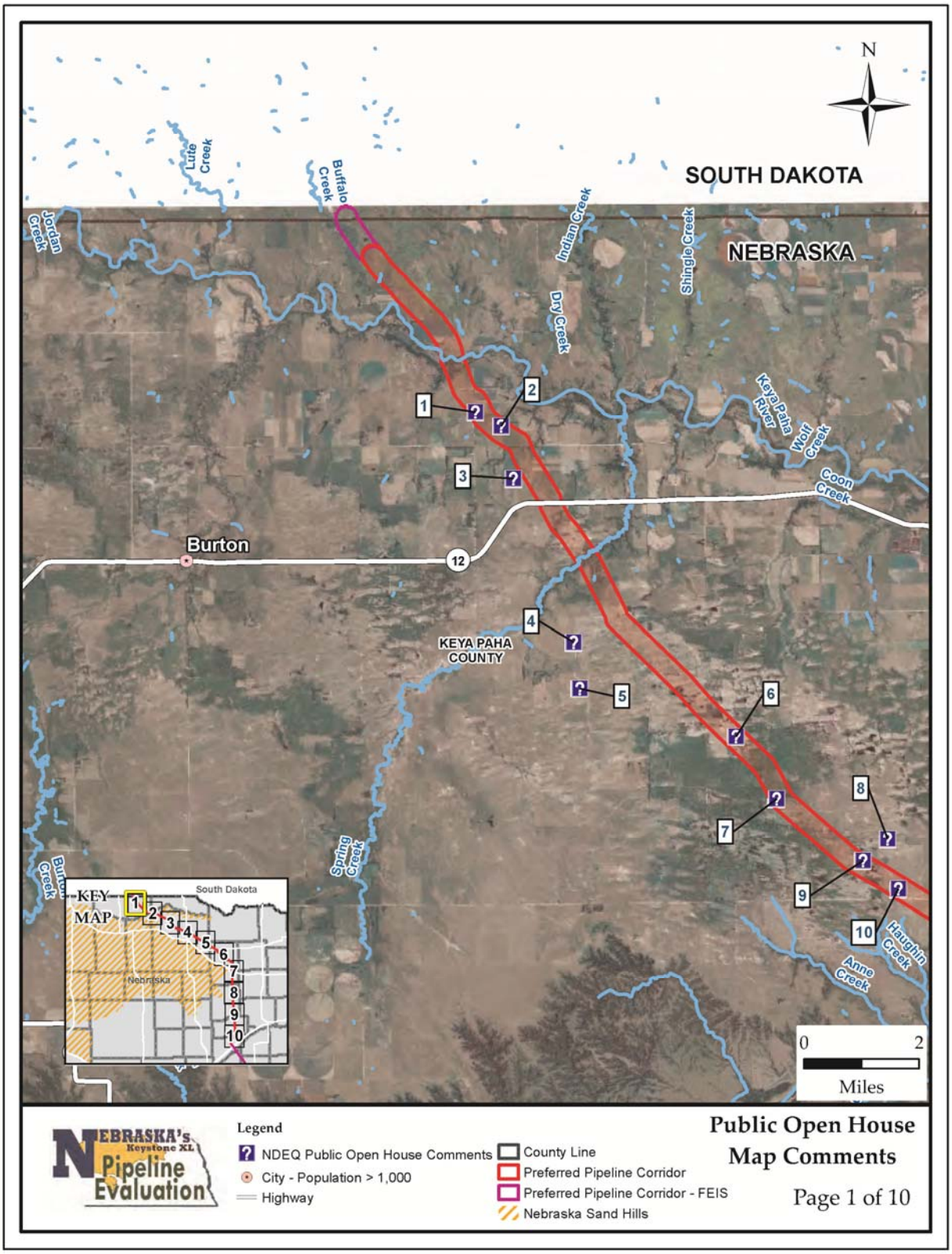
Map Comments from Public Meetings

Map Comments from Public Meetings

During the public meetings, Nebraska Department of Environmental Quality (NDEQ) representatives received input regarding specific locations shown on the corridor maps that were provided for public review. Large scroll maps were laid across tables and were used to plot comments that were later recorded using geographic information system (GIS) coordinates. During the individual conversations, NDEQ representatives marked the location associated with a specific comment.

The scroll maps are provided in 8.5 x 11 inch format in this appendix. The 174-mile reroute of the Keystone XL Pipeline through Nebraska is divided into a 10-map series. The first map (page 1 of 10) is located at the most northerly part of the reroute and the last map (page 10 of 10) the most southerly. The locations pointed out on the maps by the public are numbered. Each number correlates to an accompanying table that contains the comments. Comment numbers are not necessarily in numeric order on the maps because members of the public were able to comment on any part of the reroute during the public information meetings, and comments were numbered in the order in which they were received.

Additionally, a CD containing a Google Earth file of the reroute and the related comments is included in the appendix for those who would prefer the flexibility to zoom and pan across the corridor. Please note that the photos that come up on Google Earth are not associated in any way with this project.


N
SOUTH DAKOTA
NEBRASKA
Lute Creek
Buffalo Creek
Jordan Creek
Indian Creek
Shingle Creek
Dry Creek
Keya Paha River
Wolf Creek
Coon Creek
Burton
12
KEYA PAHA COUNTY
Spring Creek
Burton Creek
Haughin Creek
Anne Creek
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KEY MAP
South Dakota
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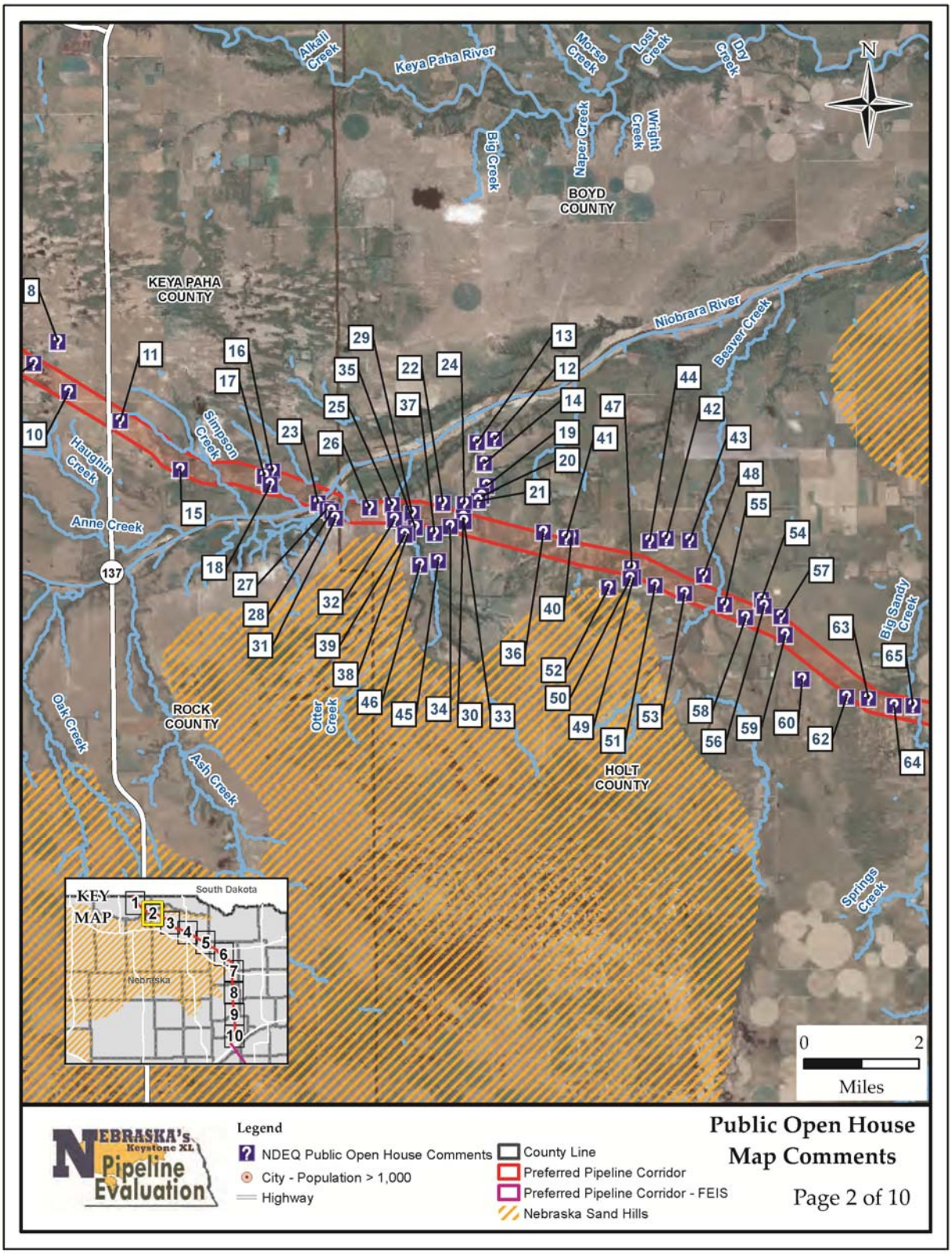
NEBRASKA'S Keystone XL Pipeline Evaluation
Legend
NDEQ Public Open House Comments
City - Population > 1,000
Highway
County Line
Preferred Pipeline Corridor
Preferred Pipeline Corridor - FEIS
Nebraska Sand Hills
Public Open House Map Comments
Page 1 of 10


Alkali Creek
Keya Paha River
Morse Creek
Lost Creek
Dry Creek
Naper Creek
Wright Creek
Big Creek
BOYD COUNTY
KEYA PAHA COUNTY
Niobrara River
Beaver Creek
Simpson Creek
Haughin Creek
Anne Creek
137
ROCK COUNTY
Oak Creek
Ash Creek
Otter Creek
HOLT COUNTY
Big Sandy Creek
Springs Creek
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Miles
KEY MAP
South Dakota
Nebraska
NEBRASKA's Keystone XL Pipeline Evaluation
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Preferred Pipeline Corridor - FEIS
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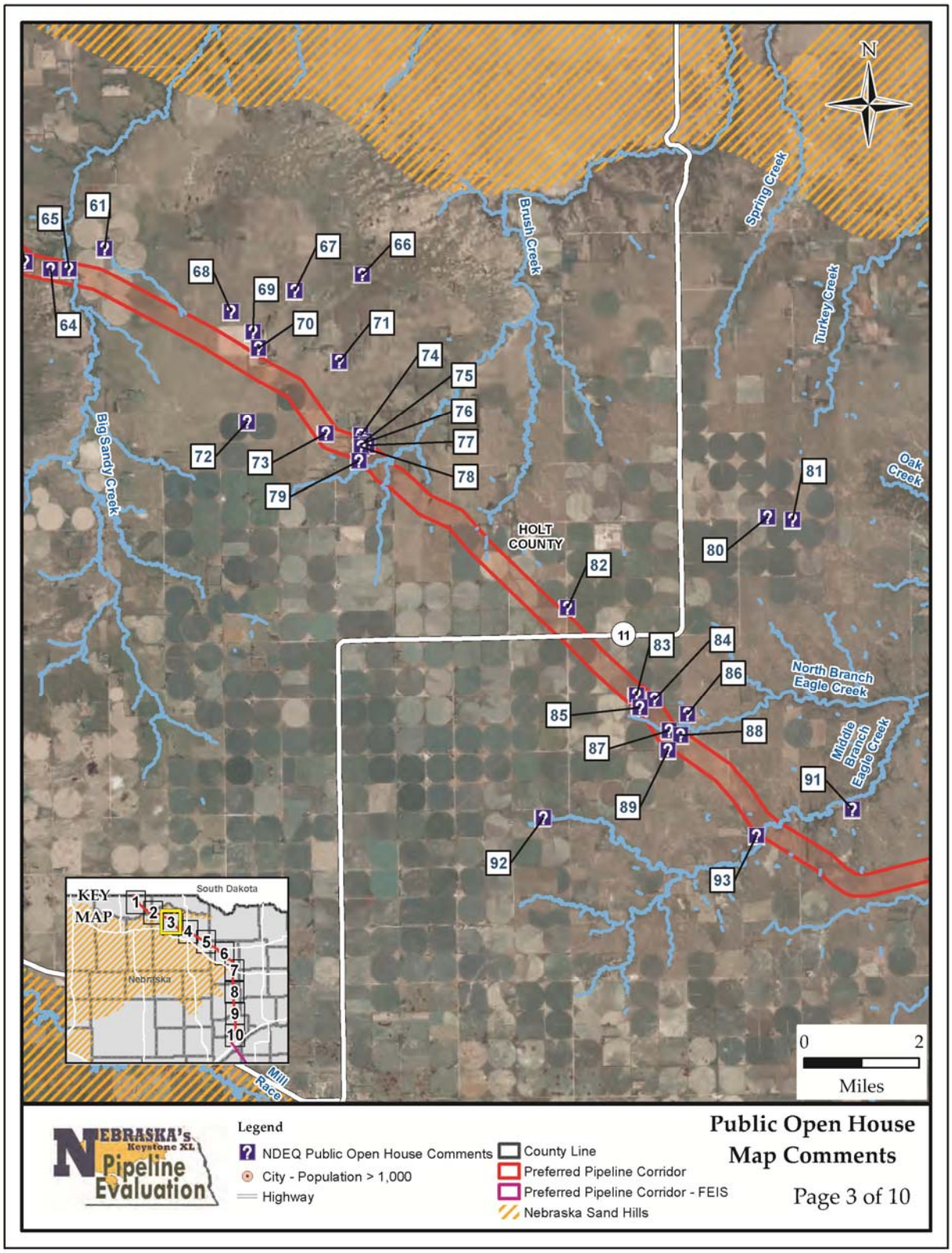
N
Spring Creek
Brush Creek
Turkey Creek
Big Sandy Creek
Oak Creek
HOLT COUNTY
North Branch Eagle Creek
Middle Branch Eagle Creek
Mill Race
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KEY MAP
South Dakota
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NEBRASKA'S Keystone XL Pipeline Evaluation
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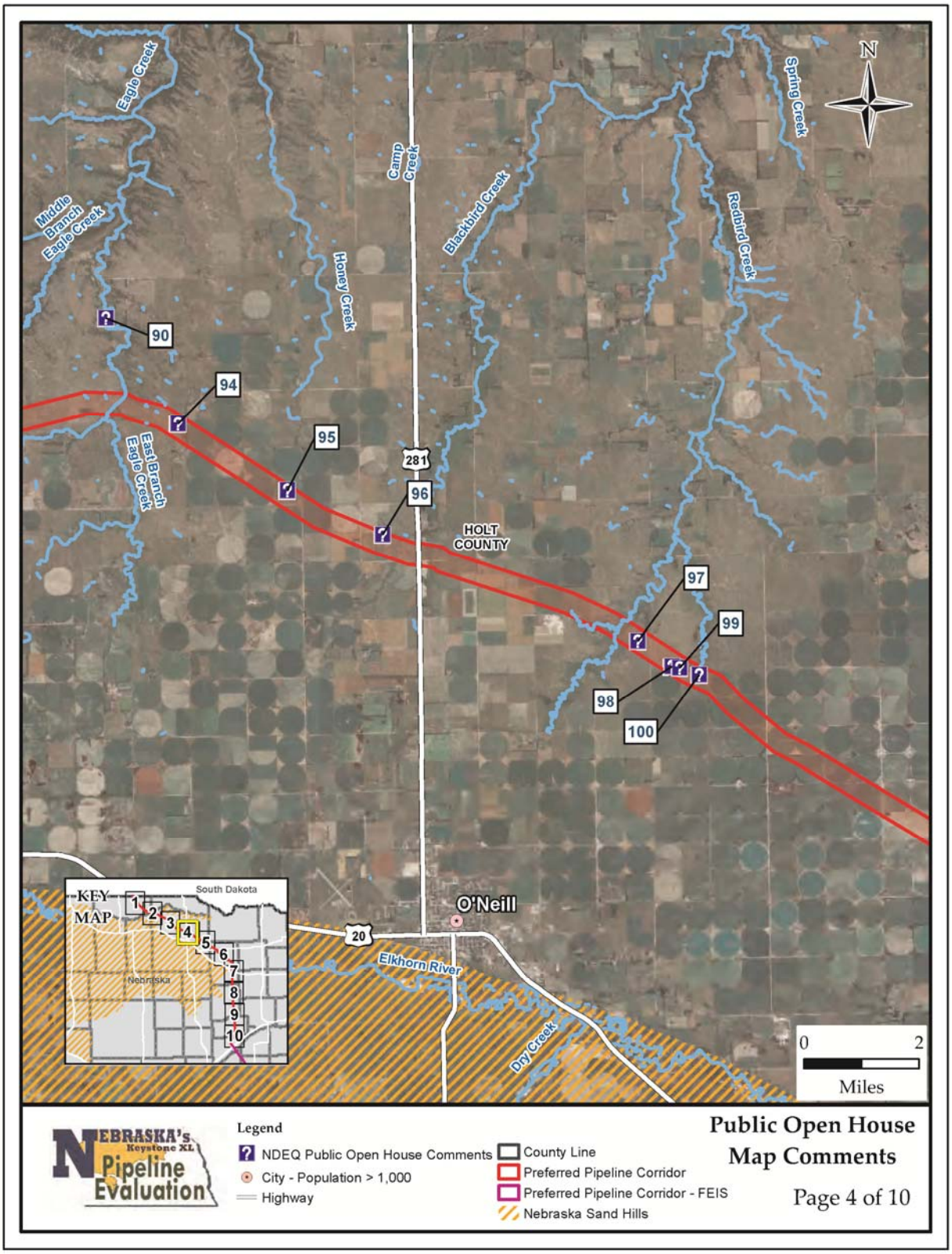
Eagle Creek
Middle Branch Eagle Creek
East Branch Eagle Creek
Honey Creek
Camp Creek
Blackbird Creek
Redbird Creek
Spring Creek
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95
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281
HOLT COUNTY
O'Neill
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Elkhorn River
Dry Creek
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KEY MAP
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NEBRASKA's Keystone XL Pipeline Evaluation
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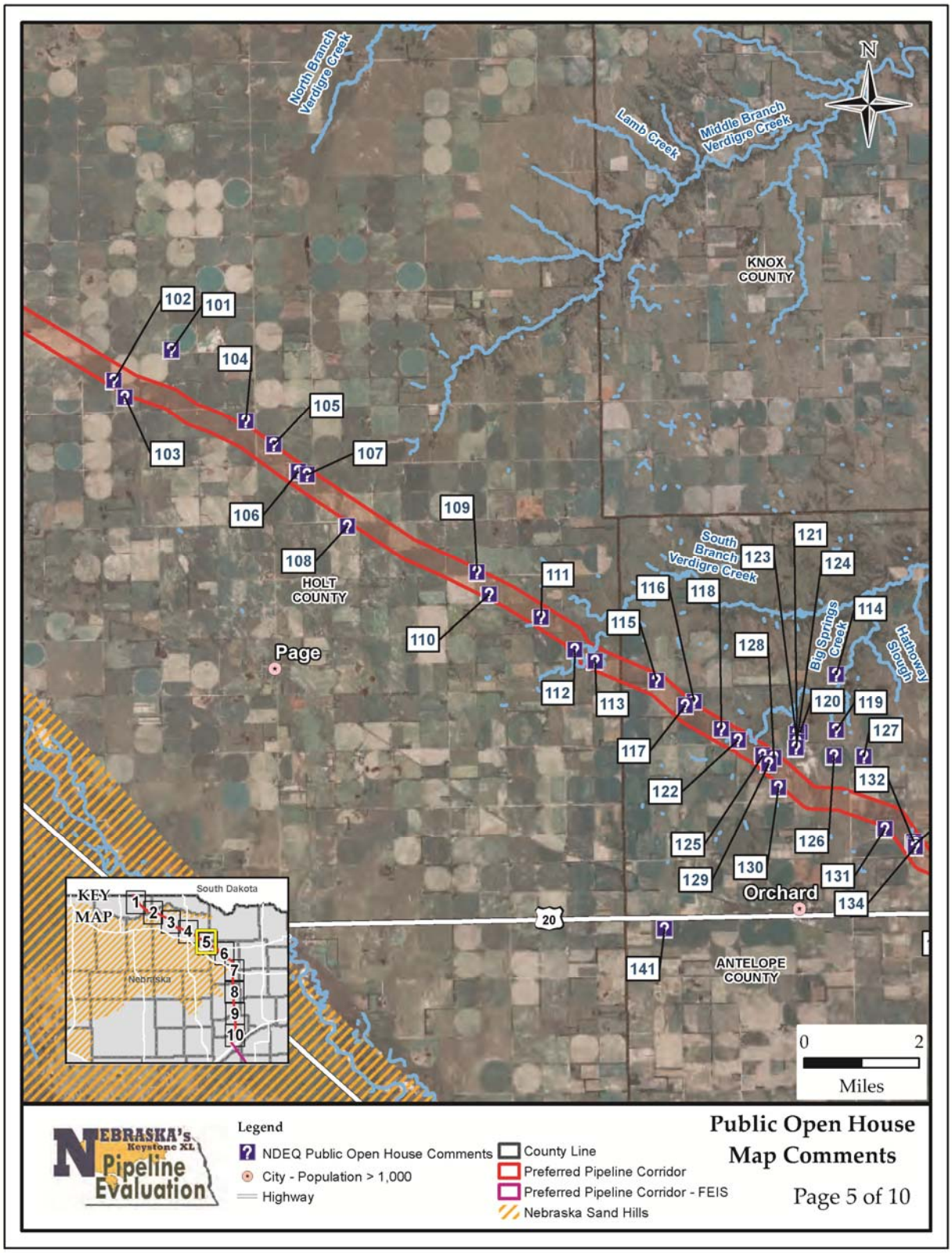
North Branch Verdigre Creek
Lamb Creek
Middle Branch Verdigre Creek
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KNOX COUNTY
South Branch Verdigre Creek
Big Springs Creek
Halloway Slough
HOLT COUNTY
Page
Orchard
ANTELOPE COUNTY
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102
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KEY MAP
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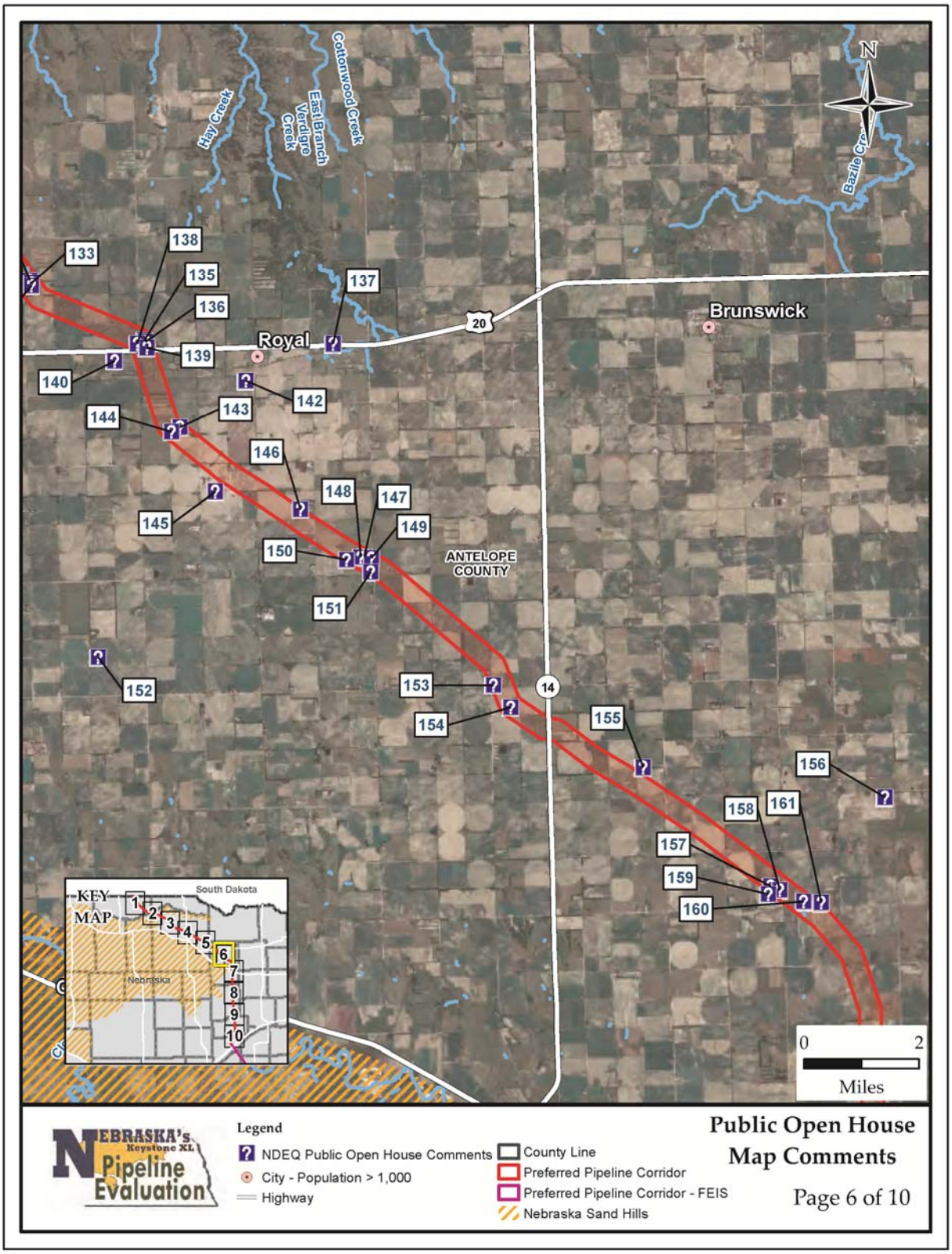
Hay Creek
East Branch Verdigre Creek
Cottonwood Creek
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Brunswick
Royal
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ANTELOPE COUNTY
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KEY MAP
South Dakota
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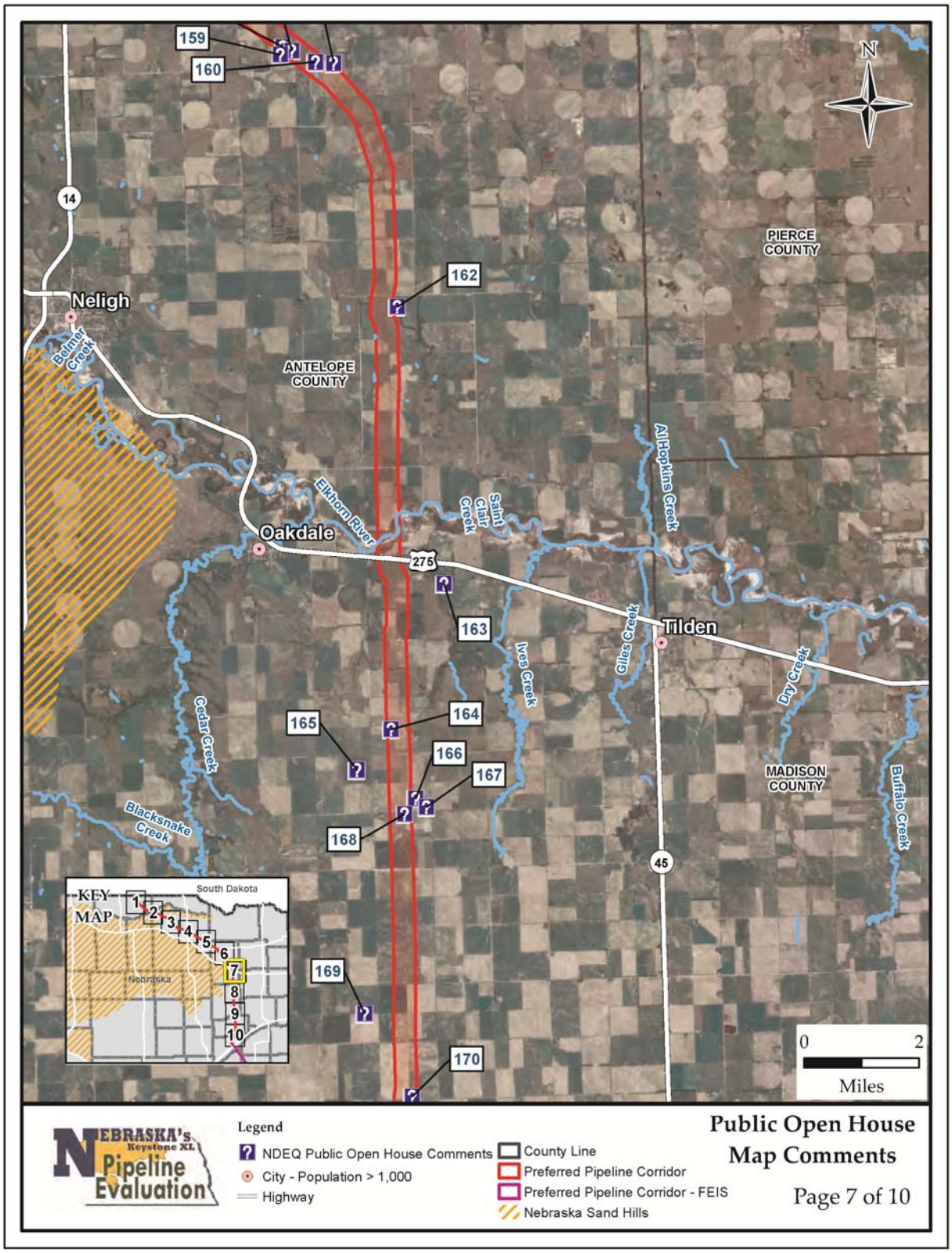
159
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Neligh
Belmer Creek
ANTELOPE COUNTY
PIERCE COUNTY
Elkhorn River
Oakdale
Saint Clair Creek
Al Hopkins Creek
275
Tilden
Ives Creek
Giles Creek
Dry Creek
Cedar Creek
Blacksnake Creek
MADISON COUNTY
Buffalo Creek
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KEY MAP
South Dakota
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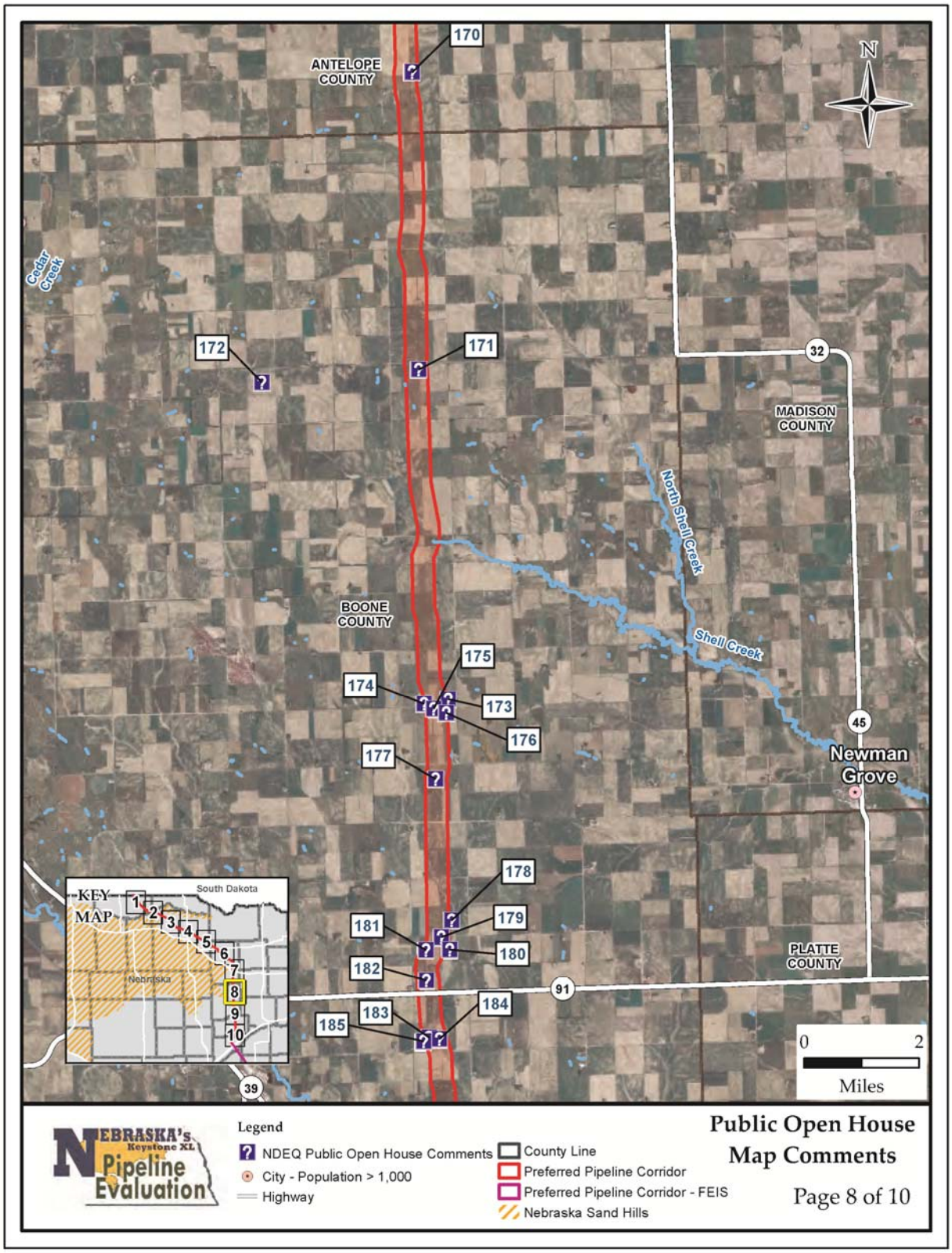
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ANTELOPE COUNTY
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Cedar Creek
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171
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MADISON COUNTY
North Shell Creek
BOONE COUNTY
Shell Creek
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174
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176
45
Newman Grove
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KEY MAP
South Dakota
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Nebraska
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PLATTE COUNTY
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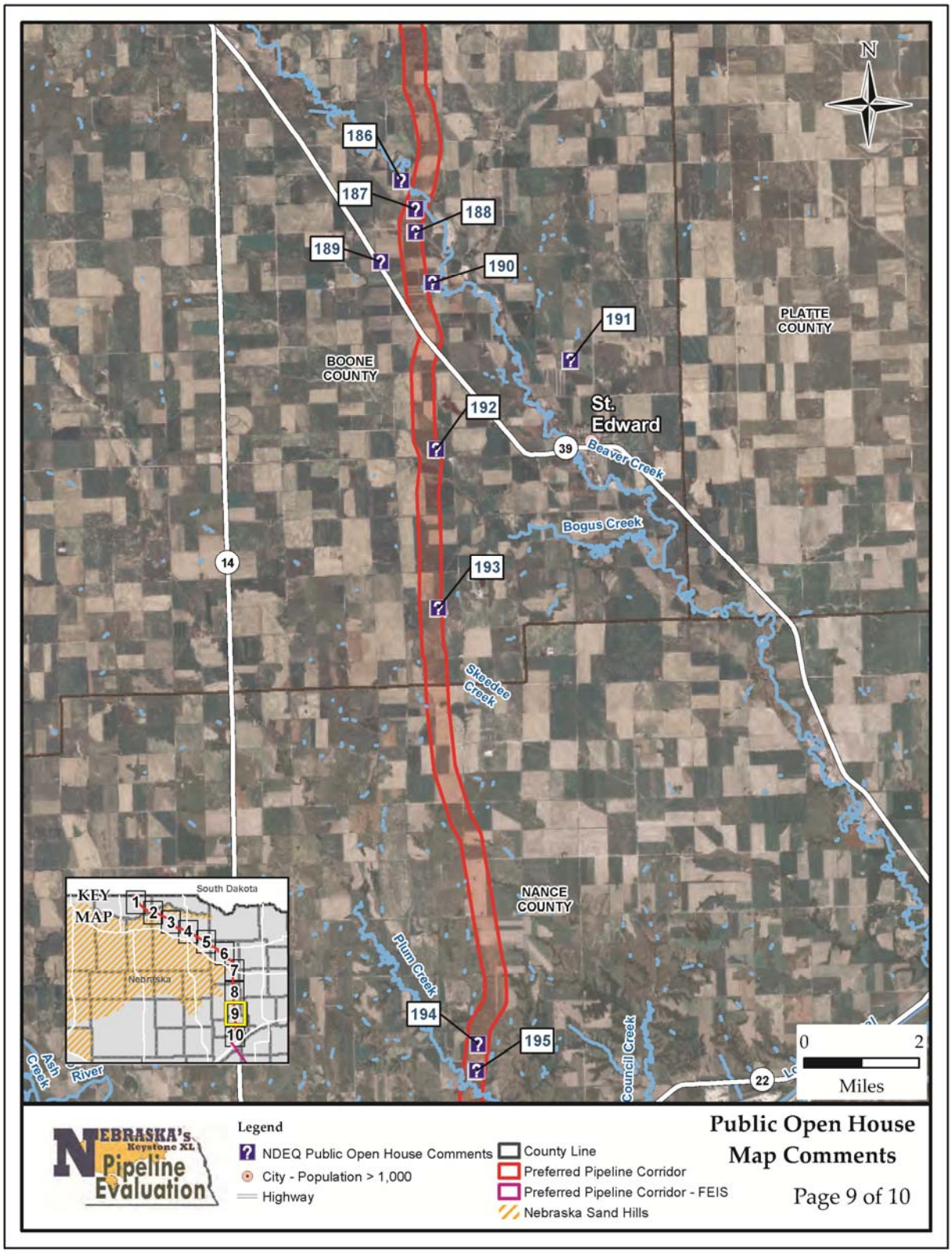
N
186
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BOONE COUNTY
PLATTE COUNTY
NANCE COUNTY
St. Edward
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14
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Beaver Creek
Bogus Creek
Skeedee Creek
Plum Creek
Council Creek
Ash Creek
River
KEY MAP
South Dakota
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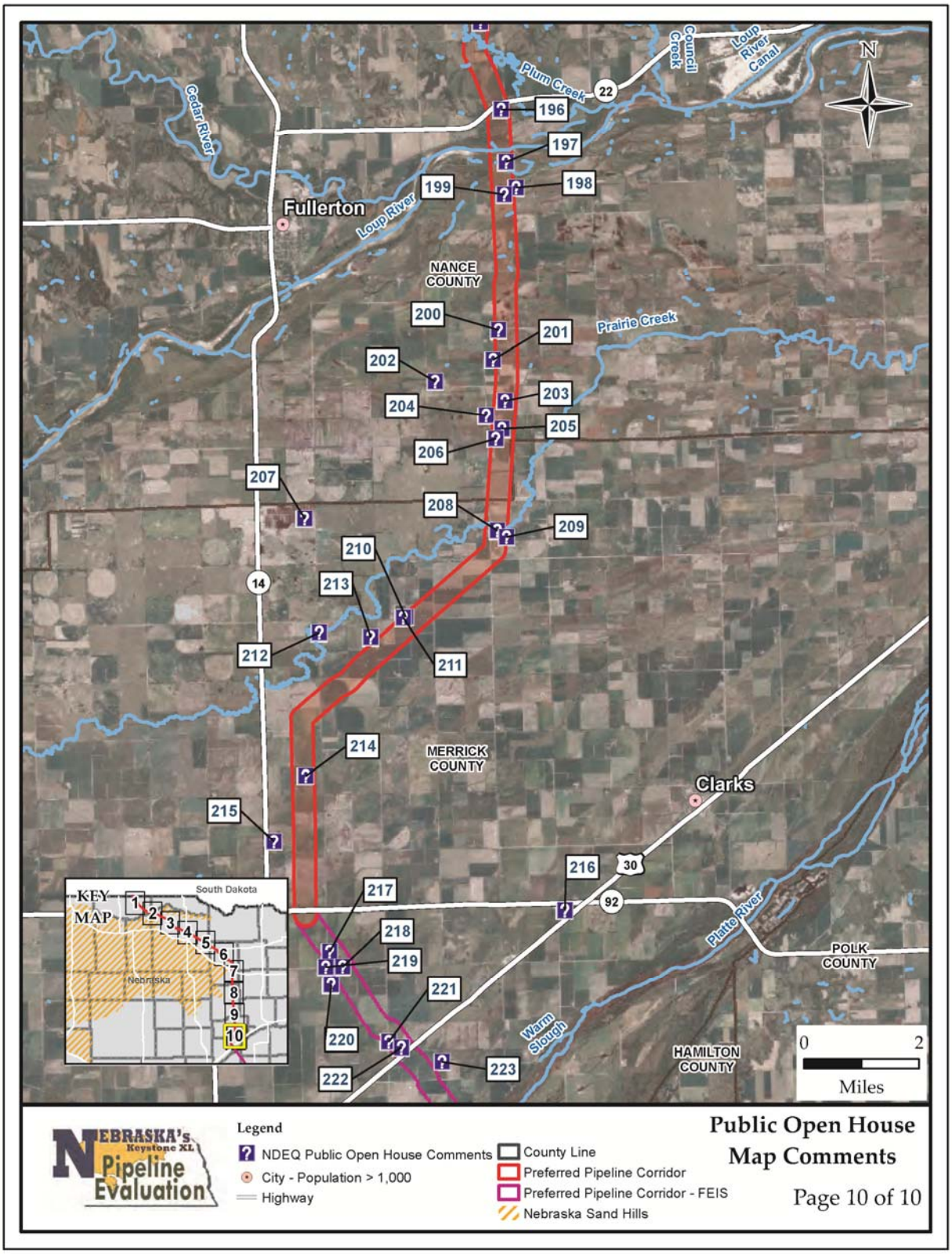
Fullerton
Clarks
NANCE COUNTY
MERRICK COUNTY
POLK COUNTY
HAMILTON COUNTY
Cedar River
Loup River
Plum Creek
Council Creek
Loup River Canal
Prairie Creek
Platte River
Warm Slough
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KEY MAP
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Table A-1. Map Comments

Comment ID #	Comment
1	House at this location; unnamed creek is 75 feet deep; TransCanada said they would go around the creek
2	Cattle spring here; main water source
3	Why can't it be next to the existing pipeline? Infrastructure is already there
4	Eroded bank
5	Erosion
6	Wind Tower Location Tildon/Antelope/Madison how will they miss the abandonment?
7	Have sandy soils whether or not they are in the Sand Hills. Have to manage soil the same as in the Sand Hills. Concerned with not classifying all sandy areas as the Sand Hills makes it easier for TransCanada.
8	Water at surface
9	Pivot well noted on map
10	How full is pipe? How much would in a 20 mile stretch?
11	High water table area
12	Residence
13	Residence
14	Cattle yards and facilities
15	Pivot well to east and north
16	Land slides along the creek
17	All Sand Hills are along here; saturate ground; can't clean up spill if it is 25 feet under the river; wrong place for a pipeline; there is a game and refuge to the south (Boyd County Game Refuge or similar name).
18	Does not want in property
19	Pivot
20	Pond
21	Well
22	Pivot
23	As facilities wells
24	Dam for stock water
25	Unique spring features at these locations; from PT10 to PT12 are erodible soils, all sand
26	Many springs along the creeks in this area every 100 feet; highly erodible soils; steep terrain; also springs to south in Section 34, T33N, R16W

Comment ID #	Comment
27	Earthquake crack foundation of cabins. How does pipeline stand against?
28	Springs from PT1 to PT10 are used to irrigate; Otter Canyon is saturated with springs
29	Earthquake Boyd County. Four county area. Fault line runs East to West. Cracked basement walls
30	NRD water monitoring well
31	Domestic well that feeds ranch house.
32	Unique spring features at these locations; from PT10 to PT12 are erodible soils, all sand
33	Drilled dozen of wells around the place but only one well in the location produces water. Well is used for domestic and livestock.
34	Domestic well at this location; lot of underground pipes for irrigation in this area
35	Dam for stock water
36	Dam for stock water
37	Pivot with supply line beneath corridor
38	Irrigation dam
39	Water flow/drainage/well at each pivot/ 80 125' flow to North
40	Drinking H2O well @ 66 ft deep, on shale, 3' diameter casing
41	Domestic well at this location; very wet
42	Dam for stock water
43	Dam for stock water
44	Windmill
45	Dam for stock water
46	Earthquake crack foundation of cabins. How does pipeline stand against?
47	Cattle working facilities
48	Dam for stock water
49	Mobile home wellfield
50	Domestic well; Richard Miles Francis Denray local well driller out of Atkinson
51	Well for livestock
52	Sensitive soils/Sand Hills boundary is off does not allow boundary shown on map
53	Dam for stock water
54	Well
55	80 foot deep ravine Beaver Creek

Comment ID #	Comment
56	Spring, domestic well at this location
57	Lonnie Breiner livestock well
58	Spring fed pond
59	Stock well with windmill
60	Windmill stock well
61	Irrigation well
62	Spring fed streams
63	Sec 8 Sec 15 T32 R15W very swampy and sandy; clay is underlying this area 5 30 ft deep, Breiner Ranch
64	All sand and springs in this area
65	Extremely wet ground/ Pristine wetland/ High water table
66	Concern with pipeline leaks, native grasses, and protection of native birds. Direction of stream flow would bring contaminated water to property.
67	Concern with pipeline leaks, native grasses, and protection of native birds. Direction of stream flow would bring contaminated water to property.
68	Ground water contamination would ruin livelihood. Sandy soils and shallow water table means oil leak would contaminate the groundwater; wetlands nearby could be impacted by a spill.
69	Six irrigation wells in the area hard time finding H2O
70	This is a spring fed pond
71	Concerned with impacts to wetlands; water table is very shallow, water ponds concerned with contamination
72	Concern over tar sands water quality
73	What's the second pipe for, is that to pump groundwater?
74	Well
75	Fertilizer Plant
76	How can wildlife not be impacted by pipeline construction? Sandy soils and shallow groundwater. How will the pipeline affect water movement?
77	Concerned with leak potential and pipeline devaluing property. Several springs around land owners 5 parcels, therefore concern with ground and surface water contamination.
78	Unique landscape sand soil changes in close proximity/ wetlands throughout corridor very shallow water table/ natural springs/ aquifer cover entire area
79	Truck and machinery will erode solid. Small deer trail can erode soil
80	Concern with contamination because of soils. Boyd county where soils are clay.
81	Concern with contamination because of soils. Boyd county where soils are clay.

Comment ID #	Comment
82	Pipeline WILL leak. Water flows southwest to northeast; will ruin us. Needs containment. Farms may be unaware of an oil leak until harvest. Pump stations for oil will drive up the price of power.
83	Irrigation well
84	Irrigation well
85	Irrigation well (not in use)
86	Gravel pit. Infiltration of water. Number of center pivots puts water table at risk. Monitoring of nitrates and solvents.
87	This is where North Branch Eagle Creek starts with springs
88	Domestic well
89	Irrigation well
90	Stop the pipeline in South Dakota and build a refinery there.
91	All gravel soils versus coarse. Drains rapidly and quickly. Wells are 100 ft or less deep. Water supply is based on location.
92	Cabin of earthquake comments/ NDOR bridge on brush creek/ land shifting
93	Border of corridor on top of house
94	Concern with government being pro oil and not considering needs of Nebraska. Concern with info saying if there is a leak, landowners are liable. Concern with pipeline leaking, rendering farms worthless for years. Existing route.
95	Concern with government being pro oil and not considering needs of Nebraska. Concern with info saying if there is a leak, landowners are liable. Concern with pipeline leaking, rendering farms worthless for years. Existing route.
96	Will cut across driveway, also across pivot.
97	Want to negotiate with TransCanada for rent/royalties. Wonder why TC has not contacted yet.
98	Windmill
99	Six inches of top soil on property then gravel
100	Erosion
101	Lower Niobrara NRD opposed since beginning of XL pipeline/Do not cross Sand Hills and Aquifer why take risk when there are other alternatives? Research why TransCanada cannot put pipeline parallel to existing in NE
102	Center pivot operation concern over long and short term crop yields (requested map)
103	Well
104	New tiling installed last week at this location
105	Three sections affected by corridor
106	North of Page. Shallow water 40 foot. Concerns with drinking water 50-55 feet. Wells is

Comment ID #	Comment
	draining water from.
107	How full is pipe? How much would in a 20 mile stretch?
108	Three sections affected by corridor
109	Two pivots with wells at this location; also electrical wires and water pipes at 3 4 foot depth; if the pipeline were routed to the south of the main pivot, it would avoid wires and pipes
110	Wells pivot has caved in twice because of the sand
111	What is Cronk Reservoir (Saltz Lake?)
112	Underground water building in trees/ fencing around property/ how will this be addressed?
113	Concern of ground water in entire aquifer/ concern of taking groundwater from aquifer
114	John Dietrich/ ponds/ 40 acre parcel/ Big Springs creek/ runs into Verdigre Creek
115	Underground electric line at drawn dotted line
116	Center pivots property within corridor
117	Underground pipe at drawn dotted line
118	Build refinery in Canada. Why is there a need to take it through US. Concern with pivot operation, tree removal, and destruction of wetlands.
119	Wonder about potential benefits of the oil from the pipeline to Nebraska and the US.
120	Fish hatchery/ trout hatch property/ Cold water hatchery/ 66 degrees year round/ great recreation area
121	Pivot farming operation
122	Areas of property are under water. Soil is greasy, peat moss like, making it difficult to mow. Concern with TransCanada ruining soil forever. Amazed state is avoiding Sand Hills, but not the Aquifer.
123	Gravel pit/ homes/ fishing resort
124	Diamond Trout Resort. Very large natural cold water spring
125	Concern over containment of oil/ how long will corrosion measure last
126	Center pivot well/ stockwell
127	Irrigation well/ windmill Northwest corner/ underground
128	Concern over Grove Lake in proximity and habitat; work creek (also requested hard copy map)
129	Cows at this location. Landowner has concerns about people being on property for surveys and construction. Concern with backfilling the trench with different soils. Changing the route to the west would avoid creeks in area.
130	Neutral on pipeline installation. What happens if there are problems down the road? Wonder how rivers and streams will be crossed.
131	What does Nebraska get in return for the pipeline? How much money?

Comment ID #	Comment
132	Wet ground; cannot farm or cut hay
133	Build refinery in Canada. Why is there a need to take it through US. Concern with pivot operation, tree removal, and destruction of wetlands.
134	Don't want pipeline on land. Snow could melt over pipeline due to eat. Concern with spill risk cannot clean it efficiently. Landowner is responsible for cleanup.
135	Wet ground; cannot farm or cut hay
136	Build refinery in Canada. Why is there a need to take it through US. Concern with pivot operation, tree removal, and destruction of wetlands.
137	Dairy farm denied due to large natural spring affect/ fish hatchery
138	Sharp bend in angle of May be more appropriate for erosion/ How long between maintenance/ stability with pipeline
139	Wetlands at this location; pipeline will transect East Verdigre Creek watershed lengthwise
140	Concern about fertilizer facility
141	Headwaters of Verdigre Creek and trout rearing station
142	Live near Russell Lake where spring fed gravel pit is 20 70 ft deep. Project is fine as long as there are no disasters. Corridor is not far enough away from Sand Hills. Positives for the US?
143	Really sandy at this location; spills will go right through; also concerned about new shelter belts and irrigation
144	Just planted new trees 2 years ago; 4 5' high
145	Build refinery in Canada. Why is there a need to take it through US. Concern with pivot operation, tree removal, and destruction of wetlands.
146	All blow sand at this location; aquifer present; concerned about spills and who would clean up
147	Most of this quarter has never been broke (native grass short prairie)
148	Dugout
149	Got to be careful of irrigation well and pivot at this location; who maintains the permanent right of way (keeping trees from growing)
150	Pasture could be planted. Concerned about spotback relation to a pipe. Trees adjacent. Trees within proximity need maintained. Plan for new fence and pasture well. Sensitive ground to machinery
151	Livestock well
152	I don't want the pipeline on my land. I wish my property was opposite the flow of water (steams)
153	Highly erodible land. Farmers who follow Conservation Reserve Program and no tilling. Took years to prep ground for no till farming. Only beginning to see the benefits currently.
154	Concerned about underground utilities electric and telephone

Comment ID #	Comment
155	Concern over what measures pollution of and concern over mitigation safety/ secure land owner rights
156	Very wet. Could not farm
157	Concern with shallow water table and impacts on water quality. The heat of oil will dry out soil. Concerned with solvents and detergents in oil; once they are in soil, can't be cleaned. Concerned with combustibility of oil
158	Very high water table/ livestock
159	Well
160	Concern with shallow water table and impacts on water quality. The heat of oil will dry out soil. Concerned with solvents and detergents in oil; once they are in soil, can't be cleaned. Concerned with combustibility of oil
161	See comment form from John Dittrich
162	Want information on the timing of construction when will it be happening at this location
163	Live near Russell Lake where spring fed gravel pit is 20 70 ft deep. Project is fine as long as there are no disasters. Corridor is not far enough away from Sand Hills. Positives for the US?
164	Map request springs/ Electricity who pays for power upgrades? Noise level on pump stations
165	Center pivot
166	Registered well (irrigation)
167	Pivot farming operation
168	Structure with corridor
169	Pipeline is okay as long as it stays off my land
170	Building site
171	Wind Tower Location Tildon/ Antelope/ Madison how will they miss the abandonment?
172	Wondering if electric line for pump station will go through this location; substation is already located to east
173	Homestead: parents of Robert
174	Homestead
175	Homestead: Robert Kroaen
176	Natural gas line E W (1950 install) 2 sets
177	Tree line; CRP how does pipeline go through reestablish. How are CRP contracts broken? What about compliance to make sure things are restored
178	Pivot well noted on map
179	Pivot well to east and north
180	Pivot underground electrical 440V 3 phase well

Comment ID #	Comment
181	Pivot gas along dot 2/3 well on 80 between pivots
182	Pivot well
183	Center Pivot
184	Concern over all water crossings/ small or large well water
185	House/ Barn/ Homestead
186	Conservation Easement NW1/4 Sec. 8 T19N R5W, Native American Village Site
187	Very swampy ground on both sides of Beaver Creek by Boone
188	The town of Boone, Nebraska
189	Building and farm facilities
190	Very swampy ground
191	Not actual location/ research on naturally occurring tar pits in general facility
192	Homestead
193	Hog lined lagoon/ PST high nitrogen in soil
194	Very sandy soil
195	4 buried irrigation pipelines run across this property, 3 registered irrigation wells
196	Subsurface drip irrigation
197	Loup River bank restoration
198	High GW table
199	Wind break right through the middle
200	Irrigation well concerned about timing
201	This area floods
202	Concern with shallow water table and contamination. Can see water fill in hole when digging. Disapprove with foreign company imposing eminent domain. Wonder why an existing N/S pipeline be used or put the new one next to it.
203	Irrigation well
204	Drinking water wells to cattle
205	Owner is very ill and cousins are worried about him being taken advantage of.
206	Lateral pipe for irrigation; 4 wells in corridor in this location
207	Feed lot: 2 3 miles NW of line concern is well contamination Kalamazoo spill
208	Artifacts archaeological/ Ancient artifacts found
209	As facilities wells

Comment ID #	Comment
210	Location of church and cemetery
211	Church and cemetery
212	Concerned with impacts to wetlands; water table is very shallow, water ponds concerned with contamination
213	Homestead
214	Natural springs
215	Groundwater 4 5 feet below surface, shale approximately 30 feet deep
216	Substation property is already purchased
217	Ground for pumping station already purchased by TransCanada for lots of money
218	Location of domestic well, very sandy, groundwater standing in ditches
219	Residence close to proposed pumping station. Concerned about noise and shallow groundwater
220	Residence with domestic well, concerned about noise from proposed pumping station, safety of kids and impact to groundwater.
221	Domestic well
222	High water level during a dry season, water standing in ditches
223	Shallow to groundwater and sandy, worried about spills destroying soil. Has a domestic and irrigation well

Appendix H.2

Request for Information #2

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Appendix H.2

Request for Information Letter 9/8/2012

Sent via Email (addresses redacted)

From: Rice, Pat
Sent: Monday, September 10, 2012 4:49 PM
To: Stephen N. Marr, P.E.
Subject: Request for information - Nebraska's Evaluation of the Keystone XL Reroute.

Nebraska DEQ has reviewed TransCanada's September 5, 2012, Supplemental Environmental Report for the Nebraska Reroute (SER). The SER identifies a preferred alignment for the proposed reroute of the Keystone XL Pipeline in Nebraska, provides updated information concerning the construction of the proposed pipeline in Nebraska and responds to Nebraska DEQ's information request contained in the Feedback Report issued on July 17, 2012.

As part of the review Nebraska DEQ consulted with the Department of State and prepared the attached request for information (RFI) describing the information and data that will be required by Nebraska DEQ in order to complete Nebraska's evaluation of the proposed reroute. The attached RFI lists information as a priority 1, 2 or 3. NDEQ requests that Keystone provide the priority 1 information as soon as practicable ; the priority 2 information is requested by the September 14, 2012, and the priority 3 information is requested by September 19, 2012.

NDEQ also notes that in a couple of locations the SER erroneously implies that NDEQ and/or Nebraska Governor will "select" a preferred route. To clarify, NDEQ is evaluating the route that was selected by Keystone.

Please let me know if you have any question concerning this request for information.

Keystone XL Pipeline	CONSTRUCTION										
Data Request to TransCanada											
For economic and fiscal impact analyses											
			Number of Units by State				Time requirements	In-State	Cost per Unit		# of Workers
Component	Description of activities	Unit	MT	SD	NE	OK	per Unit	Vendor (Y/N)	Total Cost	% Payroll	per Unit
Pipeline *(FEIS, 2.3.5, Fig. 2.3.2-1)*											
Spread mobilization	?	Spread	3.5	4	2.5	--	1 month				
Pipeline construction		Spread	3.5	4	2.5	--	4-6 months				500-600
Spread demobilzation	?	Spread	3.5	4	2.5	--	1 month				
Aboveground facilities											
Pump station (FEIS 2.2.1)	Includes access roads	Each	6	7	5	--	18-24 months				20-30
Mainline valves (FEIS 2.2.2)	Includes access roads	Each	21	17	19	--					
Cushing Tank Farm (FEIS 2.2.6)	Includes access roads	Each	--	--	--	1	15-18 months				30-40
Ancillary facilities											
Sites, sidings, & yards (FEIS, 2.2.7.2)											
Pipe stockpile sites	Includes access roads	Each	9	11	8	--					
Railroad sidings	Includes access roads	Each	5	5	3	--					
Contractor yards	Includes access roads	Each	3	5	7	--					
Construction camps (FEIS, 2.2.7.4, Fig. 2.2.7-3)											
Development/construction		Each	2	2	--	--	1 month				
Operations		Each	2	2	--	--	4-6 months				
Decommissioning		Each	2	2	--	--	1 month				
Commercial temp quarters											
List probable location		Weeks					n/a	n/a	n/a	n/a	
List probable location		Weeks					n/a	n/a	n/a	n/a	
List probable location		Weeks					n/a	n/a	n/a	n/a	
List probable location		Weeks					n/a	n/a	n/a	n/a	
Connected actions											
Electrical Distribution Lines & Substations											
Substation	Includes associated distribution lines	Each	6	7	5	1					
Electrical Transmission Line - Big Bend to Witten											
WAPA-BEPC Proposal	Average corridor configuration	Each	--	1	--	--					
Bakken Marketlink											
All facilities near Plevna-Baker, MT	Includes piping, pumps, manifolds, & tanks	Each	1	--	--	--					
All facilities in Cushing Tank Farm	Includes 2 tanks & supporting systems	Each	--	--	--	1					
Cushing Marketlink											
Additional facilities in Cushing Tank Farm	Includes 2 tanks & supporting systems	Each	--	--	--	1					
Key Assumptions:	All construction occurs simultaneously (FEIS, 2.3.5.1, p. 2-46)										
	10% of workforce is "local" (FEIS, 2.3.5.1, p. 2-48)										
	Local is defined as state resident, but not corridor resident.										
	No portion of the workforce commutes from home; all use temporary quarters or RVs.										
	All construction materials except pipe are sourced from outside the corridor state, but within the US.										
	25% of all pipe will be sourced from outside the corridor state, but within the US (FEIS, 2.3.1.1, p. 2-26)										
	Pipeline construction includes the following: clearing, grading, stringing, ditching, welding, testing, joint coating, lay pipe in trench, backfill, additional testing, & reclamation										
	Exclude retail sales from construction camp operations										

SUMMARY OF COMMENTS ON KEYSTONE XL SUPPLEMENTAL ENVIRONMENTAL REPORT

ER Section	Comments	Requested Information	Priority P1 = 9/11/12 P2 = 9/14/12 P3 = 9/18/12
3.5	All groundwater less than 10,000 mg/l TDS is drinking water in Nebraska and there is an anti-degradation standard.		Comment Only
4.3.10.1	Reference to Battelle (2012) report. The report is not final and no complete copy has been issued. Therefore, should not be used as a reference.		Comment Only
4.3.4	Clarification on temporary, short term, and long term impacts - inconsistencies between use of terms between SER and FEIS. DEQ will be following the FEIS.		Comment Only
3.3	How did Keystone determine compaction-prone soils? Keystone's GIS database did not provide any information to this point.	Provide GIS data for compaction-prone soils. Include metadata.	P1
4.0	FEIS analyzed a different route than the Reroute. Resource impact analysis in the FEIS is not necessarily applicable for the reroute alternatives.	Provide impacts to spill receptors (ecological, socioeconomic, cultural) applicable to the Reroute in Nebraska. Please provide a paragraph describing the impacts to each resource in the area of the Nebraska Reroute (Air Quality; Geology, Minerals, and Paleontology; Soils; Water Resources; Vegetation; Wildlife, Aquatic Resources, and Sensitive Species; Land Use and Aesthetics; Cultural Resources; Socioeconomics; Public Health and Safety) if a size of moderate volume (approximately XXX gallons) occurred during operation of the pipeline. Please also provide a brief description of measures proposed to mitigate impacts to each resource in case of a spill during pipeline operation.	P1
2.1.10 (Air and Noise)	Does this table include equipment for constructing a pumpstation?	Will the pump stations and MLV stations be constructed by the same crews and equipment represented by the construction spreads in Table 3.12.1-8? If not , provide similar equipment list and information associated with pump stations and MLVs as is depicted in Table 3.12.1-8	P1
2.1.11.1 Non-Standard Construction Procedures, Waterbody Crossings - Perennial, page 25	Explain why open-cutting flowing waterbodies is the preferred method considering the environmental impacts downstream sediment transport could have on vertebrate and invertebrate life forms and their lifecycles, when dry methods (e.g. pump around) are available and feasible.	Justify the crossing methods.	P1
2.1.11.1 Non-Standard Construction Procedures, Waterbody Crossings - Perennial, page 26	The SER states: "Ideally, use of the HDD method results in no impact on the banks, bed, or water quality of the waterbody being crossed."	There are only 5 stream crossings in Nebraska, describe clearing, grading and other activities that might be conducted between the entrance and exit pits of HDD crossings. If site-specifics aren't known, provide general or worst-case description.	P1
2.1.11.1 Steep Terrain	What is definition of "Steep Terrain"?	Provide a detailed explanation.	P1
2.1.3	The locations of the mainline valves (MLVs/IMLVs) are needed for the Reroute analysis. Table 2.1-3 identifies the location of 4 valves in Nebraska.	Provide shape files and a table listing, by milepost, the type and preliminary location of the remaining MLVs/IMLVs along the Reroute. Please provide a brief explanation of the factors that would determine final locations for the valves.	P1
2.1.8	Section 2.1.8 of the SER indicates that Keystone is investigating the possibility of building a temporary contractor's camp at a suitable location in northern Nebraska. One of the considerations of siting the construction camp in northern Nebraska is its proximity to existing power lines. It is not clear whether a back up generator would be needed or not.	Provide an air quality profile for construction camp emissions during construction and operations. Discussion of emission should include, but not be limited to, emissions associated with generators, back up generators, gas fired cooking/heating, vehicles for workers, maintenance vehicles, supply replenishment, etc.	P1
2.1.9 Access Roads, page 14	Provide environmental analysis for all access roads, including surveys for wetlands, streams, T&E, cultural resources, raptor nests, and other applicable resources.	Provide best available data for all access roads, including survey information for wetlands, streams, T&E, raptor nests and other applicable resources	P1
3.11, Table 3.11-1	Section 3.11 states that synthetic crude oil may be used as a diluent, which implies that in addition to dilbit, products commonly known as synbits or dilsynbits will be transported by Keystone XL. These are the commodities to be transported in the pipeline which have caused the most public concern. These concerns have prompted the U.S. Congress to direct PHMSA to commission a study to determine whether transportation of dilbit by pipeline has an increased risk of release compared with pipeline transportation of other liquid petroleum products.	If synbits or dilsynbits will be transported by the pipeline, provide the same data provided in Table 3.11-1 for a representative synbit and dilsynbit. Also clarify for each crude oil in Table 3.11-1 of whether it is commonly known as a dilbit, a synbit, a dilsynbit, a synthetic crude oil, or a conventional crude oil.	P1
3.7.7	Information is needed on the locations and volumes of hydrostatic test water withdrawals, as in the FEIS (Table 3.7.2-1)	Provide information for the preferred route, including volumes of test water withdrawals and locations.	P1
3.8.7		Provide a description of the visual appearance of the above-ground facilities such as pump stations and the work camp for visual resources.	P1
4.3.10, which refers the reader back to the FEIS and Appendix P	PHMSA regulations provide additional protection for areas identified as HCAs, including drinking water resources, ecologically sensitive areas, and navigable waterways. NDEQ would like to verify the locations that have been identified as HCAs along the rerouted portion of the pipeline in Nebraska. The route has changed since the FEIS so a new tabulation of HCAs is required.	Provide shape files and a table identifying each HCA in the Nebraska Reroute. The table should include the milepost location of each HCA. The table should also include the category for each HCA (commercially navigable waterways, populated areas, unusually sensitive areas (USA), operator-defined HCAs). For USAs, provide the PHMSA-defined type of USA (i.e., drinking water resource or ecological resource area).	P1
4.3.3, p. 101	On page 101 of the SER it states, "pages 3.2-5 to 3.2-12 of the FEIS provides the details of the measures Keystone will undertake to address soil impacts. On page 3.2-10 to 3.2-12 of the FEIS measures are proposed to mitigate soils impacts in the Sand Hills Topographic Region. "	Even though the Sand Hills are being avoided, what mitigation measures are being proposed to mitigate impacts to highly erodible soils in this area?	P1
4.3.4	Despite the federal jurisdictional issue, all wetlands are waters of the State of Nebraska (isolated or connected). Follow the 87 Manual. What was the methodology used to determine wetland impacts? Provide more detail in terms of what was surveyed and what was estimated from desktop analysis. How are farmed and grazed wetlands and wet meadows addressed? Were they included in the determination of wetland impacts?	Provide all wetland data forms collected in the field, as well as all GIS data available.	P1
4.3.9 - Socioeconomics / Construction Phase	No section in the SER; SER indicates economic analysis to be provided at a later date.	Provide an expected percent of workers to be hired from within the state. Use attached Data Request for Economic Impact Analysis sheet.	P1

SUMMARY OF COMMENTS ON KEYSTONE XL SUPPLEMENTAL ENVIRONMENTAL REPORT

ER Section	Comments	Requested Information	Priority P1 = 9/11/12 P2 = 9/14/12 P3 = 9/18/12
4.3.9 - Socioeconomics / Operations phase	No section in the SER; SER indicates economic analysis to be provided at a later date.	How many workers will be present for operations? Use attached Data Request for Economic Impact Analysis sheet.	P1
Appendix F-1 page F. 1-9	Appendix F-1 lists multiple undesignated streams as State Water Quality Classification Cold Water B provide data source. In addition, footnote #5 is not defined.	Provide requested data and detailed explanation.	P1
Appendix F-4	Appendix F-4, "Available Water Well Data Within 1 Mile of Preferred Alternative Route Centerline", is missing.	Provide Appendix F-4.	P1
Appendix N, Crude Oil Fact Sheets	A wide range of percentages is presented for xylene in Appendix N.	Verify the range of values presented in Appendix N for percentage of xylene in light and heavy crude oils.	P1
General: Biological	Section is incompletely referenced.	Provide the source of the land cover data. Also include what year aerial was used for interpretation.	P1
General: Economics	TransCanada is treating transmission lines for pump stations as a separate process. For substantial interconnections (such as the lengthy transmission lines that were needed to link Pump Station 22, 23, and 24 to the grid in the FEIS alternative). Discuss the baseline and impacts of these facilities.	How many electrical substations are anticipated in Nebraska?	P1
General: Economics	Anticipated Volume (bpd)	What is the updated, anticipated volume (bpd) - not capacity - for the Keystone XL during the initial years of operation?	P1
General: Economics	P. 30 "Local Workforce"	What does "local" workforce mean? State residents or county residents? Is the 10 to 15 percent of the workforce from local communities, county, or state?	P1
General: Economics	p. 92 TABLE 3.10-5 AND NARRATIVE. Total County Project Costs	Clarify what "Total County Project Costs" means. Construction costs? Asset value? Provide the detailed assumptions and calculations used to arrive at values in each column of the table. Describe in detail the method used to project the cost in each county "as if valued by the Nebraska Department Of Revenue." Include reference to Nebraska Department Of Revenue statute and administrative code supporting the method.	P1
General: Economics	p 93 Table footnote: "Project costs for counties included due to reroutes have not been determined."	What does this mean? "...for example Antelope County - a reroute county- is already included." If these need updating for reroute counties, provide.	P1
General: Economics	p 108 "Provided qualified personnel are available, approximately 10 to 15 percent (50 to 100 people) could be hired from the local work force for each spread."	Please clarify.	P1
General: Economics	p 109 "...In addition to the information noted above, Keystone will be providing NDEQ with an updated Nebraska-specific analysis on economic impacts based on the current preferred alternative route in Nebraska. The report will update both the construction and operation phase analyses."	Please clarify. When will it be provided and what additional detail will be included?	P1
General: Economics	p. 109 Local Purchases	What are the common goods and services for construction that TransCanada anticipates purchasing locally?	P1
General: Noise--no SER Sections	Only the minimum number of types and quantities of equipment is provide for the different phases. This list appears to be abbreviated. This list needs to represent actual conditions so impacts can be accurately depicted. If actuals are not available, provide a similar list depicting maximum number and type of equipment.	Expand the list to include equipment most likely to be used during each phase of construction of pipeline, pump stations, and worker camp. If this information is currently not available, include maximums.	P1
3.6.1	"Vegetative types that occur along..."	Describe desktop and field methodologies, and the data to go along with it.	P1
General: Biological	DEQ needs to coordinate with the Nebraska Game and Parks Commission (NGPC) as part of their evaluation process. In order for the NGPC to evaluate the Reroute, NGPC has requested a copy of the Applicant Prepared Biological Assessment (BA) or similar document.	Provide Applicant Prepared BA to DEQ.	P1* Provide earlier than 9/11/12 if available.
3.7.8	SER analyzes fewer species than the FEIS.	Provide clarity on how species were selected for evaluation.	P1* information may be forthcoming 09/07/12
2.1.1	Provide an estimate of the number of additional access roads that will be needed along Reroute in addition to the 32 already identified. Break out into temporary vs permanent.	Provide information.	P2
2.1.10 SER (Air and Noise)	Information on construction camps in the FEIS is general. Additional, detailed information is needed.	Provide a more complete description of the construction camps, cradle to grave, from a noise emissions standpoint. What equipment will be used to build them, what equipment will be used during operations/occupancy, how many trucks, etc. will visit each day for resupply and support, what ancillary support facilities will be there (and making noise), how long will they be in use, and what equipment will be used to disassemble/remove and restore the site?	P2
2.1.11.1	The only stream crossings that have been identified with crossing specifics are the 5 being HDD. Appendix F did not seem to indicate how streams would be crossed.	Provide a table of the waterbodies along the Reroute that would likely be crossed and the methods used, such as using either the flume or dam and pump method. Or if not available, provide the decision process including methodology and criteria to be used to determine how streams are crossed.	P2
2.1.11.1 Non-Standard Construction Procedures, Waterbody Crossings - Perennial, page 26	The SER states stream crossing TWAs "would be located at least 10 feet away from the water's edge, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land." It's been our experience that the 50 feet is common in most situations, and in those situations, the TWA matches the edge of the disturbed field. Best management practices establish TWA no closer than 10 feet from top of bank.	Confirm whether stream crossing TWA's will be 10 feet or 50 feet from the water's edge. If 10 feet please explain why this is the case.	P2
3.1.2	Section 2.1.10 of the SER indicates that each pump station will have three to five, approximate 6,500 horsepower electrically driven pumps; however, Section 2.2.1 of the FEIS indicates that each pump station would consist of up to six pumps driven by electric motors.	Specify number of electrically driven pumps at each station. If this information is not available, the maximum number will be used for DEQ/DOS analysis.	P2
3.5.3	No reference to Natural Resource District permits in the SER.	Clarify what would and wouldn't be covered by permits and oversight.	P2

SUMMARY OF COMMENTS ON KEYSTONE XL SUPPLEMENTAL ENVIRONMENTAL REPORT

ER Section	Comments	Requested Information	Priority P1 = 9/11/12 P2 = 9/14/12 P3 = 9/18/12
3.8.1	Report lacks discussion of types of land crossed or avoided in the Land Use section. Cross reference this type of information in appropriate sections.	Provide discussion of federal, state, or other public land crossed or avoided by the reroute in the land use section. Reference this information in the wildlife and terrestrial vegetation discussion. For example a reference to these in section 3.6.2 would be beneficial. Provide GIS coverage of these lands. Review Section 3.9 of the FEIS and provide updated data and tables to reflect information related to the Nebraska reroute.	P2
3.8.2	DEQ requested location by MP for churches, residences, schools, daycare facilities, and other high consequence areas within 250 ft of the construction ROW - information is only provided for within 50 feet of the preferred route.	Provide GIS coverage of surveys conducted for all structures and other features such as cemeteries.	P2
3.8.5	Conservations Easements	Does the proposed Reroute affect any lands subject to conservation easements (other than CRP)?	P2
Appendix L, CMRP, 2.7 Access, page 4; 4.7 Trenching, page 24; 4. Welding, Field Joint Coating, and Lowering In, page 26	What is the maximum distance Keystone will allow between wildlife crossings, which provide in each location: a gap in the spoil pile(s), a reasonably wide plug in the trench, and one-joint-long gap in the welded pipe?	Provide maximum distance between wildlife crossings.	P2
General: Cultural Resources	Once Phase I surveys are complete, need to complete Phase II/III excavations and determine eligibility recommendations.	Provide timing of Phase II/III surveys.	P2
General: Cultural Resources	If historic properties (eligible) are identified, need to determine effects and mitigation measures.	For surveys that have been completed to date, provide effects and mitigation measures for eligible historic properties.	P2
General: Cultural Resources	Need to identify any trail crossings of new route.	Identify potentially eligible trail crossings.	P2
General: Cultural Resources	Need to complete surveys. What locations were surveyed? What is the timing for completing remaining survey? Provide interim survey information for surveys completed to date.	The interim survey information should include, but not be limited to, figures depicting sites and structures, areas surveyed, and not surveyed. Provide information on the locations surveyed and the timing for remaining surveys.	P2
General: Cultural Resources	The report lacks a holistic discussion of the entire proposed alternative route through Nebraska.	Provide a holistic discussion of the entire proposed alternative route through Nebraska. This discussion/figures would include sites and structures, areas surveyed, and not surveyed for the portions of the preferred alternative route and original FEIS route (that is still being proposed).	P2
General: Wetlands	Discussion of wetlands is far too general.	Include more information collected during surveys. Identify all wetlands that are crossed (there appear to be more than the 27 indicated). Also add discussion of how wetlands would be impacted, or not, during and after construction. Provide wetland delineation report. If not, assumption will be made: that the effects of heat from the pipeline to wetlands is unknown, but there are potential impacts to wetland soils, hydrology, and vegetation.	P2
2.1.1	This section indicates construction and operation emissions are quantified in the August 2011 FEIS; however, the construction and operational emissions presented in the FEIS (Table 3.12.1 9 and 3.12.1-10) does not reflect the Reroute in Nebraska. Original air quality comment on SER has not been not addressed.	Provide Nebraska-specific construction and operations emissions.	P3
2.1.1	Since the general description and configuration of all pump stations presented in the FEIS remain accurate for the newly configured Project (according to SER Section 2.1.10), explain why the acreage disturbed during the construction of the Nebraska pump stations vary from 7.12 acres (PS-26) to 15 acres (PS-22 to PS-25) (see Table 2.1-1 in SER, Note 5)?	Explain why there is only one pumpstation that requires 7.12 acres and the remainder of the stations require 15 acres? What's the difference?	P3
2.1.10	From FEIS, backup generators are not needed for the pump stations.	Clarify what happens in the event of a power failure.	P3
2.1.3 Ancillary facilities summary	"Check valves will be located downstream of major rivers…"	Provide clarification on the meaning of "downstream" in the sentence.	P3
2.1.8	There is no noise analysis.	Provide Reroute specific noise analysis.	P3
Appendix C, Attachment A, un-numbered pages at end of appendix	Will the 2 spill scenarios in SER Appendix C, Attachment A be included in the PSRP and/or ERP? Besides describing the scenarios, include the situations and lessons learned.	Two spill scenarios are included in SER Appendix C, Attachment A. Will Keystone include these 2 spill scenario write-ups in the PSRP and/or ERP?	P3
Appendix G - Noxious Weeds	Is there a Noxious Weed Management Plan? If so it should be referenced in Appendix G and in the main document's text for 3.6 Terrestrial Vegetation. Sourcing should be accurate to depict where the mitigations for the management plan came from or how they were created.	Noxious Weed Resource Report, include approach to managing weeds in wetlands and surface water areas.	P3
Appendix N, Crude Oil Fact Sheets	DEQ recognizes that each batch of crude oil has a unique set of physical and chemical properties. DEQ needs specific MSDS data for emergency responders in the case of a spill.	Describe the mechanism by which DEQ will be provided MSDS data for the product being transported through the pipeline in the event of a spill. The process should outline the timeframe DEQ can expect to receive MSDS.	P3
Appendix N, Crude Oil Fact Sheets Page 3, Section 7 (Toxicological Information for Typical Heavy Oil)	The fact sheet for "Typical Heavy Oil" states that "This product may contain benzene."	Does Keystone anticipate that there would be instances where the product carried by the pipeline does not contain benzene? Please explain	P3
General: Economics	The FEIS stated that there would be 8 pipe stockpile sites, 3 railroad sidings, and 7 contractor yards in Nebraska.	How do these estimates change with the Nebraska reroute? Based on footnote 6 to Table 2.1-1, the SER suggests the counts are now 9, 3, and 3, respectively. Is this correct?	P3
General: Economics	p. 13 - 3. The FEIS states that construction camps will accommodate approximately 600 workers (p. 2-20). The SER states that the camp in Nebraska will accommodate up to 900 workers (p. 13).	Please reconcile.	P3
General: Economics	p. 13 - 3. 4. Workcamp	Would the development of a construction camp in northern Nebraska replace the one near Winner, SD? Which spreads would each camp support?	P3

SUMMARY OF COMMENTS ON KEYSTONE XL SUPPLEMENTAL ENVIRONMENTAL REPORT

ER Section	Comments	Requested Information	Priority P1 = 9/11/12 P2 = 9/14/12 P3 = 9/18/12
General: Economics	Based on Table 2.1-7 in the SER and section 2.3.5.1 in the FEIS, days to complete each spread are now as follows: Spread 8 – 154 days, Spread 9 – 150 days, Spread 10 – 164 days.	Please verify.	P3
General: Economics	p. 91 Temporary Housing	What are the specific data sources for the temporary housing figures?	P3
General: Economics	Effects of the first Keystone Pipeline may have had on property values along the pipeline route were previously requested by DEQ.	Provide property value information available from the first Keystone Pipeline in Nebraska.	P3
Table 3.8-1 Surface Ownership	Surface waters in Nebraska are waters of the State. The bed and the banks are owned by the adjacent property owners. Table lists 0.75 miles of "waterbody" ownership. The crossing at the Platte River by itself is at least 3200 feet long (5200 feet long including all side channels).	Provide information on how ownership was determined. Provide a detailed explanation on how waterbody crossings are measured.	P3

Appendix H.2

Data Request Response 9/14/2012

Nebraska Department of Environmental Quality 1.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 3.3

Comment:

How did Keystone determine compaction-prone soils? Keystone's GIS database did not provide any information to this point.

Requested Information:

Provide GIS data for compaction-prone soils. Include metadata.

Response:

Keystone has discussed its methodology and data sources with NDEQ's environmental contractor to address this data request.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 2.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 4.0

Comment:

FEIS analyzed a different route than the Reroute. Resource impact analysis in the FEIS is not necessarily applicable for the reroute alternatives.

Requested Information:

Provide impacts to spill receptors (ecological, socioeconomic, cultural) applicable to the Reroute in Nebraska. Please provide a paragraph describing the impacts to each resource in the area of the Nebraska Reroute (Air Quality; Geology, Minerals, and Paleontology; Soils; Water Resources; Vegetation; Wildlife, Aquatic Resources, and Sensitive Species; Land Use and Aesthetics; Cultural Resources; Socioeconomics; Public Health and Safety) if a size of moderate volume (approximately XXX gallons) occurred during operation of the pipeline. Please also provide a brief description of measures proposed to mitigate impacts to each resource in case of a spill during pipeline operation.

Response:

The receptors in Nebraska along the preferred alternative route are not materially different from those analyzed in the FEIS, Section 3.13 with respect to the assessment of the impacts of potential spills to ecological, socioeconomic, and cultural receptors.

Response provided by: Jon Schmidt, exp/Jim White, TransCanada

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Nebraska Department of Environmental Quality 3.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 2.1.10 (Air and Noise)

Comment:

Does this table include equipment for constructing a pump station?

Requested Information:

Will the pump stations and MLV stations be constructed by the same crews and equipment represented by the construction spreads in Table 3.12.1-8? If not, provide similar equipment list and information associated with pump stations and MLVs as is depicted in Table 3.12.1-8

Response:

All MLVs are installed by the pipeline contractor. A tie in point is left at the location of the valve by the mainline pipeline construction crew. A tie-in crew focused on valve installations will follow behind the mainline pipeline construction operation and will install the valves. A tie-in crew is typically made up of 20 to 25 workers. The equipment includes 2 to 4 583 class side boom tractors, 4 to 6, ¾ ton welding rigs with arc welding equipment, a 235 class hoe, a front end loader or a D7 class dozer and 2 to 4, ¾ to ½ ton pick-up type trucks hauling materials and personnel. The MLV construction equipment usage is included in the pipeline construction equipment table.

Pump station construction is a separate operation. Pump station construction crews range from 80 to 100 workers at peak per site. The equipment used in pump station construction typically includes: an LS 98A crane, 1 or 2 D6/7 Dozers, a 14G class motor grader, 3 to 5 welding rigs, 2 1750 to 2200 cfm air compressors, 1 to 3, 650 hp dump trucks, (2) 5 ton flatbed trucks (650 hp), 3 to 6, ½ to ¾ ton pickups. Pump station construction equipment usage is also included within the broader pipeline construction equipment usage table.

Below is table 3.12.1-8 which provides the typical Pipeline construction equipment per spread.

In addition to the equipment listed in the table, ten 10-hp diesel or gasoline generators could be used per spread.

Construction equipment listed in this table does not directly correlate to equipment listed in Table 2.4.2-1; however, total horsepower is similar for the purposes of the air emissions analysis.

Response provided by: Bob Bradley, TransCanada

TABLE 3.12.1-8
Construction Equipment per Spread for the Project [a, b]

Equipment Description	Units per Spread	Equipment Rating (hp)	Hours of Operation (hours/day)	Fuel Type
Automobile	50	500	2	Gasoline/ Diesel
Bus	7	190	3	Diesel
Pickup 4x4	100	500	5	Gasoline/Diesel
Welding Rig	30	400	10	Gasoline/Diesel
Winch Truck	3	650	8	Diesel
Dump Truck	1	650	8	Diesel
Flatbed Truck	8	650	9	Diesel
Fuel Truck	2	650	9	Diesel
Grease Truck	1	1	9	Diesel
Mechanic Rig	1	500	10	Diesel
Skid Truck	1	650	10	Diesel
Stringing Tr. and Tr.	15	650	10	Diesel
Truck and Float	9	650	10	Diesel
Truck and Lowboy	5	650	10	Diesel
D-7 Dozer	12	240	8	Diesel
D-8 Dozer	22	310	8	Diesel
D-8 Ripper	0	310	0	Diesel
D-5 Tow	2	90/120	8	Diesel
D-7 Tow	1	200/240	8	Diesel
D-6 Tack	3	200	8	Diesel
CAT 225	7	150	8	Diesel
CAT 235	26	250	8	Diesel
CAT 235 w/Hammer	0-1	260	8	Diesel
Bending Machine 22-36	1	159	8	Diesel
Crane LS-98A (35 ton)	0-2	230	8	Diesel
Farm Tractor	2	60	8	Diesel
Frontend Loader 977	2	190	8	Diesel
Motor Grader 14G	2	200	8	Diesel
Sideboom 571	1	200	8	Diesel
Sideboom 572	1	200/230	8	Diesel
Sideboom 583	22	300/310	8	Diesel
Sideboom 594	4	410	8	Diesel
Air Compressor 1750 cfm	3-9	50	8	Gasoline

Response provided by: Bob Bradley, TransCanada

TABLE 3.12.1-8
Construction Equipment per Spread for the Project [a, b]

Equipment Description	Units per Spread	Equipment Rating (hp)	Hours of Operation (hours/day)	Fuel Type
Generators	9	10	8	Gasoline
Pump – 3"	1	20	8	Gasoline
Pump - 6"	9	40	8	Gasoline

[a] In addition to the equipment listed above, ten 10-hp diesel or gasoline generators could be used per spread.
[b] Construction equipment listed in this table does not directly correlate to equipment listed in Table 2.4.2-1; however, total horsepower is similar for the purposes of the air emissions analysis.

Response provided by: Bob Bradley, TransCanada

Nebraska Department of Environmental Quality 4.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 2.1.11.1 (Non-Standard Construction Procedures, Waterbody Crossings - Perennial) Page 25

Comment:

Explain why open-cutting flowing waterbodies is the preferred method considering the environmental impacts downstream sediment transport could have on vertebrate and invertebrate life forms and their lifecycles, when dry methods (e.g. pump around) are available and feasible.

Requested Information:

Justify the crossing methods.

Response:

Stream crossing methods are established specific to the conditions and quality of the waters being crossed. For example, high quality, cold water blue ribbon trout streams are often constructed differently than warm water and lower quality streams. The U.S. Army Corps of Engineers regulates jurisdictional waters of the U.S. and determines the crossing methods for a project. The State has an avenue for participation through the Section 401 Water Quality Certification process. The USACE normally permits lower quality waters such as the majority of those found in Nebraska – as open cut wet crossings.

As described in the FEIS Section 3.7.3.1: "The typical flowing open cut crossing method allows the construction spread to move more quickly and reduces the amount of time the waterbody is subjected to construction disturbance." Crossing the stream quickly reduces the duration and amount of sedimentation that is released to the water column. Sections 2.3.3.5, 3.3.2.2, 3.7.3.1, Consolidated Response WAT-1 of the FEIS and Section 7.4 of the CMRP discuss the proposed crossing methods in more detail. The open cut method is designed to limit the disturbance to the stream to a short duration (maximum 24 to 48 hours for minor and intermediate streams) during which the pipeline trench is excavated, the pipe lowered into the trench, the trench backfilled and the stream bottom and banks are restored and stabilized. The dam and pump and flume crossing methods require a longer period of disturbance within the stream. Short pulses of sediment load such as that produced during a one day construction of a pipeline through a stream is not

inconsistent with the natural variability of sediment load that is experienced in spring rains and benthic and aquatic organisms are adapted to relatively high turbidity, short duration events as further described below.

It is widely recognized that in-stream excavation activities result in short-term increases in Total Suspended Solids (TSS) levels and turbidity. These levels decrease with distance from the source as particles settle. The levels also decrease with time following cessation of in-stream activities.

The impact to aquatic organisms by an increase in suspended solids levels is a function of the duration of exposure and the concentration of suspended solids. While relatively high levels of TSS can occur immediately downstream of a crossing, the effects are very short-term with construction across most streams being completed in one day.

Additionally, the waterbodies in the Project area experience wide ranges in seasonal flow rates, large peak flows due to precipitation events, and drain through areas with relatively fine-grained soils. These factors cause sudden natural peaks in suspended solids concentrations. The aquatic systems supported by these waterbodies are adapted to such increases.

The extent of the increase in TSS levels will be mitigated by Keystone through the use of BMPs that include: measures to reduce the period of in-stream activity, spoil handling techniques, and installation of bridges where appropriate. Standard industry BMPs also address upland erosion and sediment control procedures to limit the potential for runoff from disturbed areas to contribute to increased in-stream TSS levels.

Solids introduced into suspension in a waterbody ultimately would settle on the streambed downstream of the crossing. The distance from the crossing depends on the depth of flow, flow velocity, particle diameter and flow characteristics. Coarser materials (sands and gravels) settle relatively close to the crossing location and tend to be distributed uniformly across the stream section. Fine silts and clays can stay in suspension for considerable periods of time and tend to settle in natural depositional areas downstream of the crossing.

The channel substrates of the streams and rivers that would be crossed by the project consist primarily of fine-grained materials (clay, silt, and sand). Fine-grained excavated materials that become deposited downstream are expected to be similar to the existing substrate. Stream flows would re-suspend and re-deposit excavated materials during higher flow periods. Young and Mackie (1991) found that benthic invertebrates inhabiting the upper surface of the substrate may be more adaptable to sedimentation than are taxa occupying the interstitial spaces of the substrate. Post-construction studies have shown that benthic invertebrate populations generally have recovered to normal within one to two months of construction. Tsui and McCart (1981) reported benthic invertebrate populations downstream of a water crossing had recovered to near pre-construction levels shortly after construction.

Response provided by: Steve Craycroft, TransCanada

The BMPs adopted for the Project as described in the CMRP would mitigate the short-term effects of downstream sedimentation, as discussed above.

Tsui, P. T. P. and P. J. McCart. 1981. Effects of Stream Crossing by a Pipeline on the Benthic Macroinvertebrate Communities of a Small Mountain Stream. Hydrobiologia, 79:271-276.

Young, R. J. and G. L. Mackie. 1991. The Effect of Winter Oil-pipeline Construction on the Benthic Invertebrate Community of Hodgson Creek. N.W.T. Can. J. Zool. 69: 2154-2160.

Response provided by: Steve Craycroft, TransCanada

Nebraska Department of Environmental Quality 5.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 2.1.11.1 (Non-Standard Construction Procedures, Waterbody Crossings - Perennial) Page 26

Comment:

The SER states: "Ideally, use of the HDD method results in no impact on the banks, bed, or water quality of the waterbody being crossed."

Requested Information:

There are only 5 stream crossings in Nebraska, describe clearing, grading and other activities that might be conducted between the entrance and exit pits of HDD crossings. If site-specifics aren't known, provide general or worst-case description.

Response:

Clearing and grading between the entry and exit pits of HDD crossings is typically limited to hand clearing brush, trees and other vegetation along a six foot wide path on the outside edges of the ROW to facilitate placement of the TruTracker wires used to monitor the location of the drill head during the drilling of the pilot hole.

To provide access to the water source to support the HDD operation, and for the mainline hydrostatic testing, clearing and/or grading may be required within the 50 foot permanent easement on one or both sides of the waterbody. Topsoil would be removed from any areas requiring grading. This disturbance would be maintained to as small a footprint as practicable and erosion and sediment control measures would be installed where necessary to minimize the potential off-site sedimentation or impact to the waterbody.

Response provided by: Steve Craycroft, TransCanada

Nebraska Department of Environmental Quality 6.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 2.1.11.1 Steep Terrain

Comment:

What is definition of "Steep Terrain"?

Requested Information:

Provide a detailed explanation.

Response:

Steep terrain as it pertains to the assessment of siting constraints and opportunities used to discriminate between route alternatives is generally considered terrain where the ground has a slope of greater than 20 percent. However, this measure of steepness is not absolute as site specific conditions (including slopes less than 20 percent) will determine if special construction techniques are warranted to safely conduct the work and/or protect the environment.

Response provided by: Stephen Marr, TransCanada

Nebraska Department of Environmental Quality 7.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 2.1.3

Comment:

The locations of the mainline valves (MLVs/IMLVs) are needed for the Reroute analysis. Table 2.1-3 identifies the location of 4 valves in Nebraska.

Requested Information:

Provide shape files and a table listing, by milepost, the type and preliminary location of the remaining MLVs/IMLVs along the Reroute. Please provide a brief explanation of the factors that would determine final locations for the valves.

Response:

Keystone will provide an answer to this data request by no later than Wednesday, September 19, 2012.

Response provided by: Stephen Marr, TransCanada

Nebraska Department of Environmental Quality 8.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 2.1.8

Comment:

Section 2.1.8 of the SER indicates that Keystone is investigating the possibility of building a temporary contractor's camp at a suitable location in northern Nebraska. One of the considerations of siting the construction camp in northern Nebraska is its proximity to existing power lines. It is not clear whether a backup generator would be needed or not.

Requested Information:

Provide an air quality profile for construction camp emissions during construction and operations. Discussion of emission should include, but not be limited to, emissions associated with generators, backup generators, gas fired cooking/heating, vehicles for workers, maintenance vehicles, supply replenishment, etc.

Response:

All camps will be operated with local commercial power with emergency diesel powered generators used only in the event of commercial power loss. Camp kitchen cooking equipment is typically powered by either propane or electricity. Camp transportation and maintenance vehicles are either gas or diesel powered as are camp supply replenishment vehicles.

There has been no specific "air quality profile" developed for any of the proposed Keystone contractor camps. Typical camp construction equipment would include motor graders and tractors, backhoes, trucks (pick-ups, dump, 18-wheelers) and cranes and/or other hoisting devices.

Response provided by: Rick Perkins, TransCanada

Nebraska Department of Environmental Quality 9.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 2.1.9 Access Roads, page 14

Comment:

Provide environmental analysis for all access roads, including surveys for wetlands, streams, T&E, cultural resources, raptor nests, and other applicable resources.

Requested Information:

Provide best available data for all access roads, including survey information for wetlands, streams, T&E, raptor nests and other applicable resources

Response:

Access roads along the reroute portion of the preferred alternative route in Nebraska have not been identified or surveyed at this time. The access roads along this portion of the preferred alternative route will not be identified until the fall of 2012, and surveys would not be completed until the spring of 2013. For access roads not surveyed to date, Keystone assessed impacts to wetlands, waterbodies, and listed species using existing NWI, NHD, and species habitat maps that were provided to NDEQ in May, 2012.

For access roads that have been surveyed along the FEIS portion of the preferred alternative route, the survey data is provided on the CDs containing field survey data that was filed in the Supplemental Environmental Report on September 5, 2012.

In addition, wetland and stream data for access roads will be submitted to the USACE for review when Keystone submits its Nationwide Permit Pre-construction Notification package. This will be completed in the fall of 2012. Federally listed species that are evaluated per the project are discussed in the BA which was provided to the DOS.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 10.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 3.11, Table 3.11-1

Comment:

Section 3.11 states that synthetic crude oil may be used as a diluent, which implies that in addition to dilbit, products commonly known as synbits or dilsynbits will be transported by Keystone XL. These are the commodities to be transported in the pipeline which have caused the most public concern. These concerns have prompted the U.S. Congress to direct PHMSA to commission a study to determine whether transportation of dilbit by pipeline has an increased risk of release compared with pipeline transportation of other liquid petroleum products.

Requested Information:

If synbits or dilsynbits will be transported by the pipeline, provide the same data provided in Table 3.11-1 for a representative synbit and dilsynbit. Also clarify for each crude oil in Table 3.11-1 of whether it is commonly known as a dilbit, a synbit, a dilsynbit, a synthetic crude oil, or a conventional crude oil.

Response:

Attached is a revised Table 3.11-1 that identifies, for each crude oil listed, its oil category. The North American crude oil products listed are representative of products that may or may not be transported by the Keystone XL pipeline. The other crude oil products listed are provided for comparison. Keystone's shipper determines the specific products to be transported from time to time, consistent with Keystone's FERC tariff. Synthetic oil is highly upgraded bitumen with good flow characteristics. Synbit is a blend of synthetic crude and bitumen. Albian Heavy Synthetic (AHS) is a partially upgraded dilsynbit.

Response provided by: Sandra Barnett, TransCanada

NDEQ Data Response September 14th 2012

Table 3.11-1 Physicochemical Properties of Various Crude Oils

Parameter	Unit	Heavy[1]										Light[1]							
		Western Canadian Select[2,5]	Western Canadian Blend[2]	Lloyd Blend (Canada)[2]	Fosterton (Canada)[2]	Boscan (Venezuela)[3]	California (API 15)[3]	Hondo Monterey (California)[3]	Maya (Mexico)[3]	Surmont Heavy Blend (Canada)[2]	Albian Heavy Synthetic (Canada)[2]	Suncor Synthetic A (Canada)[2,5]	Mixed Sweet Blend (Canada)[2]	Arabian Heavy (Saudi Arabia)[3]	Iranian Heavy[3]	Bakken Crude (North Dakota)[3,5]	Azeri Light (Azerbaijan)[4]	Qua Iboe (Nigeria)[3]	Ekofisk (Norway)[4]
Crude Type	-	Heavy Sour Dilbit	Heavy Sour Conventional	Heavy Sour Conventional	Heavy Sour Conventional	Heavy Sour Conventional	Heavy Sour Conventional	Heavy Sour Conventional	Heavy Sour Conventional	Heavy Sour Synbit	Heavy Sour Dilsynbit	Light Sweet Synthetic	Light Sweet Conventional	Medium Sour Conventional	Medium Sour Conventional	Light Sweet Conventional	Light Sweet Conventional	Light Sweet Conventional	Light Sweet Conventional
Density	g/ml	0.93	0.93	0.93	0.93	1	0.97	0.94	0.93	0.94	0.94	0.86	0.83	0.89	0.89	-	0.85	-	0.832
Gravity	°API	20.6	20.6	20.8	20.5	10.9	13.2	18.3	20.2	19.6	19.1	33.1	39.5	27	30.0-31.0	42.1	34.8	35.8	38.42
Sulfur	wt%	3.49	3.17	3.52	3.24	4.6	5.5	4.7	-	2.98	2.4	0.19	0.44	2.8	1.20-1.65	0.17-0.20	0.15	0.12	0.22
MCR	wt%	9.61	8.59	9.57	9.66	-	-	-	-	7.27	11.93	ND	1.94	-	-	-	-	-	-
Sediment	ppmw	360	299	333	207	-	-	-	-	160	754	-	-	-	-	-	-	-	-
TAN	mgKOH/g	0.93	0.73	0.81	0.2	-	-	-	-	1.37	0.50	-	-	0.1	-	-	0.26	-	0.13
Benzene	vol%	0.16	0.1	0.2	0.02	0.012	0.036	0.093	0.075	0.07	0.14	0.05	0.29	0.36	0.083	0.28	0.1	-	0.12
Toluene	vol%	0.29	0.18	0.35	0.11	0.018	0.104	0.21	0.278	0.20	0.39	0.24	0.85	1.89	0.25	0.92	0.33	-	0.64
Ethyl Benzene	vol%	0.06	0.06	0.06	0.17	0.012	0.052	0.075	0.11	0.09	0.12	0.14	0.25	1.11	0.13	0.33	-	-	-
Xylenes	vol%	0.29	0.25	0.32	0.3	0.03	0.119	0.2323	0.374	0.20	0.45	0.51	1.1	3.46	0.51	1.4	-	-	-
Salt	ptb	49.1	74.3	56.8	13	-	-	-	-	5.4	12.0	-	-	-	-	-	-	-	-
Nickel	mg/L	57.4	45.5	58.5	47.8	117	111	-	45.5	50.7	43.1	ND	4.3	-	22.6	-	3	3.3	2.3
Vanadium	mg/L	137.7	98.6	130.7	109	1320	266	-	257	138.6	85.4	ND	8.3	-	81	-	0.7	0.3	2.1
Butanes	vol%	2.08	0.63	1.83	1.02	-	-	-	-	0.71	1.52	1.7	3.66	-	-	7.5	-	-	-
Pentanes	vol%	4.21	3.69	4.48	0.89	-	-	-	-	1.31	4.29	2.96	3.47	-	-	6.4	-	-	-
Hexanes	vol%	3.78	3.08	4.15	1.8	-	-	-	-	1.90	4.89	4.01	5.84	-	-	2.4	-	-	-
Heptanes	vol%	2.74	2.51	2.97	2.13	-	-	-	-	1.83	3.78	3.51	7.19	-	-	10	-	-	-
Octanes	vol%	2.13	2.16	2.12	3.05	-	-	-	-	2.32	3.30	4.47	7.24	-	-	8.9	-	-	-
Nonanes	vol%	1.52	1.85	1.48	3	-	-	-	-	2.10	2.09	3.8	5.58	-	-	3.7	-	-	-
Decanes	vol%	0.71	0.85	0.7	1.42	-	-	-	-	1.13	0.94	2.02	2.49	-	-	-	-	-	-

[1]Naming conventions for crude oil are not consistent within the worldwide industry. According to CrudeMonitor.ca, heavy oil has an API below 22.3°, medium oil has an API between 22.3° and 31.1°, and light oil has an API greater than 31.1°.

[2]5-year Averages from CrudeMonitor.ca.

[3]Data from Environment Canada's Crude Oil Properties Database

[4]Data from Statoil Crude Oil Assay

[5]Western Canadian Select, Suncor Synthetic A and Bakken Crude Oils are representative types to be transported by the Keystone XL

ND indicates measurement below instrument threshold; MCR = Micro Carbon Residue; TAN = Total Acid Number; g/ml = grams per milliliter; API = American Petroleum Institute; wt% = weight percent; ppmw = parts per million weight; mgKOH/g = milligrams Potassium Hydroxide per gram; vol% = percent volume; ptb = pounds per thousand barrels; mg/L = milligrams per liter

Response provided by: Sandra Barnett, TransCanada

Nebraska Department of Environmental Quality 11.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 3.7.7

Comment:

Information is needed on the locations and volumes of hydrostatic test water withdrawals, as in the FEIS (Table 3.7.2-1)

Requested Information:

Provide information for the preferred route, including volumes of test water withdrawals and locations.

Response:

The table below (taken from the Biological Assessment) presents the preliminary information for hydrostatic test water volumes and potential uptake locations. A final hydrostatic test plan will be finalized once a final route has been selected and the topographic and civil survey can be completed. Consultation with construction contractors is also required to determine test segments, sequencing of testing, and water volume needs. Once all of this work is completed, final test water locations, discharge locations, and volumes will be determined and included in permit packages to the respective permitting agencies. All test water withdrawals will be permitted by the appropriate regulatory agency.

Response provided by: Jon Schmidt, exp

Potential Hydrostatic Test Water Sources along the Project Route			
County	**Approximate Milepost**	**Waterbody Name**	**Maximum Water Withdrawal (million gallons)**
Montana			
Phillips	25.4	Frenchman Creek	14,3489
Valley	83.4	Milk River	9,707,38
Valley/McCone	89.2 to 89.3	Missouri River	20,012,79
Dawson	196.4	Yellowstone River	40,205,81
South Dakota			
Harding	295.1	Little Missouri River	14,140,37
Perkins	360.97	North Fork Moreau River	21,377,26
Meade	429.9	Cheyenne River	17,944,92
Haakon	486	Bad River	8,067,20
Tripp	541.3	White River	28,672,02
Nebraska			
Boyd	618.1	Keya Paha River	TBD[1]
Holt	626.1	Niobrara River	TBD
Antelope	713.3	Elk Horn River	TBD
Nance	761.7	Loup River	TBD
Polk	775.2	Platte river	TBD

[1] Test water volumes cannot be determined until the final route topographic survey has been completed. Due to incomplete survey access permission on the reroute portion of the preferred alternative route in Nebraska, these surveys will not be completed until 2013.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 12.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 3.8.7

Comment:

Requested Information:

Provide a description of the visual appearance of the above-ground facilities such as pump stations and the work camp for visual resources.

Response:

Keystone will provide an answer to this data request by no later than Wednesday, September 19, 2012.

Response provided by: Steve Marr, TransCanada

Nebraska Department of Environmental Quality 13.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 4.3.10, which refers the reader back to the FEIS and Appendix P.

Comment:

PHMSA regulations provide additional protection for areas identified as HCAs, including drinking water resources, ecologically sensitive areas, and navigable waterways. NDEQ would like to verify the locations that have been identified as HCAs along the rerouted portion of the pipeline in Nebraska. The route has changed since the FEIS so a new tabulation of HCAs is required.

Requested Information:

Provide shape files and a table identifying each HCA in the Nebraska Reroute. The table should include the milepost location of each HCA. The table should also include the category for each HCA (commercially navigable waterways, populated areas, unusually sensitive areas (USA), operator-defined HCAs). For USAs, provide the PHMSA-defined type of USA (i.e., drinking water resource or ecological resource area).

Response:

NDEQ has received the HCA locations from PHMSA. NDEQ and Keystone are confirming consistency of HCA locations directly.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 14.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 4.3.3, p. 101

Comment:

On page 101 of the SER it states, "Pages 3.2-5 to 3.2-12 of the FEIS provides the details of the measures Keystone will undertake to address soil impacts. On page 3.2-10 to 3.2-12 of the FEIS measures are proposed to mitigate soils impacts in the Sand Hills Topographic Region. "

Requested Information:

Even though the Sand Hills are being avoided, what mitigation measures are being proposed to mitigate impacts to highly erodible soils in this area?

Response:

Keystone has avoided many areas of highly erodible soil in the routing of the project. During the process of finalizing the route across individual landowners and acquiring easements, Keystone will implement micro-routing adjustments where practicable and appropriate to minimize steep topography with fragile soils. Specific construction, reclamation, and post-construction procedures have been developed to minimize potential impacts to highly erodible soils, as described in Keystone's CMRP and the Sandy Prairie Construction/Reclamation Unit, (a site-specific reclamation plan that itemizes construction, erosion control, and revegetation procedures in sandy soils)(see Appendix H of the Nebraska SER).

Additional information on the measures that will be implemented to minimize potential impacts to erodible soils during construction and reclamation are described in the FEIS (Section 3.2.2.1, Appendix A - ERO-1, Appendix H, and DR 4.3.1) and the CMRP (Section 4.15).

Response provided by: Steve Craycroft

Nebraska Department of Environmental Quality 15.0

Reference: Nebraska Supplement Environmental Report

ER Section 4.3.4

Comment:

Despite the federal jurisdictional issue, all wetlands are waters of the State of Nebraska (isolated or connected). Follow the 87 Manual. What was the methodology used to determine wetland impacts? Provide more detail in terms of what was surveyed and what was estimated from desktop analysis. How are farmed and grazed wetlands and wet meadows addressed? Were they included in the determination of wetland impacts?

Requested Information:

Provide all wetland data forms collected in the field, as well as all GIS data available.

Response:

Wetland impacts were determined by overlaying the project footprint that is known to date over either field delineated wetlands or desktop delineated wetlands. Field delineated wetlands were determined using USACE 1987 field survey protocols. Desktop wetland delineation was determined using USFWS NWI maps overlain on recent aerial imagery to determine if the NWI wetland was converted to cropland or is still a wetland.

Farmed or grazed wetlands were delineated as either wetland or agriculture based on the NWI mapping or field surveys. If the field surveys found all three USACE delineation criteria, it was delineated as a wetland. If hydrophytic vegetation was not the dominant vegetation in all cases, then it would not have been delineated as a wetland as per USACE methodology. For desk top analysis, if an NWI wetland was mapped over an active row crop area, then it was not called out as a wetland because the vegetation is unlikely to be hydrophytic.

Due to incomplete survey access permission, less than 40% of the preferred alternative route in

Nebraska has been surveyed, most of which lies along the FEIS portion of the preferred alternative route.

Once the route is finalized and access is acquired, field surveys will be completed where access is granted. Keystone will then prepare a Nationwide Permit No. 12 application (Pre-construction Notification (PCN) package) for submission to the USACE. Wetland data forms will be included in a wetland delineation report when that application is filed and copied to the 401 Water Quality branch of NDEQ. It is not expected that this will be completed until early 2013, depending on survey progress.

Available GIS field data will be provided on Monday, September 17, 2012.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 16.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 4.3.9 - Socioeconomics / Construction Phase

Comment:

No section in the SER; SER indicates economic analysis to be provided at a later date.

Requested Information:

Provide an expected percent of workers to be hired from within the state. Use attached Data Request for Economic Impact Analysis sheet.

Response:

Keystone will provide an answer to this data request by no later than Wednesday, September 19, 2012.

Response provided by: Andrea Jalbert, TransCanada

Nebraska Department of Environmental Quality 17.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 4.3.9 - Socioeconomics / Operations phase

Comment:

No section in the SER; SER indicates economic analysis to be provided at a later date.

Requested Information:

How many workers will be present for operations? Use attached Data Request for Economic Impact Analysis sheet.

Response:

Keystone will provide an answer to this data request by no later than Wednesday, September 19, 2012.

Response provided by: Andrea Jalbert, TransCanada

Nebraska Department of Environmental Quality 18.0

Reference: Nebraska Supplemental Environmental Report

ER Section: Appendix F-1 page F. 1-9

Comment:

Appendix F-1 lists multiple undesignated streams as State Water Quality Classification Cold Water B provide data source. In addition, footnote #5 is not defined.

Requested Information:

Provide requested data and detailed explanation.

Response:

The data source is identified at footnote 3 as clarified below. The footnotes should be changed as follows:

> 3-- Designated and Supports Use information obtained from EPA WATERS Assessed 305b Water designated use attainments query.
> 5--should be changed to 1.

Keystone characterized the stream use designation from EPA 305b reports. If the stream was not listed, the designation could not be provided.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 19.0

Reference: Nebraska Supplemental Environmental Report

ER Section: Appendix F-4

Comment:

Appendix F-4, "Available Water Well Data within 1 Mile of Preferred Alternative Route Centerline", is missing.

Requested Information:

Provide Appendix F-4.

Response:

Appendix F-4 was inadvertently omitted from the document and is herein attached.

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Keya Paha	Re-Route Portion of the Preferred Alternative Route	613.32	-0.49	142855	Livestock	33	7.6	42.935417	-99.323306
Keya Paha	Re-Route Portion of the Preferred Alternative Route	613.53	-0.09	205498	Domestic	60	25	42.941267	-99.3193
Boyd	Re-Route Portion of the Preferred Alternative Route	618.76	-0.33	194448	Irrigation	90	36	42.892911	-99.25285
Boyd	Re-Route Portion of the Preferred Alternative Route	618.78	-0.18	194449	Irrigation	90	26	42.894417	-99.25075
Boyd	Re-Route Portion of the Preferred Alternative Route	619.96	-0.75	127854	Irrigation	96	7	42.879786	-99.238157
Boyd	Re-Route Portion of the Preferred Alternative Route	620.05	-0.99	185033	Irrigation	95	0	42.876293	-99.239781
Boyd	Re-Route Portion of the Preferred Alternative Route	620.06	-0.88	50631	Irrigation	99	12	42.877319	-99.238338
Boyd	Re-Route Portion of the Preferred Alternative Route	620.10	-0.93	128583	Livestock	64	9	42.876414	-99.238295
Boyd	Re-Route Portion of the Preferred Alternative Route	620.33	0.98	122452	Domestic	20	10	42.895448	-99.210606
Boyd	Re-Route Portion of the Preferred Alternative Route	620.60	0.14	151638	Domestic	58	14	42.883665	-99.217161
Boyd	Re-Route Portion of the Preferred Alternative Route	621.06	0.52	91423	Livestock	58	15	42.883594	-99.205473
Boyd	Re-Route Portion of the Preferred Alternative Route	621.87	0.78	67938	Irrigation	129	57	42.878411	-99.190905
Boyd	Re-Route Portion of the Preferred Alternative Route	622.10	-0.21	110308	Livestock	96	43	42.865186	-99.198514
Boyd	Re-Route Portion of the Preferred Alternative Route	622.42	-0.89	89748	Livestock	96	70	42.854209	-99.198663

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Boyd	Re-Route Portion of the Preferred Alternative Route	622.56	0.61	77004	Irrigation	115	54	42.87307	-99.183483
Boyd	Re-Route Portion of the Preferred Alternative Route	622.56	0.61	77003	Irrigation	119	57	42.87307	-99.183483
Boyd	Re-Route Portion of the Preferred Alternative Route	622.72	0.70	124467	Irrigation	129	50	42.873143	-99.179848
Boyd	Re-Route Portion of the Preferred Alternative Route	622.77	0.72	108502	Livestock	105	53	42.873074	-99.178744
Boyd	Re-Route Portion of the Preferred Alternative Route	622.84	0.89	56047	Irrigation	126	44	42.874959	-99.176153
Boyd	Re-Route Portion of the Preferred Alternative Route	622.84	0.89	67937	Irrigation	122	60	42.874959	-99.176153
Boyd	Re-Route Portion of the Preferred Alternative Route	622.84	0.88	39139	Irrigation	126	52	42.874741	-99.176141
Boyd	Re-Route Portion of the Preferred Alternative Route	623.41	0.63	141451	Livestock	120	52	42.868889	-99.169722
Holt	Re-Route Portion of the Preferred Alternative Route	630.14	-0.32	208962	Livestock	45	9	42.790117	-99.097983
Holt	Re-Route Portion of the Preferred Alternative Route	630.41	-0.91	106082	Domestic	43	11	42.782231	-99.104279
Holt	Re-Route Portion of the Preferred Alternative Route	630.78	0.41	191059	Domestic	47	8	42.789667	-99.07925
Holt	Re-Route Portion of the Preferred Alternative Route	633.31	0.53	105576	Domestic	74	14	42.772008	-99.045594
Holt	Re-Route Portion of the Preferred Alternative Route	633.32	0.22	84455	Irrigation	125	28	42.766801	-99.044831
Holt	Re-Route Portion of the Preferred Alternative Route	633.42	-0.08	149007	Irrigation	137	32	42.762513	-99.047578

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	633.57	0.13	73226	Irrigation	136	34	42.762764	-99.04261
Holt	Re-Route Portion of the Preferred Alternative Route	633.61	-0.22	73227	Irrigation	131	21	42.759086	-99.047518
Holt	Re-Route Portion of the Preferred Alternative Route	633.62	-0.33	140081	Irrigation	125	20	42.75791	-99.049057
Holt	Re-Route Portion of the Preferred Alternative Route	633.69	-0.46	79944	Irrigation	124	20	42.756053	-99.050235
Holt	Re-Route Portion of the Preferred Alternative Route	633.92	-0.55	69472	Irrigation	130	18	42.753857	-99.050235
Holt	Re-Route Portion of the Preferred Alternative Route	634.10	-0.49	73228	Irrigation	130	21	42.751871	-99.047487
Holt	Re-Route Portion of the Preferred Alternative Route	634.28	-0.69	140082	Irrigation	133	22	42.748263	-99.049409
Holt	Re-Route Portion of the Preferred Alternative Route	634.43	-0.73	71762	Irrigation	120	30	42.744625	-99.047416
Holt	Re-Route Portion of the Preferred Alternative Route	636.26	-0.35	211716	Livestock	84	22	42.728733	-99.014917
Holt	Re-Route Portion of the Preferred Alternative Route	636.43	-0.03	125503	Irrigation	85	20	42.730305	-99.00824
Holt	Re-Route Portion of the Preferred Alternative Route	636.54	0.06	188451	Irrigation	0	0	42.730167	-99.005361
Holt	Re-Route Portion of the Preferred Alternative Route	636.59	0.28	188449	Irrigation	86	0	42.732006	-99.001694
Holt	Re-Route Portion of the Preferred Alternative Route	636.75	0.41	188448	Irrigation	85	20	42.73175	-98.997694
Holt	Re-Route Portion of the Preferred Alternative Route	636.84	0.21	188450	Irrigation	0	0	42.728756	-98.999114

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	636.89	0.50	188447	Irrigation	80	15	42.731194	-98.994528
Holt	Re-Route Portion of the Preferred Alternative Route	637.78	-0.19	148893	Irrigation	90	30	42.715286	-98.990166
Holt	Re-Route Portion of the Preferred Alternative Route	637.83	-0.56	157998	Irrigation	72	50	42.710222	-98.992861
Holt	Re-Route Portion of the Preferred Alternative Route	637.98	0.85	108603	Livestock	34	13	42.725563	-98.973952
Holt	Re-Route Portion of the Preferred Alternative Route	638.00	-0.06	118887	Irrigation	0	0	42.715521	-98.985567
Holt	Re-Route Portion of the Preferred Alternative Route	638.09	-0.13	118886	Irrigation	0	0	42.713926	-98.985851
Holt	Re-Route Portion of the Preferred Alternative Route	638.19	-0.19	106373	Irrigation	90	34	42.712198	-98.985762
Holt	Re-Route Portion of the Preferred Alternative Route	638.22	-0.86	120196	Irrigation	0	0	42.706407	-98.996207
Holt	Re-Route Portion of the Preferred Alternative Route	638.30	-0.24	106371	Irrigation	89	32	42.710488	-98.985153
Holt	Re-Route Portion of the Preferred Alternative Route	638.30	-0.09	106372	Irrigation	88	34	42.711679	-98.982743
Holt	Re-Route Portion of the Preferred Alternative Route	638.40	-0.06	157999	Irrigation	90	42	42.71075	-98.981306
Holt	Re-Route Portion of the Preferred Alternative Route	638.42	-0.96	86358	Irrigation	136	44	42.703114	-98.99564
Holt	Re-Route Portion of the Preferred Alternative Route	638.46	-0.70	86359	Irrigation	103	42	42.704765	-98.990992
Holt	Re-Route Portion of the Preferred Alternative Route	638.48	-0.87	120194	Irrigation	0	0	42.703116	-98.993481

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	638.55	-0.77	120193	Irrigation	0	0	42.703118	-98.991025
Holt	Re-Route Portion of the Preferred Alternative Route	639.56	0.19	116133	Domestic	33	4	42.702994	-98.961377
Holt	Re-Route Portion of the Preferred Alternative Route	640.19	-0.89	59465	Irrigation	95	10	42.6852	-98.966434
Holt	Re-Route Portion of the Preferred Alternative Route	640.19	-0.90	59466	Irrigation	117	19	42.68698	-98.968876
Holt	Re-Route Portion of the Preferred Alternative Route	640.19	-0.69	185565	Domestic	95	15	42.689083	-98.965667
Holt	Re-Route Portion of the Preferred Alternative Route	640.91	-0.97	42941	Irrigation	91	4	42.678133	-98.956548
Holt	Re-Route Portion of the Preferred Alternative Route	640.94	-0.95	42937	Irrigation	91	11	42.678033	-98.955804
Holt	Re-Route Portion of the Preferred Alternative Route	642.03	-0.09	33482	Irrigation	84	32	42.678182	-98.927444
Holt	Re-Route Portion of the Preferred Alternative Route	642.38	-0.42	33483	Irrigation	84	34	42.670874	-98.927357
Holt	Re-Route Portion of the Preferred Alternative Route	642.56	0.29	78001	Irrigation	80	24	42.676361	-98.915109
Holt	Re-Route Portion of the Preferred Alternative Route	642.73	-0.77	52498	Irrigation	130	45	42.663682	-98.927345
Holt	Re-Route Portion of the Preferred Alternative Route	642.73	-0.07	57845	Irrigation	91	28	42.670916	-98.917538
Holt	Re-Route Portion of the Preferred Alternative Route	642.76	0.29	34383	Irrigation	77	26	42.674232	-98.912271
Holt	Re-Route Portion of the Preferred Alternative Route	643.09	0.29	68332	Irrigation	79	26	42.67097	-98.907712

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	643.09	-0.25	26800	Irrigation	103	15	42.665369	-98.915061
Holt	Re-Route Portion of the Preferred Alternative Route	643.28	0.75	54059	Irrigation	160	34	42.673669	-98.898581
Holt	Re-Route Portion of the Preferred Alternative Route	643.43	-0.06	30255	Irrigation	90	33	42.663778	-98.907768
Holt	Re-Route Portion of the Preferred Alternative Route	643.46	-0.79	96614	Irrigation	156	32	42.656085	-98.917421
Holt	Re-Route Portion of the Preferred Alternative Route	643.59	0.45	31328	Irrigation	152	35	42.667521	-98.898481
Holt	Re-Route Portion of the Preferred Alternative Route	643.69	0.57	192822	Livestock	80	35	42.66765	-98.895333
Holt	Re-Route Portion of the Preferred Alternative Route	643.79	-0.43	31583	Irrigation	102	30	42.656331	-98.907753
Holt	Re-Route Portion of the Preferred Alternative Route	643.80	0.30	31327	Irrigation	82	20	42.663847	-98.897785
Holt	Re-Route Portion of the Preferred Alternative Route	643.82	1.00	76764	Irrigation	173	42	42.671062	-98.888172
Holt	Re-Route Portion of the Preferred Alternative Route	643.94	-0.78	26801	Irrigation	108	32	42.650966	-98.910105
Holt	Re-Route Portion of the Preferred Alternative Route	644.12	-0.82	167221	Irrigation	116	41	42.648884	-98.908054
Holt	Re-Route Portion of the Preferred Alternative Route	644.14	-0.25	28550	Irrigation	130	35	42.654679	-98.900294
Holt	Re-Route Portion of the Preferred Alternative Route	644.14	-0.08	28549	Irrigation	101	27	42.656525	-98.897844
Holt	Re-Route Portion of the Preferred Alternative Route	644.17	0.63	76767	Irrigation	170	32	42.663852	-98.888043

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	644.44	0.71	165025	Irrigation	192	44	42.661945	-98.883061
Holt	Re-Route Portion of the Preferred Alternative Route	644.48	0.98	76765	Irrigation	131	36	42.663875	-98.878224
Holt	Re-Route Portion of the Preferred Alternative Route	644.48	0.99	76766	Irrigation	180	36	42.664126	-98.878226
Holt	Re-Route Portion of the Preferred Alternative Route	644.49	0.27	124828	Irrigation	202	33	42.656551	-98.887971
Holt	Re-Route Portion of the Preferred Alternative Route	644.51	-0.44	52497	Irrigation	130	37	42.649335	-98.897757
Holt	Re-Route Portion of the Preferred Alternative Route	644.83	0.64	43921	Irrigation	117	30	42.656574	-98.878086
Holt	Re-Route Portion of the Preferred Alternative Route	644.85	-0.07	38247	Irrigation	200	36	42.649414	-98.888089
Holt	Re-Route Portion of the Preferred Alternative Route	644.88	-0.78	33587	Irrigation	155	34	42.642032	-98.897744
Holt	Re-Route Portion of the Preferred Alternative Route	645.19	-0.43	38248	Irrigation	196	37	42.641962	-98.888077
Holt	Re-Route Portion of the Preferred Alternative Route	645.21	0.30	48557	Irrigation	196	35	42.649437	-98.878088
Holt	Re-Route Portion of the Preferred Alternative Route	645.24	1.00	32342	Irrigation	191	35	42.656557	-98.868268
Holt	Re-Route Portion of the Preferred Alternative Route	645.27	0.61	154217	Livestock	92	28	42.652222	-98.873056
Holt	Re-Route Portion of the Preferred Alternative Route	645.42	0.50	79091	Irrigation	188	55	42.649443	-98.872454
Holt	Re-Route Portion of the Preferred Alternative Route	645.53	-0.79	28542	Irrigation	120	30	42.6348	-98.88805

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	645.56	-0.08	38249	Irrigation	196	37	42.641989	-98.878157
Holt	Re-Route Portion of the Preferred Alternative Route	645.57	0.63	33109	Irrigation	200	42	42.649421	-98.86842
Holt	Re-Route Portion of the Preferred Alternative Route	645.90	-0.44	30226	Irrigation	139	17	42.634852	-98.878161
Holt	Re-Route Portion of the Preferred Alternative Route	645.94	0.26	79548	Irrigation	180	39	42.642022	-98.868452
Holt	Re-Route Portion of the Preferred Alternative Route	646.03	0.97	30227	Irrigation	160	30	42.649367	-98.858379
Holt	Re-Route Portion of the Preferred Alternative Route	646.10	0.06	166278	Irrigation	150	41	42.638344	-98.868523
Holt	Re-Route Portion of the Preferred Alternative Route	646.17	0.48	141800	Irrigation	199	85	42.642222	-98.861667
Holt	Re-Route Portion of the Preferred Alternative Route	646.18	-0.03	126966	Irrigation	60	26	42.636642	-98.868361
Holt	Re-Route Portion of the Preferred Alternative Route	646.19	0.77	66764	Irrigation	182	40	42.643844	-98.855995
Holt	Re-Route Portion of the Preferred Alternative Route	646.27	-0.11	164577	Irrigation	182	37	42.634858	-98.868496
Holt	Re-Route Portion of the Preferred Alternative Route	646.36	-0.81	30225	Irrigation	139	28	42.627564	-98.878103
Holt	Re-Route Portion of the Preferred Alternative Route	646.39	0.62	66763	Irrigation	182	36	42.64022	-98.855992
Holt	Re-Route Portion of the Preferred Alternative Route	646.60	-0.03	161883	Livestock	43	26	42.631886	-98.863224
Holt	Re-Route Portion of the Preferred Alternative Route	646.65	0.33	170698	Irrigation	125	36	42.634111	-98.856667

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	646.70	-0.98	32953	Irrigation	180	40	42.623721	-98.878149
Holt	Re-Route Portion of the Preferred Alternative Route	646.72	-0.67	154517	Irrigation	204	47	42.625836	-98.872781
Holt	Re-Route Portion of the Preferred Alternative Route	646.73	-0.40	76768	Irrigation	182	34	42.627651	-98.868232
Holt	Re-Route Portion of the Preferred Alternative Route	646.78	0.43	167223	Irrigation	176	35	42.63319	-98.853599
Holt	Re-Route Portion of the Preferred Alternative Route	646.92	-0.52	76769	Irrigation	184	37	42.624456	-98.868302
Holt	Re-Route Portion of the Preferred Alternative Route	646.94	-0.70	30230	Irrigation	195	32	42.620459	-98.868417
Holt	Re-Route Portion of the Preferred Alternative Route	647.02	-0.32	171316	Livestock	128	56	42.623611	-98.861667
Holt	Re-Route Portion of the Preferred Alternative Route	647.02	-0.45	92474	Irrigation	201	30	42.622106	-98.863082
Holt	Re-Route Portion of the Preferred Alternative Route	647.14	-0.19	164576	Irrigation	121	38	42.624082	-98.858335
Holt	Re-Route Portion of the Preferred Alternative Route	647.22	-0.69	164533	Irrigation	205	36	42.617508	-98.862683
Holt	Re-Route Portion of the Preferred Alternative Route	647.25	-0.55	164534	Irrigation	218	41	42.618949	-98.860573
Holt	Re-Route Portion of the Preferred Alternative Route	647.28	-0.40	164532	Irrigation	206	37	42.620432	-98.858352
Holt	Re-Route Portion of the Preferred Alternative Route	647.55	-0.81	205828	Livestock	181	54	42.613333	-98.858583
Holt	Re-Route Portion of the Preferred Alternative Route	647.77	0.24	185960	Livestock	155	55	42.623867	-98.84335

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	649.33	-0.19	101797	Domestic	85	20	42.602356	-98.827942
Holt	Re-Route Portion of the Preferred Alternative Route	649.38	-0.77	207759	Domestic	107	12	42.5954	-98.8344
Holt	Re-Route Portion of the Preferred Alternative Route	649.67	0.70	125889	Livestock	50	34	42.610075	-98.812827
Holt	Re-Route Portion of the Preferred Alternative Route	650.35	-0.98	64981	Irrigation	248	58	42.584353	-98.819328
Holt	Re-Route Portion of the Preferred Alternative Route	650.87	-0.30	211701	Irrigation	340	91	42.58825	-98.805222
Holt	Re-Route Portion of the Preferred Alternative Route	650.89	-0.64	91131	Irrigation	250	68	42.584324	-98.809225
Holt	Re-Route Portion of the Preferred Alternative Route	650.89	-0.96	210547	Livestock	123	38	42.580383	-98.8127
Holt	Re-Route Portion of the Preferred Alternative Route	651.07	0.08	34357	Irrigation	224	71	42.590842	-98.797159
Holt	Re-Route Portion of the Preferred Alternative Route	651.45	-0.24	160245	Livestock	117	45	42.585858	-98.7896
Holt	Re-Route Portion of the Preferred Alternative Route	651.77	-0.95	169775	Irrigation	303	44	42.57694	-98.780281
Holt	Re-Route Portion of the Preferred Alternative Route	651.98	-0.62	176960	Livestock	121	22	42.582167	-98.777833
Holt	Re-Route Portion of the Preferred Alternative Route	651.99	-0.84	141620	Livestock	100	12	42.579167	-98.776667
Holt	Re-Route Portion of the Preferred Alternative Route	653.89	0.71	151107	Livestock	178	91	42.598889	-98.74
Holt	Re-Route Portion of the Preferred Alternative Route	654.03	-0.37	193508	Livestock	152	90	42.583483	-98.746017

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	654.33	0.21	136269	Livestock	142	94	42.588121	-98.734908
Holt	Re-Route Portion of the Preferred Alternative Route	654.38	0.95	166209	Livestock	158	80	42.596667	-98.726111
Holt	Re-Route Portion of the Preferred Alternative Route	654.59	-0.23	178664	Livestock	140	88	42.580722	-98.735361
Holt	Re-Route Portion of the Preferred Alternative Route	654.62	0.10	128375	Irrigation	348	84	42.584535	-98.73137
Holt	Re-Route Portion of the Preferred Alternative Route	654.76	0.80	46761	Irrigation	305	63	42.591898	-98.721526
Holt	Re-Route Portion of the Preferred Alternative Route	654.83	-0.64	162101	Irrigation	301	74	42.573886	-98.735831
Holt	Re-Route Portion of the Preferred Alternative Route	654.90	-0.31	162368	Irrigation	295	86	42.577344	-98.731264
Holt	Re-Route Portion of the Preferred Alternative Route	655.04	0.39	56469	Irrigation	337	64	42.584618	-98.721448
Holt	Re-Route Portion of the Preferred Alternative Route	655.06	0.82	191698	Irrigation	349	85	42.589694	-98.716444
Holt	Re-Route Portion of the Preferred Alternative Route	655.17	-0.73	76793	Irrigation	280	80	42.570015	-98.731353
Holt	Re-Route Portion of the Preferred Alternative Route	655.19	0.16	76792	Irrigation	280	75	42.580633	-98.721407
Holt	Re-Route Portion of the Preferred Alternative Route	655.45	0.67	143123	Irrigation	291	73	42.584667	-98.711567
Holt	Re-Route Portion of the Preferred Alternative Route	655.60	-0.45	76835	Irrigation	280	80	42.570044	-98.721347
Holt	Re-Route Portion of the Preferred Alternative Route	655.74	0.24	62557	Irrigation	327	70	42.577323	-98.711523

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	655.74	0.61	165118	Livestock	119	74	42.581667	-98.7075
Holt	Re-Route Portion of the Preferred Alternative Route	655.86	-0.28	141342	Irrigation	287	71	42.57	-98.715278
Holt	Re-Route Portion of the Preferred Alternative Route	655.89	-0.78	128374	Irrigation	279	65	42.563794	-98.720122
Holt	Re-Route Portion of the Preferred Alternative Route	655.90	-0.57	180880	Livestock	110	75	42.566183	-98.717567
Holt	Re-Route Portion of the Preferred Alternative Route	656.01	-0.17	54569	Irrigation	250	65	42.570077	-98.711594
Holt	Re-Route Portion of the Preferred Alternative Route	656.15	0.53	121845	Irrigation	291	52	42.577447	-98.701717
Holt	Re-Route Portion of the Preferred Alternative Route	656.16	0.83	125673	Livestock	121	33	42.580954	-98.69819
Holt	Re-Route Portion of the Preferred Alternative Route	656.28	-0.59	35711	Irrigation	275	38	42.56283	-98.711628
Holt	Re-Route Portion of the Preferred Alternative Route	656.38	0.36	167928	Irrigation	274	50	42.573609	-98.699727
Holt	Re-Route Portion of the Preferred Alternative Route	656.43	0.10	166547	Irrigation	288	51	42.570062	-98.70179
Holt	Re-Route Portion of the Preferred Alternative Route	656.51	0.38	186496	Livestock	140	32	42.57285	-98.697417
Holt	Re-Route Portion of the Preferred Alternative Route	656.56	0.81	121846	Irrigation	293	43	42.577474	-98.691911
Holt	Re-Route Portion of the Preferred Alternative Route	656.70	-0.31	40129	Irrigation	270	30	42.562871	-98.701825
Holt	Re-Route Portion of the Preferred Alternative Route	656.85	0.39	48128	Irrigation	275	64	42.570137	-98.691796

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	656.97	-0.73	44516	Irrigation	250	48	42.555625	-98.701824
Holt	Re-Route Portion of the Preferred Alternative Route	657.06	0.04	46748	Irrigation	268	100	42.564263	-98.692022
Holt	Re-Route Portion of the Preferred Alternative Route	657.12	-0.04	46749	Irrigation	273	140	42.562891	-98.692022
Holt	Re-Route Portion of the Preferred Alternative Route	657.17	-0.87	145459	Domestic	200	47	42.551389	-98.6975
Holt	Re-Route Portion of the Preferred Alternative Route	657.19	0.45	147961	Irrigation	286	48	42.568891	-98.686835
Holt	Re-Route Portion of the Preferred Alternative Route	657.30	-0.78	112137	Irrigation	257	53	42.551873	-98.694349
Holt	Re-Route Portion of the Preferred Alternative Route	657.32	-0.49	55540	Irrigation	258	51	42.555638	-98.691879
Holt	Re-Route Portion of the Preferred Alternative Route	657.56	-0.39	208082	Irrigation	278	61	42.555522	-98.686756
Holt	Re-Route Portion of the Preferred Alternative Route	657.58	0.17	162102	Irrigation	263	58	42.562891	-98.681946
Holt	Re-Route Portion of the Preferred Alternative Route	657.65	-0.66	164019	Livestock	120	64	42.551389	-98.687222
Holt	Re-Route Portion of the Preferred Alternative Route	657.65	-0.63	38395	Irrigation	247	46	42.551789	-98.686918
Holt	Re-Route Portion of the Preferred Alternative Route	657.87	0.06	187418	Livestock	120	43	42.559694	-98.677611
Holt	Re-Route Portion of the Preferred Alternative Route	658.58	0.88	127642	Domestic	163	55	42.567177	-98.659649
Holt	Re-Route Portion of the Preferred Alternative Route	658.88	-0.40	62978	Irrigation	213	20	42.548276	-98.662535

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	658.89	-0.25	62979	Irrigation	206	47	42.55008	-98.660084
Holt	Re-Route Portion of the Preferred Alternative Route	659.11	0.55	107591	Domestic	137	25	42.561431	-98.654707
Holt	Re-Route Portion of the Preferred Alternative Route	659.48	0.18	89186	Livestock	140	33	42.555639	-98.647942
Holt	Re-Route Portion of the Preferred Alternative Route	660.00	0.12	198841	Irrigation	210	38	42.554333	-98.637889
Holt	Re-Route Portion of the Preferred Alternative Route	660.06	0.59	194520	Domestic	80	40	42.5611	-98.636117
Holt	Re-Route Portion of the Preferred Alternative Route	660.07	0.53	198842	Irrigation	220	40	42.560028	-98.634222
Holt	Re-Route Portion of the Preferred Alternative Route	660.07	0.17	199321	Irrigation	210	48	42.554972	-98.635778
Holt	Re-Route Portion of the Preferred Alternative Route	660.08	0.61	198843	Irrigation	240	47	42.559389	-98.629056
Holt	Re-Route Portion of the Preferred Alternative Route	660.46	0.62	171518	Irrigation	239	55	42.555792	-98.622879
Holt	Re-Route Portion of the Preferred Alternative Route	660.48	0.34	170471	Irrigation	243	59	42.5525	-98.626116
Holt	Re-Route Portion of the Preferred Alternative Route	660.48	0.34	170472	Irrigation	242	59	42.5525	-98.626111
Holt	Re-Route Portion of the Preferred Alternative Route	660.75	-0.86	205387	Domestic	170	25	42.536733	-98.637567
Holt	Re-Route Portion of the Preferred Alternative Route	660.97	0.56	172443	Irrigation	240	41	42.552503	-98.619159
Holt	Re-Route Portion of the Preferred Alternative Route	661.22	0.10	164300	Livestock	118	38	42.545	-98.6175

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	661.27	0.46	43848	Irrigation	225	41	42.54969	-98.61427
Holt	Re-Route Portion of the Preferred Alternative Route	661.34	-0.10	166590	Irrigation	227	30	42.541671	-98.616391
Holt	Re-Route Portion of the Preferred Alternative Route	661.38	0.06	166591	Irrigation	226	18	42.543616	-98.614722
Holt	Re-Route Portion of the Preferred Alternative Route	661.45	0.65	156515	Irrigation	242	50	42.551391	-98.609723
Holt	Re-Route Portion of the Preferred Alternative Route	661.66	0.93	194257	Irrigation	259	54	42.554222	-98.603944
Holt	Re-Route Portion of the Preferred Alternative Route	661.70	0.80	194255	Irrigation	259	51	42.552278	-98.603944
Holt	Re-Route Portion of the Preferred Alternative Route	661.92	0.61	201230	Irrigation	230	40	42.549369	-98.603947
Holt	Re-Route Portion of the Preferred Alternative Route	661.99	-0.83	187419	Livestock	120	38	42.5285	-98.605083
Holt	Re-Route Portion of the Preferred Alternative Route	662.03	0.82	194256	Irrigation	255	48	42.552361	-98.601417
Holt	Re-Route Portion of the Preferred Alternative Route	662.05	0.68	73750	Irrigation	240	40	42.550304	-98.601386
Holt	Re-Route Portion of the Preferred Alternative Route	662.13	0.76	95123	Monitoring	61	48	42.551298	-98.599682
Holt	Re-Route Portion of the Preferred Alternative Route	662.74	0.76	174585	Livestock	135	25	42.54925	-98.581833
Holt	Re-Route Portion of the Preferred Alternative Route	664.18	-0.39	102731	Irrigation	254	41	42.519719	-98.574353
Holt	Re-Route Portion of the Preferred Alternative Route	664.38	-0.83	102728	Irrigation	246	25	42.512168	-98.574333

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	664.38	-0.52	102730	Irrigation	244	26	42.516086	-98.571486
Holt	Re-Route Portion of the Preferred Alternative Route	664.50	-0.60	112310	Livestock	94	17	42.514285	-98.569738
Holt	Re-Route Portion of the Preferred Alternative Route	664.91	0.48	209954	Irrigation	220	26	42.525583	-98.552722
Holt	Re-Route Portion of the Preferred Alternative Route	664.92	0.46	209955	Irrigation	220	28	42.524056	-98.550722
Holt	Re-Route Portion of the Preferred Alternative Route	665.00	0.11	165876	Irrigation	260	41	42.519705	-98.554741
Holt	Re-Route Portion of the Preferred Alternative Route	665.03	-0.61	102729	Irrigation	264	28	42.512181	-98.564606
Holt	Re-Route Portion of the Preferred Alternative Route	665.07	0.81	209956	Irrigation	237	17	42.525861	-98.543639
Holt	Re-Route Portion of the Preferred Alternative Route	665.22	0.82	209957	Irrigation	220	18	42.524361	-98.541556
Holt	Re-Route Portion of the Preferred Alternative Route	665.38	-0.25	85279	Irrigation	242	23	42.51209	-98.554888
Holt	Re-Route Portion of the Preferred Alternative Route	665.45	0.49	165875	Irrigation	275	38	42.517223	-98.541942
Holt	Re-Route Portion of the Preferred Alternative Route	665.46	0.87	98307	Irrigation	180	16	42.519691	-98.535284
Holt	Re-Route Portion of the Preferred Alternative Route	665.54	-0.50	149531	Irrigation	260	24	42.509164	-98.558059
Holt	Re-Route Portion of the Preferred Alternative Route	665.63	-0.94	57549	Irrigation	259	30	42.504872	-98.564598
Holt	Re-Route Portion of the Preferred Alternative Route	665.67	0.18	85281	Irrigation	255	32	42.51223	-98.545064

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	665.74	-0.17	85280	Irrigation	270	31	42.508915	-98.55047
Holt	Re-Route Portion of the Preferred Alternative Route	665.85	0.78	75834	Irrigation	259	20	42.51417	-98.533194
Holt	Re-Route Portion of the Preferred Alternative Route	665.88	-0.50	85278	Irrigation	264	0	42.5049	-98.554805
Holt	Re-Route Portion of the Preferred Alternative Route	665.97	0.99	75835	Irrigation	255	25	42.514135	-98.528296
Holt	Re-Route Portion of the Preferred Alternative Route	666.05	-0.96	146900	G	173	35	42.499437	-98.561045
Holt	Re-Route Portion of the Preferred Alternative Route	666.05	-0.95	146899	Domestic	143	35	42.499437	-98.560933
Holt	Re-Route Portion of the Preferred Alternative Route	666.11	-0.06	32660	Irrigation	274	18	42.504934	-98.545022
Holt	Re-Route Portion of the Preferred Alternative Route	666.15	0.03	110091	Irrigation	283	20	42.50512	-98.543149
Holt	Re-Route Portion of the Preferred Alternative Route	666.28	-0.29	83017	Irrigation	295	34	42.501192	-98.54729
Holt	Re-Route Portion of the Preferred Alternative Route	666.32	-0.73	32654	Irrigation	278	18	42.497647	-98.554681
Holt	Re-Route Portion of the Preferred Alternative Route	666.34	-0.75	115524	Irrigation	292	30	42.497304	-98.554727
Holt	Re-Route Portion of the Preferred Alternative Route	666.44	-0.32	32659	Irrigation	288	17	42.497688	-98.544889
Holt	Re-Route Portion of the Preferred Alternative Route	666.45	-0.77	32769	Irrigation	284	25	42.490445	-98.544869
Holt	Re-Route Portion of the Preferred Alternative Route	666.57	-0.51	181102	Monitoring	43	35	42.493611	-98.540333

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	666.58	-0.98	84216	Irrigation	298	38	42.48683	-98.541875
Holt	Re-Route Portion of the Preferred Alternative Route	666.62	-0.73	181097	Monitoring	43	35	42.490306	-98.54025
Holt	Re-Route Portion of the Preferred Alternative Route	666.65	-0.38	181101	Monitoring	40	32	42.495167	-98.538361
Holt	Re-Route Portion of the Preferred Alternative Route	666.67	0.32	82378	Irrigation	0	0	42.505072	-98.535231
Holt	Re-Route Portion of the Preferred Alternative Route	666.70	-0.68	181098	Monitoring	41	33	42.490778	-98.5385
Holt	Re-Route Portion of the Preferred Alternative Route	666.72	-0.46	181100	Monitoring	40	32	42.493917	-98.537167
Holt	Re-Route Portion of the Preferred Alternative Route	666.75	-0.18	32655	Irrigation	280	21	42.497715	-98.535647
Holt	Re-Route Portion of the Preferred Alternative Route	666.91	0.37	87324	Irrigation	282	32	42.505147	-98.53047
Holt	Re-Route Portion of the Preferred Alternative Route	667.00	-0.77	56895	Irrigation	284	19	42.488637	-98.533137
Holt	Re-Route Portion of the Preferred Alternative Route	667.13	0.41	167929	Irrigation	286	28	42.505074	-98.526111
Holt	Re-Route Portion of the Preferred Alternative Route	667.14	0.40	82377	Irrigation	0	0	42.504976	-98.52587
Holt	Re-Route Portion of the Preferred Alternative Route	667.15	-0.38	181099	Monitoring	36	28	42.493806	-98.528667
Holt	Re-Route Portion of the Preferred Alternative Route	667.24	-0.09	32770	Irrigation	284	24	42.49773	-98.525854
Holt	Re-Route Portion of the Preferred Alternative Route	667.36	-0.07	96713	Irrigation	300	35	42.497679	-98.523369

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	667.46	0.99	36964	Irrigation	240	25	42.512201	-98.516137
Holt	Re-Route Portion of the Preferred Alternative Route	667.47	0.53	52314	Irrigation	258	29	42.504952	-98.515939
Holt	Re-Route Portion of the Preferred Alternative Route	667.54	-0.23	82894	Irrigation	293	32	42.494935	-98.522436
Holt	Re-Route Portion of the Preferred Alternative Route	667.63	-0.53	50103	Irrigation	292	25	42.490541	-98.523958
Holt	Re-Route Portion of the Preferred Alternative Route	667.66	-0.51	110092	Irrigation	298	19	42.490487	-98.523219
Holt	Re-Route Portion of the Preferred Alternative Route	667.69	0.10	192837	Irrigation	240	29	42.497889	-98.516444
Holt	Re-Route Portion of the Preferred Alternative Route	667.72	0.11	32766	Irrigation	287	25	42.497707	-98.515731
Holt	Re-Route Portion of the Preferred Alternative Route	667.88	0.79	46084	Irrigation	274	22	42.504897	-98.506146
Holt	Re-Route Portion of the Preferred Alternative Route	667.88	0.82	114381	Irrigation	272	36	42.505256	-98.505786
Holt	Re-Route Portion of the Preferred Alternative Route	667.99	0.87	84248	Irrigation	276	34	42.50492	-98.503476
Holt	Re-Route Portion of the Preferred Alternative Route	668.00	-0.31	32653	Irrigation	290	20	42.490402	-98.515611
Holt	Re-Route Portion of the Preferred Alternative Route	668.15	0.37	46092	Irrigation	284	50	42.497652	-98.505939
Holt	Re-Route Portion of the Preferred Alternative Route	668.18	0.99	84249	Irrigation	265	42	42.504955	-98.499025
Holt	Re-Route Portion of the Preferred Alternative Route	668.19	0.54	54362	Irrigation	285	20	42.49945	-98.503542

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	668.25	-0.92	183175	Irrigation	290	68	42.481028	-98.517806
Holt	Re-Route Portion of the Preferred Alternative Route	668.26	-0.74	46101	Irrigation	294	20	42.483156	-98.515578
Holt	Re-Route Portion of the Preferred Alternative Route	668.42	-0.05	62421	Irrigation	282	22	42.490349	-98.505819
Holt	Re-Route Portion of the Preferred Alternative Route	668.49	0.59	54175	Irrigation	289	33	42.497702	-98.498076
Holt	Re-Route Portion of the Preferred Alternative Route	668.56	0.64	46093	Irrigation	287	35	42.497703	-98.496385
Holt	Re-Route Portion of the Preferred Alternative Route	668.65	-0.64	62423	Irrigation	298	0	42.481304	-98.508228
Holt	Re-Route Portion of the Preferred Alternative Route	668.67	0.91	201344	Livestock	224	50	42.500278	-98.491667
Holt	Re-Route Portion of the Preferred Alternative Route	668.69	-0.47	62422	Irrigation	294	23	42.483103	-98.505788
Holt	Re-Route Portion of the Preferred Alternative Route	668.85	-0.38	102734	Irrigation	303	24	42.483083	-98.502191
Holt	Re-Route Portion of the Preferred Alternative Route	668.95	-0.89	47701	Irrigation	334	22	42.475962	-98.505785
Holt	Re-Route Portion of the Preferred Alternative Route	669.00	0.18	67277	Irrigation	301	35	42.488726	-98.493798
Holt	Re-Route Portion of the Preferred Alternative Route	669.09	0.99	81199	Irrigation	274	40	42.497978	-98.484
Holt	Re-Route Portion of the Preferred Alternative Route	669.11	-0.20	78342	Irrigation	300	35	42.48322	-98.496006
Holt	Re-Route Portion of the Preferred Alternative Route	669.24	0.50	67274	Irrigation	290	56	42.490757	-98.486476

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	669.34	0.11	77601	Irrigation	321	34	42.485249	-98.488875
Holt	Re-Route Portion of the Preferred Alternative Route	669.36	1.00	84250	Irrigation	281	43	42.49599	-98.479427
Holt	Re-Route Portion of the Preferred Alternative Route	669.40	-0.45	56821	Irrigation	335	32	42.477883	-98.493719
Holt	Re-Route Portion of the Preferred Alternative Route	669.41	0.46	67275	Irrigation	293	28	42.489019	-98.484015
Holt	Re-Route Portion of the Preferred Alternative Route	669.51	0.08	77602	Irrigation	275	35	42.48351	-98.486414
Holt	Re-Route Portion of the Preferred Alternative Route	669.61	-0.31	56823	Irrigation	331	32	42.477957	-98.488826
Holt	Re-Route Portion of the Preferred Alternative Route	669.67	0.76	46448	Irrigation	279	13	42.490742	-98.476687
Holt	Re-Route Portion of the Preferred Alternative Route	669.88	-0.74	56824	Irrigation	338	33	42.47071	-98.488801
Holt	Re-Route Portion of the Preferred Alternative Route	669.93	0.35	98936	Irrigation	306	22	42.483668	-98.476701
Holt	Re-Route Portion of the Preferred Alternative Route	670.19	-0.07	80002	Irrigation	347	25	42.476479	-98.476659
Holt	Re-Route Portion of the Preferred Alternative Route	670.36	0.62	46450	Irrigation	284	22	42.483699	-98.466734
Holt	Re-Route Portion of the Preferred Alternative Route	670.42	0.97	128399	Livestock	45	23	42.487445	-98.462137
Holt	Re-Route Portion of the Preferred Alternative Route	670.45	-0.51	159398	Irrigation	336	40	42.469046	-98.47694
Holt	Re-Route Portion of the Preferred Alternative Route	670.62	0.19	38834	Irrigation	277	30	42.476369	-98.466842

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	670.74	-0.93	38530	Irrigation	333	38	42.461753	-98.476517
Holt	Re-Route Portion of the Preferred Alternative Route	670.87	-0.22	40356	Irrigation	183	30	42.469088	-98.466171
Holt	Re-Route Portion of the Preferred Alternative Route	670.94	-0.86	73193	Irrigation	330	38	42.460064	-98.469211
Holt	Re-Route Portion of the Preferred Alternative Route	670.97	0.89	44727	Irrigation	310	20	42.483647	-98.456892
Holt	Re-Route Portion of the Preferred Alternative Route	671.00	0.37	93601	Irrigation	340	33	42.476477	-98.459723
Holt	Re-Route Portion of the Preferred Alternative Route	671.02	-0.70	71702	Irrigation	330	38	42.461896	-98.466751
Holt	Re-Route Portion of the Preferred Alternative Route	671.14	0.42	38835	Irrigation	289	28	42.476412	-98.456831
Holt	Re-Route Portion of the Preferred Alternative Route	671.31	-0.07	44766	Irrigation	322	30	42.468987	-98.457013
Holt	Re-Route Portion of the Preferred Alternative Route	671.49	-0.52	71750	Irrigation	346	44	42.461944	-98.456943
Holt	Re-Route Portion of the Preferred Alternative Route	671.58	0.59	40212	Irrigation	84	28	42.476494	-98.447225
Holt	Re-Route Portion of the Preferred Alternative Route	671.59	0.20	77183	Irrigation	331	40	42.471044	-98.449595
Holt	Re-Route Portion of the Preferred Alternative Route	671.76	-0.22	205413	Domestic	124	39	42.464417	-98.451306
Holt	Re-Route Portion of the Preferred Alternative Route	671.78	0.51	182050	Livestock	80	41	42.472917	-98.442583
Holt	Re-Route Portion of the Preferred Alternative Route	671.86	0.88	40606	Irrigation	105	19	42.476552	-98.437249

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	672.03	-0.24	67158	Irrigation	223	42	42.461958	-98.447156
Holt	Re-Route Portion of the Preferred Alternative Route	672.11	0.13	120913	Monitoring	211	34	42.466065	-98.442153
Holt	Re-Route Portion of the Preferred Alternative Route	672.11	0.13	120912	Monitoring	120	34	42.466004	-98.442153
Holt	Re-Route Portion of the Preferred Alternative Route	672.11	0.12	120911	Monitoring	70	34	42.465938	-98.442153
Holt	Re-Route Portion of the Preferred Alternative Route	672.15	-0.70	63364	Irrigation	114	56	42.454684	-98.44747
Holt	Re-Route Portion of the Preferred Alternative Route	672.26	0.43	32981	Irrigation	82	18	42.469305	-98.437248
Holt	Re-Route Portion of the Preferred Alternative Route	672.31	-0.73	95493	Monitoring	75	63	42.453425	-98.444786
Holt	Re-Route Portion of the Preferred Alternative Route	672.62	-0.09	71953	Irrigation	110	35	42.460206	-98.434814
Holt	Re-Route Portion of the Preferred Alternative Route	672.67	0.64	164569	Irrigation	88	43	42.46934	-98.427386
Holt	Re-Route Portion of the Preferred Alternative Route	672.67	-0.48	56742	Irrigation	140	59	42.454754	-98.437274
Holt	Re-Route Portion of the Preferred Alternative Route	672.84	0.03	71952	Irrigation	109	42	42.460241	-98.429921
Holt	Re-Route Portion of the Preferred Alternative Route	673.06	0.86	43984	Irrigation	117	50	42.469325	-98.417809
Holt	Re-Route Portion of the Preferred Alternative Route	673.06	0.86	63659	Irrigation	130	63	42.469325	-98.417809
Holt	Re-Route Portion of the Preferred Alternative Route	673.17	-0.48	96022	Monitoring	80	67	42.452004	-98.430165

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	673.18	-0.25	53187	Irrigation	151	49	42.454494	-98.427415
Holt	Re-Route Portion of the Preferred Alternative Route	673.24	-0.96	28273	Irrigation	125	74	42.445764	-98.43488
Holt	Re-Route Portion of the Preferred Alternative Route	673.24	0.76	173432	Domestic	98	70	42.465556	-98.414444
Holt	Re-Route Portion of the Preferred Alternative Route	673.25	0.46	34614	Irrigation	140	50	42.462133	-98.417757
Holt	Re-Route Portion of the Preferred Alternative Route	673.46	-0.64	67265	Irrigation	127	48	42.447585	-98.427527
Holt	Re-Route Portion of the Preferred Alternative Route	673.55	0.69	33478	Irrigation	104	56	42.462112	-98.41036
Holt	Re-Route Portion of the Preferred Alternative Route	673.55	0.06	33688	Irrigation	135	54	42.454837	-98.417833
Holt	Re-Route Portion of the Preferred Alternative Route	673.62	0.59	1710	Irrigation	117	56	42.46024	-98.410505
Holt	Re-Route Portion of the Preferred Alternative Route	673.95	0.36	4379	Irrigation	0	0	42.454795	-98.408047
Holt	Re-Route Portion of the Preferred Alternative Route	674.02	-0.36	62615	Irrigation	133	67	42.445801	-98.415366
Holt	Re-Route Portion of the Preferred Alternative Route	674.13	-0.74	49801	Irrigation	146	65	42.440386	-98.417764
Holt	Re-Route Portion of the Preferred Alternative Route	674.28	0.13	57228	Irrigation	185	60	42.44945	-98.40559
Holt	Re-Route Portion of the Preferred Alternative Route	674.38	0.65	156148	Irrigation	160	49	42.454782	-98.398335
Holt	Re-Route Portion of the Preferred Alternative Route	674.41	0.82	9885	Irrigation	118	38	42.456606	-98.39577

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	674.53	-0.45	43743	Irrigation	157	80	42.440413	-98.408053
Holt	Re-Route Portion of the Preferred Alternative Route	674.62	-0.98	64300	Irrigation	190	37	42.433355	-98.412549
Holt	Re-Route Portion of the Preferred Alternative Route	674.67	0.24	38268	Irrigation	192	60	42.447541	-98.398247
Holt	Re-Route Portion of the Preferred Alternative Route	674.79	0.94	38266	Irrigation	192	38	42.454816	-98.388417
Holt	Re-Route Portion of the Preferred Alternative Route	674.95	-0.17	46651	Irrigation	143	70	42.440399	-98.398232
Holt	Re-Route Portion of the Preferred Alternative Route	674.97	0.91	4042	Irrigation	0	0	42.453011	-98.385958
Holt	Re-Route Portion of the Preferred Alternative Route	675.00	-0.87	58057	Irrigation	183	35	42.431585	-98.405185
Holt	Re-Route Portion of the Preferred Alternative Route	675.08	0.53	38267	Irrigation	192	50	42.447645	-98.388386
Holt	Re-Route Portion of the Preferred Alternative Route	675.36	0.12	878	Irrigation	0	0	42.440399	-98.388372
Holt	Re-Route Portion of the Preferred Alternative Route	675.43	-0.42	56514	Irrigation	142	60	42.433437	-98.393183
Holt	Re-Route Portion of the Preferred Alternative Route	675.49	0.82	59554	Irrigation	336	32	42.44765	-98.378602
Holt	Re-Route Portion of the Preferred Alternative Route	675.71	-0.83	38882	Irrigation	139	80	42.426191	-98.393263
Holt	Re-Route Portion of the Preferred Alternative Route	675.77	0.40	49384	Irrigation	278	49	42.440422	-98.378756
Holt	Re-Route Portion of the Preferred Alternative Route	675.84	-0.13	37183	Irrigation	129	76	42.433437	-98.3834

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	675.84	-0.13	56540	Irrigation	124	60	42.433437	-98.3834
Holt	Re-Route Portion of the Preferred Alternative Route	675.86	0.92	59555	Irrigation	306	45	42.445894	-98.371396
Holt	Re-Route Portion of the Preferred Alternative Route	676.06	-0.94	45524	Irrigation	158	104	42.422019	-98.388826
Holt	Re-Route Portion of the Preferred Alternative Route	676.13	-0.54	62943	Irrigation	365	52	42.426191	-98.383482
Holt	Re-Route Portion of the Preferred Alternative Route	676.17	0.69	62999	Irrigation	345	44	42.440471	-98.368972
Holt	Re-Route Portion of the Preferred Alternative Route	676.27	0.14	56667	Irrigation	335	0	42.43309	-98.373547
Holt	Re-Route Portion of the Preferred Alternative Route	676.66	-0.32	57844	Irrigation	370	74	42.424392	-98.3713
Holt	Re-Route Portion of the Preferred Alternative Route	676.70	-0.69	206106	Irrigation	369	66	42.419278	-98.373667
Holt	Re-Route Portion of the Preferred Alternative Route	676.73	0.38	56669	Irrigation	363	62	42.433177	-98.364105
Holt	Re-Route Portion of the Preferred Alternative Route	676.74	0.95	48748	Irrigation	372	37	42.4405	-98.359218
Holt	Re-Route Portion of the Preferred Alternative Route	676.94	-0.05	80483	Irrigation	352	0	42.426243	-98.364007
Holt	Re-Route Portion of the Preferred Alternative Route	677.14	1.00	34327	Irrigation	345	28	42.438702	-98.35172
Holt	Re-Route Portion of the Preferred Alternative Route	677.16	-0.50	52723	Irrigation	330	49	42.418928	-98.364011
Holt	Re-Route Portion of the Preferred Alternative Route	677.17	0.62	131680	Irrigation	347	40	42.433531	-98.354249

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	677.18	0.60	38402	Irrigation	342	35	42.433256	-98.354286
Holt	Re-Route Portion of the Preferred Alternative Route	677.21	-0.89	858	Irrigation	334	49	42.413515	-98.366397
Holt	Re-Route Portion of the Preferred Alternative Route	677.37	0.16	14520	Irrigation	330	26	42.426163	-98.354663
Holt	Re-Route Portion of the Preferred Alternative Route	677.55	0.68	29944	Irrigation	354	0	42.431642	-98.346824
Holt	Re-Route Portion of the Preferred Alternative Route	677.55	1.00	88786	Domestic	245	49	42.435741	-98.343936
Holt	Re-Route Portion of the Preferred Alternative Route	677.62	0.28	156096	Irrigation	360	72	42.426108	-98.349163
Holt	Re-Route Portion of the Preferred Alternative Route	677.79	-0.33	77398	Irrigation	331	39	42.417138	-98.351692
Holt	Re-Route Portion of the Preferred Alternative Route	677.84	0.03	83505	Irrigation	330	51	42.421431	-98.347557
Holt	Re-Route Portion of the Preferred Alternative Route	677.93	-0.62	124923	Livestock	135	45	42.412385	-98.351909
Holt	Re-Route Portion of the Preferred Alternative Route	678.00	0.35	59620	Irrigation	325	42	42.424388	-98.34193
Holt	Re-Route Portion of the Preferred Alternative Route	678.07	-0.06	53597	Irrigation	332	25	42.418737	-98.344362
Holt	Re-Route Portion of the Preferred Alternative Route	678.16	0.85	34426	Irrigation	278	27	42.429772	-98.334633
Holt	Re-Route Portion of the Preferred Alternative Route	678.27	-0.38	183623	Livestock	309	28.1	42.413222	-98.343806
Holt	Re-Route Portion of the Preferred Alternative Route	678.29	-0.53	191770	Irrigation	330	32	42.411194	-98.344944

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Holt	Re-Route Portion of the Preferred Alternative Route	678.43	0.58	60030	Irrigation	345	61	42.424354	-98.332158
Holt	Re-Route Portion of the Preferred Alternative Route	678.44	0.43	172473	Domestic	338	70	42.422111	-98.332889
Holt	Re-Route Portion of the Preferred Alternative Route	678.50	0.19	166281	Irrigation	335	84	42.41875	-98.3345
Holt	Re-Route Portion of the Preferred Alternative Route	678.62	-0.92	52181	Irrigation	318	62	42.404385	-98.344429
Holt	Re-Route Portion of the Preferred Alternative Route	678.63	0.89	157104	Irrigation	320	57	42.426306	-98.324972
Holt	Re-Route Portion of the Preferred Alternative Route	678.72	-0.56	120117	Domestic	140	40	42.40796	-98.338958
Holt	Re-Route Portion of the Preferred Alternative Route	679.35	-0.19	51752	Irrigation	310	20	42.40748	-98.324641
Holt	Re-Route Portion of the Preferred Alternative Route	679.65	0.50	73584	Irrigation	304	55	42.413453	-98.312389
Holt	Re-Route Portion of the Preferred Alternative Route	679.67	-0.15	163732	Domestic	304	54.700001	42.405417	-98.31895
Holt	Re-Route Portion of the Preferred Alternative Route	680.34	-0.73	165789	Livestock	162	50	42.391722	-98.315194
Holt	Re-Route Portion of the Preferred Alternative Route	680.59	-0.16	209233	Irrigation	309	68	42.397278	-98.305139
Holt	Re-Route Portion of the Preferred Alternative Route	680.65	-0.02	207706	Irrigation	312	60	42.398694	-98.303056
Holt	Re-Route Portion of the Preferred Alternative Route	680.82	-0.63	191331	Irrigation	330	33	42.389694	-98.304944
Antelope	Re-Route Portion of the Preferred Alternative Route	680.85	0.49	106706	Irrigation	300	54	42.404299	-98.295353

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	681.02	0.01	63735	Irrigation	314	40	42.396998	-98.29622
Antelope	Re-Route Portion of the Preferred Alternative Route	681.26	-0.43	148275	Irrigation	317	46	42.389752	-98.295457
Antelope	Re-Route Portion of the Preferred Alternative Route	681.48	0.21	67046	Irrigation	305	39	42.396942	-98.286444
Antelope	Re-Route Portion of the Preferred Alternative Route	681.74	-0.86	162529	Irrigation	310	60	42.382417	-98.29575
Antelope	Re-Route Portion of the Preferred Alternative Route	681.75	-0.17	148274	Irrigation	298	50	42.389722	-98.286409
Antelope	Re-Route Portion of the Preferred Alternative Route	681.79	0.66	53449	Irrigation	292	50	42.398106	-98.274855
Antelope	Re-Route Portion of the Preferred Alternative Route	681.89	-0.96	205661	Domestic	165	69	42.379861	-98.294889
Antelope	Re-Route Portion of the Preferred Alternative Route	682.09	-0.55	209607	Irrigation	319	63	42.382333	-98.286583
Antelope	Re-Route Portion of the Preferred Alternative Route	682.11	0.16	53450	Irrigation	172	0	42.389578	-98.276861
Antelope	Re-Route Portion of the Preferred Alternative Route	682.11	0.17	69993	Irrigation	303	67	42.389715	-98.276653
Antelope	Re-Route Portion of the Preferred Alternative Route	682.25	-0.37	37351	Irrigation	304	67	42.382325	-98.281432
Antelope	Re-Route Portion of the Preferred Alternative Route	682.26	0.03	44462	Irrigation	318	22	42.38686	-98.276417
Antelope	Re-Route Portion of the Preferred Alternative Route	682.32	0.62	76717	Irrigation	312	61	42.393685	-98.269644
Antelope	Re-Route Portion of the Preferred Alternative Route	682.67	0.78	172535	Livestock	112	40	42.393028	-98.262028

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	682.68	-0.66	145383	Irrigation	298	37	42.375083	-98.2765
Antelope	Re-Route Portion of the Preferred Alternative Route	682.77	-0.34	175295	Livestock	100	22	42.378413	-98.271753
Antelope	Re-Route Portion of the Preferred Alternative Route	682.83	0.02	52352	Irrigation	272	30	42.382455	-98.267148
Antelope	Re-Route Portion of the Preferred Alternative Route	682.88	-0.40	165788	Livestock	104	30	42.376806	-98.270417
Antelope	Re-Route Portion of the Preferred Alternative Route	683.10	-0.39	162324	Irrigation	300	26	42.375282	-98.266667
Antelope	Re-Route Portion of the Preferred Alternative Route	683.48	0.43	205134	Domestic	102	10	42.382778	-98.252222
Antelope	Re-Route Portion of the Preferred Alternative Route	683.65	0.57	205135	Livestock	58	30	42.3825	-98.246667
Antelope	Re-Route Portion of the Preferred Alternative Route	683.76	0.77	186565	Domestic	164	20	42.383611	-98.242222
Antelope	Re-Route Portion of the Preferred Alternative Route	683.94	0.15	167936	Irrigation	290	63	42.375111	-98.247472
Antelope	Re-Route Portion of the Preferred Alternative Route	684.26	-0.24	42399	Irrigation	292	47	42.367809	-98.247595
Antelope	Re-Route Portion of the Preferred Alternative Route	684.29	0.46	202356	Irrigation	215	25	42.374999	-98.237897
Antelope	Re-Route Portion of the Preferred Alternative Route	684.43	-0.03	165851	Irrigation	245	79	42.36839	-98.242497
Antelope	Re-Route Portion of the Preferred Alternative Route	684.61	-0.60	55494	Irrigation	275	100	42.360597	-98.247527
Antelope	Re-Route Portion of the Preferred Alternative Route	684.61	-0.43	4332	Irrigation	0	0	42.362399	-98.245099

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	684.92	-0.67	56224	Irrigation	291	100	42.355113	-98.235293
Antelope	Re-Route Portion of the Preferred Alternative Route	685.19	0.72	177760	Irrigation	270	42	42.375056	-98.228361
Antelope	Re-Route Portion of the Preferred Alternative Route	685.38	0.54	106487	Livestock	139	80	42.371575	-98.221894
Antelope	Re-Route Portion of the Preferred Alternative Route	685.49	0.85	191479	Irrigation	320	76	42.375056	-98.217639
Antelope	Re-Route Portion of the Preferred Alternative Route	685.71	0.52	68562	Irrigation	297	95	42.369492	-98.215877
Antelope	Re-Route Portion of the Preferred Alternative Route	685.87	-0.64	201922	Domestic	260	80	42.353056	-98.221111
Antelope	Re-Route Portion of the Preferred Alternative Route	686.02	0.76	107091	Irrigation	318	61	42.371173	-98.208569
Antelope	Re-Route Portion of the Preferred Alternative Route	686.03	0.05	192365	Irrigation	380	106	42.361444	-98.213361
Antelope	Re-Route Portion of the Preferred Alternative Route	686.09	0.25	183609	Irrigation	380	111	42.363946	-98.210945
Antelope	Re-Route Portion of the Preferred Alternative Route	686.32	0.75	128122	Irrigation	321	62	42.367563	-98.198829
Antelope	Re-Route Portion of the Preferred Alternative Route	686.67	-0.25	55252	Irrigation	352	90	42.353146	-98.208592
Antelope	Re-Route Portion of the Preferred Alternative Route	686.76	-0.77	75292	Irrigation	375	71	42.347826	-98.215958
Antelope	Re-Route Portion of the Preferred Alternative Route	686.90	-0.56	75291	Irrigation	377	81	42.34784	-98.211074
Antelope	Re-Route Portion of the Preferred Alternative Route	686.96	0.77	108843	Irrigation	316	64	42.357917	-98.189001

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	687.09	-0.52	155822	Irrigation	399	90	42.345837	-98.208329
Antelope	Re-Route Portion of the Preferred Alternative Route	687.20	-0.85	208649	Irrigation	380	101	42.338889	-98.208694
Antelope	Re-Route Portion of the Preferred Alternative Route	687.28	-0.19	115387	Irrigation	400	100	42.345865	-98.198793
Antelope	Re-Route Portion of the Preferred Alternative Route	687.44	0.70	111888	Irrigation	350	63	42.356625	-98.189004
Antelope	Re-Route Portion of the Preferred Alternative Route	687.48	-0.62	164665	Irrigation	340	94	42.338917	-98.198556
Antelope	Re-Route Portion of the Preferred Alternative Route	687.72	-0.98	209798	Irrigation	350	98	42.332733	-98.197317
Antelope	Re-Route Portion of the Preferred Alternative Route	687.74	0.02	164923	Irrigation	347	84	42.345892	-98.189013
Antelope	Re-Route Portion of the Preferred Alternative Route	687.94	-0.44	49892	Irrigation	224	95	42.338705	-98.18905
Antelope	Re-Route Portion of the Preferred Alternative Route	688.17	0.21	74160	Irrigation	320	39	42.345896	-98.179833
Antelope	Re-Route Portion of the Preferred Alternative Route	688.27	-1.00	145973	Livestock	206	110	42.3293	-98.1876
Antelope	Re-Route Portion of the Preferred Alternative Route	688.30	0.00	124326	Irrigation	360	78	42.342296	-98.179125
Antelope	Re-Route Portion of the Preferred Alternative Route	688.41	-0.97	169327	Irrigation	197	0	42.328778	-98.184753
Antelope	Re-Route Portion of the Preferred Alternative Route	688.43	0.86	125504	Irrigation	330	62	42.353056	-98.170016
Antelope	Re-Route Portion of the Preferred Alternative Route	688.43	-0.08	54522	Irrigation	262	88	42.340468	-98.177364

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	688.62	-0.35	163711	Domestic	187	90	42.335861	-98.176056
Antelope	Re-Route Portion of the Preferred Alternative Route	688.71	0.68	171766	Livestock	212	76	42.348944	-98.166306
Antelope	Re-Route Portion of the Preferred Alternative Route	688.83	-0.04	85655	Irrigation	334	72	42.338733	-98.169955
Antelope	Re-Route Portion of the Preferred Alternative Route	689.08	0.62	179706	Irrigation	358	83	42.345944	-98.160306
Antelope	Re-Route Portion of the Preferred Alternative Route	689.12	0.93	86171	Irrigation	380	66	42.345942	-98.15051
Antelope	Re-Route Portion of the Preferred Alternative Route	689.17	0.45	192017	Irrigation	350	88	42.338694	-98.155889
Antelope	Re-Route Portion of the Preferred Alternative Route	689.23	0.70	191475	Irrigation	360	79	42.338833	-98.150694
Antelope	Re-Route Portion of the Preferred Alternative Route	689.44	-0.40	48715	Irrigation	290	107	42.331404	-98.170124
Antelope	Re-Route Portion of the Preferred Alternative Route	689.45	-0.71	95657	Irrigation	176	79	42.329904	-98.176024
Antelope	Re-Route Portion of the Preferred Alternative Route	689.56	0.27	211053	Irrigation	360	81	42.332444	-98.156889
Antelope	Re-Route Portion of the Preferred Alternative Route	689.77	0.27	212296	Irrigation	350	84	42.329611	-98.155833
Antelope	Re-Route Portion of the Preferred Alternative Route	689.78	-1.00	166457	Irrigation	180	71	42.324167	-98.1795
Antelope	Re-Route Portion of the Preferred Alternative Route	689.86	-0.71	32955	Irrigation	159	72	42.324239	-98.17362
Antelope	Re-Route Portion of the Preferred Alternative Route	690.20	0.42	105460	Irrigation	348	68	42.324287	-98.150534

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	690.33	0.91	169398	Irrigation	320	51	42.324389	-98.140667
Antelope	Re-Route Portion of the Preferred Alternative Route	690.42	-0.17	187720	Irrigation	320	54	42.31875	-98.160389
Antelope	Re-Route Portion of the Preferred Alternative Route	690.68	-0.86	179773	Irrigation	240	76	42.309778	-98.170278
Antelope	Re-Route Portion of the Preferred Alternative Route	690.68	-0.78	126429	Livestock	140	80	42.306821	-98.164915
Antelope	Re-Route Portion of the Preferred Alternative Route	690.81	0.06	75097	Irrigation	358	50	42.315306	-98.153031
Antelope	Re-Route Portion of the Preferred Alternative Route	691.08	-0.85	62676	Irrigation	205	80	42.302669	-98.160331
Antelope	Re-Route Portion of the Preferred Alternative Route	691.14	-0.15	118370	Irrigation	160	52	42.309888	-98.150598
Antelope	Re-Route Portion of the Preferred Alternative Route	691.20	0.55	67261	Irrigation	335	69	42.317148	-98.14089
Antelope	Re-Route Portion of the Preferred Alternative Route	691.47	-0.54	62677	Irrigation	200	96	42.302597	-98.150575
Antelope	Re-Route Portion of the Preferred Alternative Route	691.53	0.17	67260	Irrigation	350	58	42.309902	-98.140839
Antelope	Re-Route Portion of the Preferred Alternative Route	691.57	0.70	63397	Irrigation	180	45	42.315367	-98.133554
Antelope	Re-Route Portion of the Preferred Alternative Route	691.59	0.88	67259	Irrigation	180	45	42.317188	-98.131126
Antelope	Re-Route Portion of the Preferred Alternative Route	691.70	-0.02	177129	Irrigation	160	64	42.306111	-98.140694
Antelope	Re-Route Portion of the Preferred Alternative Route	691.78	-0.91	176617	Irrigation	230	78	42.295528	-98.150611

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	691.91	0.49	63398	Irrigation	200	66	42.309942	-98.131076
Antelope	Re-Route Portion of the Preferred Alternative Route	691.91	0.49	67253	Irrigation	200	67	42.309942	-98.131076
Antelope	Re-Route Portion of the Preferred Alternative Route	692.12	-0.53	107115	Irrigation	235	70	42.296247	-98.139598
Antelope	Re-Route Portion of the Preferred Alternative Route	692.24	0.08	46656	Irrigation	137	77	42.302695	-98.131074
Antelope	Re-Route Portion of the Preferred Alternative Route	692.27	-0.65	68005	Irrigation	253	118	42.293571	-98.138449
Antelope	Re-Route Portion of the Preferred Alternative Route	692.29	0.47	205957	Irrigation	359	78	42.307111	-98.126083
Antelope	Re-Route Portion of the Preferred Alternative Route	692.58	0.92	117550	Irrigation	180	40	42.30999	-98.116506
Antelope	Re-Route Portion of the Preferred Alternative Route	692.71	-0.20	184007	Irrigation	340	78	42.295447	-98.126637
Antelope	Re-Route Portion of the Preferred Alternative Route	692.79	-0.75	48031	Irrigation	254	110	42.288179	-98.131134
Antelope	Re-Route Portion of the Preferred Alternative Route	692.82	0.33	59088	Irrigation	361	80	42.300895	-98.118952
Antelope	Re-Route Portion of the Preferred Alternative Route	692.95	0.84	114100	Monitoring	18	12	42.306024	-98.111378
Antelope	Re-Route Portion of the Preferred Alternative Route	692.96	0.12	59089	Irrigation	366	70	42.297271	-98.118958
Antelope	Re-Route Portion of the Preferred Alternative Route	692.98	0.77	114101	Monitoring	19	12	42.304871	-98.11138
Antelope	Re-Route Portion of the Preferred Alternative Route	693.01	0.91	114099	Monitoring	56	48	42.306154	-98.109144

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	693.05	-0.43	70746	Irrigation	404	110	42.290021	-98.123869
Antelope	Re-Route Portion of the Preferred Alternative Route	693.13	0.90	113973	Livestock	150	96	42.305075	-98.10739
Antelope	Re-Route Portion of the Preferred Alternative Route	693.13	0.90	172542	Livestock	147	95	42.305028	-98.107417
Antelope	Re-Route Portion of the Preferred Alternative Route	693.14	-0.98	61644	Irrigation	421	115	42.282758	-98.128685
Antelope	Re-Route Portion of the Preferred Alternative Route	693.21	-0.79	169189	Irrigation	398	138	42.284444	-98.125442
Antelope	Re-Route Portion of the Preferred Alternative Route	693.21	0.80	131678	Irrigation	220	80	42.303182	-98.107116
Antelope	Re-Route Portion of the Preferred Alternative Route	693.50	0.41	159504	Domestic	210	67	42.296131	-98.107055
Antelope	Re-Route Portion of the Preferred Alternative Route	693.51	-0.87	59725	Irrigation	392	107	42.280972	-98.121438
Antelope	Re-Route Portion of the Preferred Alternative Route	693.75	0.51	147734	Irrigation	380	84	42.295472	-98.102167
Antelope	Re-Route Portion of the Preferred Alternative Route	693.90	-0.59	60509	Irrigation	408	168	42.280979	-98.111778
Antelope	Re-Route Portion of the Preferred Alternative Route	694.03	0.10	157658	Irrigation	410	88	42.288139	-98.102111
Antelope	Re-Route Portion of the Preferred Alternative Route	694.18	0.79	165726	Irrigation	380	90	42.295361	-98.092139
Antelope	Re-Route Portion of the Preferred Alternative Route	694.31	-0.31	175489	Irrigation	438	120	42.281005	-98.101982
Antelope	Re-Route Portion of the Preferred Alternative Route	694.37	-0.88	105035	Irrigation	412	106	42.273697	-98.107161

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Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	694.65	-0.94	182464	Irrigation	417	118	42.270278	-98.102167
Antelope	Re-Route Portion of the Preferred Alternative Route	695.15	0.19	204249	Irrigation	439	122	42.280833	-98.082639
Antelope	Re-Route Portion of the Preferred Alternative Route	695.41	-0.89	99981	Irrigation	282	102	42.266403	-98.092161
Antelope	Re-Route Portion of the Preferred Alternative Route	695.44	-0.35	67263	Irrigation	393	86	42.271914	-98.084854
Antelope	Re-Route Portion of the Preferred Alternative Route	695.67	0.52	58304	Irrigation	243	125	42.27917	-98.07022
Antelope	Re-Route Portion of the Preferred Alternative Route	695.78	-0.55	63967	Irrigation	390	100	42.266493	-98.082414
Antelope	Re-Route Portion of the Preferred Alternative Route	695.78	-0.55	67256	Irrigation	390	100	42.266493	-98.082414
Antelope	Re-Route Portion of the Preferred Alternative Route	695.82	0.16	67264	Irrigation	400	104	42.273795	-98.072658
Antelope	Re-Route Portion of the Preferred Alternative Route	696.16	-0.22	166762	Irrigation	375	75	42.2665	-98.072583
Antelope	Re-Route Portion of the Preferred Alternative Route	696.19	0.49	89484	Irrigation	390	112	42.273872	-98.063064
Antelope	Re-Route Portion of the Preferred Alternative Route	696.31	0.73	118666	Monitoring	30	22	42.275272	-98.058158
Antelope	Re-Route Portion of the Preferred Alternative Route	696.33	0.74	114078	Monitoring	34	26	42.275193	-98.057788
Antelope	Re-Route Portion of the Preferred Alternative Route	696.34	0.71	123725	Livestock	170	124	42.274781	-98.05792
Antelope	Re-Route Portion of the Preferred Alternative Route	696.35	0.70	123726	Livestock	170	120	42.274575	-98.05792

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	696.43	0.93	114080	Monitoring	30	24	42.276302	-98.053725
Antelope	Re-Route Portion of the Preferred Alternative Route	696.51	0.85	114081	Monitoring	24	19	42.274655	-98.053721
Antelope	Re-Route Portion of the Preferred Alternative Route	696.52	0.11	89485	Irrigation	389	111	42.266476	-98.063064
Antelope	Re-Route Portion of the Preferred Alternative Route	696.60	0.85	111889	Irrigation	310	94	42.273808	-98.052314
Antelope	Re-Route Portion of the Preferred Alternative Route	696.84	-0.78	58125	Irrigation	358	90	42.253826	-98.069985
Antelope	Re-Route Portion of the Preferred Alternative Route	696.85	-0.27	63043	Irrigation	180	87	42.259275	-98.063081
Antelope	Re-Route Portion of the Preferred Alternative Route	697.06	0.43	54465	Irrigation	193	100	42.264838	-98.050962
Antelope	Re-Route Portion of the Preferred Alternative Route	697.17	0.41	197620	Livestock	120	60	42.263611	-98.049722
Antelope	Re-Route Portion of the Preferred Alternative Route	697.18	-0.64	194861	Irrigation	330	61	42.252056	-98.063194
Antelope	Re-Route Portion of the Preferred Alternative Route	697.24	0.09	156746	Irrigation	310	135	42.259389	-98.05275
Antelope	Re-Route Portion of the Preferred Alternative Route	697.26	0.77	39374	Irrigation	165	70	42.266674	-98.043797
Antelope	Re-Route Portion of the Preferred Alternative Route	697.42	0.40	71553	Irrigation	360	80	42.261078	-98.046168
Antelope	Re-Route Portion of the Preferred Alternative Route	697.56	-0.29	80714	Irrigation	120	70	42.252248	-98.053121
Antelope	Re-Route Portion of the Preferred Alternative Route	697.90	0.13	92506	Irrigation	134	78	42.251974	-98.043473

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	698.02	-0.98	191047	Irrigation	340	75	42.244694	-98.062917
Antelope	Re-Route Portion of the Preferred Alternative Route	698.07	0.60	100056	Irrigation	320	49	42.251987	-98.033754
Antelope	Re-Route Portion of the Preferred Alternative Route	698.12	-0.35	58126	Irrigation	330	90	42.246628	-98.050685
Antelope	Re-Route Portion of the Preferred Alternative Route	698.37	-0.04	52293	Irrigation	124	72	42.244785	-98.043393
Antelope	Re-Route Portion of the Preferred Alternative Route	698.37	-0.04	199001	Livestock	120	60	42.244722	-98.043333
Antelope	Re-Route Portion of the Preferred Alternative Route	698.47	-0.71	64337	Irrigation	351	81	42.237567	-98.053124
Antelope	Re-Route Portion of the Preferred Alternative Route	698.57	0.11	137595	Domestic	120	35	42.243988	-98.039233
Antelope	Re-Route Portion of the Preferred Alternative Route	698.60	-0.74	176951	Monitoring	95	87	42.233722	-98.048306
Antelope	Re-Route Portion of the Preferred Alternative Route	698.65	-0.38	52294	Irrigation	110	54	42.23755	-98.043395
Antelope	Re-Route Portion of the Preferred Alternative Route	698.66	0.04	42322	Irrigation	125	70	42.24249	-98.038506
Antelope	Re-Route Portion of the Preferred Alternative Route	698.67	-0.80	118010	Livestock	150	90	42.232371	-98.047892
Antelope	Re-Route Portion of the Preferred Alternative Route	698.69	-0.70	117380	Monitoring	77	68	42.233398	-98.046407
Antelope	Re-Route Portion of the Preferred Alternative Route	698.71	-0.85	118011	Livestock	155	60	42.231534	-98.047899
Antelope	Re-Route Portion of the Preferred Alternative Route	698.86	-0.70	117381	Monitoring	69	61	42.232023	-98.043832

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	698.86	-0.81	117382	Monitoring	67	63	42.230652	-98.044951
Antelope	Re-Route Portion of the Preferred Alternative Route	698.94	-0.79	81851	Irrigation	215	64	42.230375	-98.043476
Antelope	Re-Route Portion of the Preferred Alternative Route	699.00	0.64	66153	Irrigation	133	32	42.246628	-98.026398
Antelope	Re-Route Portion of the Preferred Alternative Route	699.06	-0.09	79200	Irrigation	110	53	42.237509	-98.03358
Antelope	Re-Route Portion of the Preferred Alternative Route	699.17	-0.52	165762	Irrigation	215	48	42.230528	-98.033778
Antelope	Re-Route Portion of the Preferred Alternative Route	699.41	0.82	197621	Domestic	302	40	42.248333	-98.021389
Antelope	Re-Route Portion of the Preferred Alternative Route	699.42	0.83	56776	Irrigation	90	19	42.246724	-98.016645
Antelope	Re-Route Portion of the Preferred Alternative Route	699.86	0.43	54082	Irrigation	282	15	42.23769	-98.014191
Antelope	Re-Route Portion of the Preferred Alternative Route	699.97	-0.30	76919	Irrigation	310	40	42.228524	-98.021513
Antelope	Re-Route Portion of the Preferred Alternative Route	700.26	0.41	160317	Livestock	80	22	42.234484	-98.008922
Antelope	Re-Route Portion of the Preferred Alternative Route	700.33	0.72	54081	Irrigation	296	12	42.237728	-98.004702
Antelope	Re-Route Portion of the Preferred Alternative Route	700.50	-0.96	51598	Irrigation	305	41	42.215788	-98.019105
Antelope	Re-Route Portion of the Preferred Alternative Route	700.60	0.30	45480	Irrigation	117	37	42.230481	-98.004556
Antelope	Re-Route Portion of the Preferred Alternative Route	700.76	0.98	54080	Irrigation	151	10	42.237639	-97.994859

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	700.88	-0.15	80322	Irrigation	232	40	42.222844	-98.004405
Antelope	Re-Route Portion of the Preferred Alternative Route	700.99	-0.49	71554	Irrigation	345	71	42.217837	-98.006247
Antelope	Re-Route Portion of the Preferred Alternative Route	701.03	0.58	81045	Irrigation	255	28	42.230627	-97.994519
Antelope	Re-Route Portion of the Preferred Alternative Route	701.24	0.13	165918	Irrigation	240	47	42.223389	-97.995694
Antelope	Re-Route Portion of the Preferred Alternative Route	701.27	0.39	168026	Livestock	96	21	42.226278	-97.992278
Antelope	Re-Route Portion of the Preferred Alternative Route	701.40	0.77	53091	Irrigation	186	27	42.229691	-97.985931
Antelope	Re-Route Portion of the Preferred Alternative Route	701.45	-0.95	62542	Irrigation	342	90	42.208785	-98.004416
Antelope	Re-Route Portion of the Preferred Alternative Route	701.59	-0.24	62545	Irrigation	300	120	42.216003	-97.994182
Antelope	Re-Route Portion of the Preferred Alternative Route	701.68	0.44	165727	Irrigation	300	42	42.223417	-97.985167
Antelope	Re-Route Portion of the Preferred Alternative Route	701.86	-0.67	62544	Irrigation	260	100	42.208766	-97.994669
Antelope	Re-Route Portion of the Preferred Alternative Route	701.97	0.03	53016	Irrigation	324	66	42.216028	-97.985089
Antelope	Re-Route Portion of the Preferred Alternative Route	702.03	0.42	113090	Livestock	95	24	42.220215	-97.979707
Antelope	Re-Route Portion of the Preferred Alternative Route	702.08	0.72	165729	Irrigation	300	26	42.223389	-97.975694
Antelope	Re-Route Portion of the Preferred Alternative Route	702.09	-0.80	138133	Monitoring	360	137	42.205224	-97.992495

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	702.09	-0.80	138136	Monitoring	212	135	42.205227	-97.992462
Antelope	Re-Route Portion of the Preferred Alternative Route	702.09	-0.80	138137	Monitoring	160	134	42.205224	-97.99241
Antelope	Re-Route Portion of the Preferred Alternative Route	702.23	-0.56	63842	Irrigation	356	85	42.20696	-97.987426
Antelope	Re-Route Portion of the Preferred Alternative Route	702.36	0.32	78092	Irrigation	315	42	42.216069	-97.97534
Antelope	Re-Route Portion of the Preferred Alternative Route	702.58	-0.78	167010	Irrigation	367	169	42.201667	-97.985389
Antelope	Re-Route Portion of the Preferred Alternative Route	702.68	-0.07	78068	Irrigation	355	95	42.208823	-97.975262
Antelope	Re-Route Portion of the Preferred Alternative Route	702.75	0.63	38403	Irrigation	115	25	42.216109	-97.965685
Antelope	Re-Route Portion of the Preferred Alternative Route	702.98	-0.46	189565	Irrigation	350	111	42.201694	-97.975472
Antelope	Re-Route Portion of the Preferred Alternative Route	703.06	0.24	82688	Irrigation	329	58	42.208808	-97.965588
Antelope	Re-Route Portion of the Preferred Alternative Route	703.13	0.94	61557	Irrigation	312	43	42.216149	-97.955937
Antelope	Re-Route Portion of the Preferred Alternative Route	703.37	-0.17	183153	Irrigation	320	89	42.201417	-97.965861
Antelope	Re-Route Portion of the Preferred Alternative Route	703.45	0.56	131111	Irrigation	285	24	42.20889	-97.955824
Antelope	Re-Route Portion of the Preferred Alternative Route	703.79	0.34	61270	Irrigation	333	86	42.203429	-97.953377
Antelope	Re-Route Portion of the Preferred Alternative Route	703.81	0.68	69615	Irrigation	302	38	42.207109	-97.94889

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	704.07	-0.21	184365	Irrigation	320	82	42.194528	-97.955778
Antelope	Re-Route Portion of the Preferred Alternative Route	704.08	-0.76	111047	Livestock	165	0	42.188301	-97.96237
Antelope	Re-Route Portion of the Preferred Alternative Route	704.14	0.47	48532	Irrigation	306	55	42.201631	-97.946434
Antelope	Re-Route Portion of the Preferred Alternative Route	704.53	-0.20	40794	Irrigation	150	78	42.190583	-97.948628
Antelope	Re-Route Portion of the Preferred Alternative Route	704.54	0.78	49141	Irrigation	284	25	42.201602	-97.936614
Antelope	Re-Route Portion of the Preferred Alternative Route	704.63	0.06	72425	Irrigation	297	55	42.192587	-97.943972
Antelope	Re-Route Portion of the Preferred Alternative Route	704.70	-1.00	184025	Irrigation	410	153	42.18	-97.955833
Antelope	Re-Route Portion of the Preferred Alternative Route	704.98	-0.14	191329	Irrigation	355	104	42.187167	-97.941167
Antelope	Re-Route Portion of the Preferred Alternative Route	705.08	0.74	82678	Irrigation	265	37	42.194551	-97.926998
Antelope	Re-Route Portion of the Preferred Alternative Route	705.22	-0.65	203804	Irrigation	399	160	42.180083	-97.945972
Antelope	Re-Route Portion of the Preferred Alternative Route	705.26	0.19	134155	Livestock	135	58	42.187435	-97.932921
Antelope	Re-Route Portion of the Preferred Alternative Route	705.27	-0.98	175791	Livestock	240	168	42.176446	-97.950261
Antelope	Re-Route Portion of the Preferred Alternative Route	705.47	0.41	81920	Irrigation	289	58	42.187304	-97.927017
Antelope	Re-Route Portion of the Preferred Alternative Route	705.60	-0.98	203778	Irrigation	390	163	42.17275	-97.946111

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	705.63	0.61	44637	Irrigation	280	42	42.187278	-97.922071
Antelope	Re-Route Portion of the Preferred Alternative Route	705.83	0.10	176093	Irrigation	351	143	42.180142	-97.927028
Antelope	Re-Route Portion of the Preferred Alternative Route	706.01	0.25	181635	Domestic	310	175	42.177917	-97.9229
Antelope	Re-Route Portion of the Preferred Alternative Route	706.14	-0.53	152882	Irrigation	400	170	42.172806	-97.936722
Antelope	Re-Route Portion of the Preferred Alternative Route	706.29	-0.04	139456	Irrigation	390	150	42.172857	-97.926715
Antelope	Re-Route Portion of the Preferred Alternative Route	706.43	0.44	57793	Irrigation	362	167	42.172925	-97.917001
Antelope	Re-Route Portion of the Preferred Alternative Route	706.61	-0.68	62571	Irrigation	377	147	42.165652	-97.936715
Antelope	Re-Route Portion of the Preferred Alternative Route	706.84	-0.36	57117	Irrigation	342	170	42.163864	-97.929445
Antelope	Re-Route Portion of the Preferred Alternative Route	706.89	0.29	209608	Irrigation	408	153	42.165889	-97.917139
Antelope	Re-Route Portion of the Preferred Alternative Route	706.90	0.75	141999	Irrigation	358	170	42.165748	-97.907962
Antelope	Re-Route Portion of the Preferred Alternative Route	707.31	-0.21	53861	Irrigation	324	112	42.158385	-97.926892
Antelope	Re-Route Portion of the Preferred Alternative Route	707.42	0.77	90253	Irrigation	359	136	42.158337	-97.907688
Antelope	Re-Route Portion of the Preferred Alternative Route	707.61	-0.48	101739	Livestock	240	100	42.154387	-97.931923
Antelope	Re-Route Portion of the Preferred Alternative Route	707.82	0.27	21604	Irrigation	196	56	42.151311	-97.917356

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	707.83	-0.23	46961	Irrigation	312	94	42.151189	-97.927023
Antelope	Re-Route Portion of the Preferred Alternative Route	707.83	0.77	47005	Irrigation	260	68	42.151256	-97.907544
Antelope	Re-Route Portion of the Preferred Alternative Route	708.32	-0.72	64087	Irrigation	397	0	42.143949	-97.936559
Antelope	Re-Route Portion of the Preferred Alternative Route	708.34	0.77	167103	Irrigation	290	65	42.143972	-97.907361
Antelope	Re-Route Portion of the Preferred Alternative Route	708.57	0.02	79067	Irrigation	340	127	42.14049	-97.922073
Antelope	Re-Route Portion of the Preferred Alternative Route	708.77	0.77	165500	Irrigation	345	114	42.136833	-97.907417
Antelope	Re-Route Portion of the Preferred Alternative Route	709.12	-0.32	100466	Livestock	220	180	42.133464	-97.929765
Antelope	Re-Route Portion of the Preferred Alternative Route	709.64	0.84	166402	Irrigation	330	110	42.129639	-97.906944
Antelope	Re-Route Portion of the Preferred Alternative Route	710.09	-0.15	80480	Irrigation	315	83	42.118737	-97.925294
Antelope	Re-Route Portion of the Preferred Alternative Route	710.32	0.26	142063	Livestock	240	142	42.11551	-97.917152
Antelope	Re-Route Portion of the Preferred Alternative Route	710.39	-0.50	173054	Livestock	256	90	42.114333	-97.932033
Antelope	Re-Route Portion of the Preferred Alternative Route	710.79	0.85	107241	Livestock	280	140	42.10787	-97.905904
Antelope	Re-Route Portion of the Preferred Alternative Route	711.34	0.31	62481	Irrigation	342	125	42.100553	-97.916908
Antelope	Re-Route Portion of the Preferred Alternative Route	711.98	-0.05	61609	Irrigation	347	54	42.091505	-97.924254

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	711.99	-0.80	54463	Irrigation	300	55	42.091505	-97.938781
Antelope	Re-Route Portion of the Preferred Alternative Route	712.16	0.27	16658	Irrigation	202	38	42.08874	-97.918104
Antelope	Re-Route Portion of the Preferred Alternative Route	712.18	-0.12	5943	Irrigation	0	0	42.088567	-97.925784
Antelope	Re-Route Portion of the Preferred Alternative Route	712.21	0.71	70362	Irrigation	325	45	42.087823	-97.909629
Antelope	Re-Route Portion of the Preferred Alternative Route	712.23	-0.29	1330	Irrigation	100	0	42.087918	-97.929043
Antelope	Re-Route Portion of the Preferred Alternative Route	712.35	-0.34	79046	Irrigation	262	23	42.086056	-97.930115
Antelope	Re-Route Portion of the Preferred Alternative Route	712.35	-0.03	46015	Irrigation	185	21	42.086047	-97.924035
Antelope	Re-Route Portion of the Preferred Alternative Route	712.36	-0.93	45390	Irrigation	198	8	42.085858	-97.94155
Antelope	Re-Route Portion of the Preferred Alternative Route	712.47	-0.29	1329	Irrigation	75	0	42.084295	-97.929025
Antelope	Re-Route Portion of the Preferred Alternative Route	712.62	-0.36	26533	Irrigation	90	0	42.082082	-97.930449
Antelope	Re-Route Portion of the Preferred Alternative Route	712.64	-0.64	190218	Irrigation	290	16	42.081778	-97.935861
Antelope	Re-Route Portion of the Preferred Alternative Route	712.66	0.09	46675	Irrigation	169	4	42.081553	-97.921713
Antelope	Re-Route Portion of the Preferred Alternative Route	712.89	0.63	134721	Domestic	84	14	42.078295	-97.911124
Antelope	Re-Route Portion of the Preferred Alternative Route	713.10	0.65	169415	Domestic	90	17	42.075267	-97.910672

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	713.40	0.87	24697	Irrigation	96	38	42.070952	-97.906322
Antelope	Re-Route Portion of the Preferred Alternative Route	713.47	0.46	4720	Irrigation	0	0	42.069803	-97.914435
Antelope	Re-Route Portion of the Preferred Alternative Route	713.57	-0.28	178300	Livestock	230	0	42.068417	-97.928817
Antelope	Re-Route Portion of the Preferred Alternative Route	713.61	0.69	24696	Irrigation	52	21	42.067921	-97.909809
Antelope	Re-Route Portion of the Preferred Alternative Route	713.81	-0.64	54464	Irrigation	291	30	42.06394	-97.935658
Antelope	Re-Route Portion of the Preferred Alternative Route	714.07	0.87	136286	Domestic	300	31	42.061755	-97.903966
Antelope	Re-Route Portion of the Preferred Alternative Route	714.12	-0.04	105696	Irrigation	290	14	42.060817	-97.921766
Antelope	Re-Route Portion of the Preferred Alternative Route	714.20	0.29	121672	Domestic	100	28	42.059646	-97.915376
Antelope	Re-Route Portion of the Preferred Alternative Route	714.25	0.08	9419	Irrigation	90	26	42.059012	-97.919344
Antelope	Re-Route Portion of the Preferred Alternative Route	714.38	-0.78	41252	Irrigation	332	40	42.057182	-97.936132
Antelope	Re-Route Portion of the Preferred Alternative Route	714.61	-0.03	134332	Irrigation	355	47	42.053708	-97.921695
Antelope	Re-Route Portion of the Preferred Alternative Route	714.64	-0.39	165050	Irrigation	0	0	42.053443	-97.928654
Antelope	Re-Route Portion of the Preferred Alternative Route	714.88	0.23	112633	Irrigation	304	35	42.049852	-97.916627
Antelope	Re-Route Portion of the Preferred Alternative Route	715.00	-0.55	129199	Domestic	280	37	42.050839	-97.932086

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	715.01	-0.73	194249	Irrigation	390	72	42.049607	-97.936055
Antelope	Re-Route Portion of the Preferred Alternative Route	715.38	-0.57	166864	Irrigation	430	110	42.042681	-97.932992
Antelope	Re-Route Portion of the Preferred Alternative Route	715.39	0.27	112635	Irrigation	400	86	42.042715	-97.916695
Antelope	Re-Route Portion of the Preferred Alternative Route	715.88	-0.24	59356	Irrigation	446	95	42.035526	-97.926362
Antelope	Re-Route Portion of the Preferred Alternative Route	716.38	0.26	69579	Irrigation	160	40	42.02815	-97.916817
Antelope	Re-Route Portion of the Preferred Alternative Route	717.37	-0.24	48693	Irrigation	248	92	42.013883	-97.926268
Antelope	Re-Route Portion of the Preferred Alternative Route	717.38	-0.73	125209	Irrigation	220	62	42.013856	-97.935839
Antelope	Re-Route Portion of the Preferred Alternative Route	717.76	-0.36	62272	Irrigation	221	74	42.008256	-97.928603
Antelope	Re-Route Portion of the Preferred Alternative Route	717.87	-0.74	166576	Irrigation	280	140	42.006556	-97.936028
Antelope	Re-Route Portion of the Preferred Alternative Route	717.89	0.27	124323	Irrigation	200	26	42.006439	-97.916365
Antelope	Re-Route Portion of the Preferred Alternative Route	717.89	0.76	170374	Irrigation	220	62	42.006424	-97.906888
Antelope	Re-Route Portion of the Preferred Alternative Route	718.02	0.99	141571	Domestic	152	64	42.004604	-97.902288
Antelope	Re-Route Portion of the Preferred Alternative Route	718.23	-0.62	54419	Irrigation	221	99	42.001309	-97.933475
Antelope	Re-Route Portion of the Preferred Alternative Route	718.37	0.77	167748	Irrigation	200	57	41.999528	-97.906611

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	718.38	-0.24	52405	Irrigation	216	92	41.999234	-97.926213
Antelope	Re-Route Portion of the Preferred Alternative Route	718.86	-0.24	77170	Irrigation	221	70	41.992271	-97.926011
Antelope	Re-Route Portion of the Preferred Alternative Route	718.86	-0.87	36047	Irrigation	175	80	41.992168	-97.938279
Antelope	Re-Route Portion of the Preferred Alternative Route	718.87	0.75	56479	Irrigation	214	67	41.992319	-97.906779
Antelope	Re-Route Portion of the Preferred Alternative Route	718.87	0.26	206482	Irrigation	219	42	41.992194	-97.916306
Antelope	Re-Route Portion of the Preferred Alternative Route	719.36	0.27	81951	Irrigation	180	60	41.985093	-97.91618
Antelope	Re-Route Portion of the Preferred Alternative Route	719.36	-0.25	46416	Irrigation	171	70	41.985107	-97.926173
Antelope	Re-Route Portion of the Preferred Alternative Route	719.36	0.64	112981	Irrigation	214	0	41.985018	-97.908913
Antelope	Re-Route Portion of the Preferred Alternative Route	719.36	-0.74	25370	Irrigation	144	41	41.985101	-97.935666
Antelope	Re-Route Portion of the Preferred Alternative Route	719.86	-0.74	85774	Irrigation	170	72	41.977666	-97.935738
Antelope	Re-Route Portion of the Preferred Alternative Route	719.86	0.26	65890	Irrigation	289	147	41.977823	-97.916237
Antelope	Re-Route Portion of the Preferred Alternative Route	719.87	-0.24	157039	Irrigation	225	124	41.977694	-97.926
Antelope	Re-Route Portion of the Preferred Alternative Route	719.87	0.75	61828	Irrigation	225	80	41.977844	-97.90675
Antelope	Re-Route Portion of the Preferred Alternative Route	720.23	-0.62	55057	Irrigation	221	90	41.972373	-97.933316

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	720.35	0.26	48485	Irrigation	235	130	41.9706	-97.916202
Antelope	Re-Route Portion of the Preferred Alternative Route	720.46	-0.25	174810	Irrigation	220	0	41.969204	-97.926083
Antelope	Re-Route Portion of the Preferred Alternative Route	720.86	0.28	160947	Irrigation	320	86	41.963222	-97.915917
Antelope	Re-Route Portion of the Preferred Alternative Route	720.87	-0.22	195971	Irrigation	360	118	41.963194	-97.925611
Antelope	Re-Route Portion of the Preferred Alternative Route	720.88	-0.73	69716	Irrigation	324	157	41.963277	-97.935674
Antelope	Re-Route Portion of the Preferred Alternative Route	720.88	-0.73	69716	Irrigation	324	157	41.963277	-97.935674
Antelope	Re-Route Portion of the Preferred Alternative Route	721.35	0.28	122763	Irrigation	320	108	41.956107	-97.916124
Antelope	Re-Route Portion of the Preferred Alternative Route	721.37	-0.22	59829	Irrigation	330	92	41.956027	-97.925832
Antelope	Re-Route Portion of the Preferred Alternative Route	721.38	-0.72	71840	Irrigation	303	116	41.955979	-97.935647
Antelope	Re-Route Portion of the Preferred Alternative Route	721.84	0.80	209605	Irrigation	300	96	41.948889	-97.906306
Antelope	Re-Route Portion of the Preferred Alternative Route	721.88	-0.21	188737	Irrigation	330	134	41.948639	-97.925833
Antelope	Re-Route Portion of the Preferred Alternative Route	721.88	-0.71	71841	Irrigation	365	169	41.948732	-97.935646
Antelope	Re-Route Portion of the Preferred Alternative Route	722.31	-0.71	98891	Irrigation	344	163	41.941501	-97.935609
Antelope	Re-Route Portion of the Preferred Alternative Route	722.35	-0.21	56131	Irrigation	245	155	41.941571	-97.925815

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Antelope	Re-Route Portion of the Preferred Alternative Route	722.49	0.16	62680	Irrigation	249	150	41.939749	-97.918527
Antelope	Re-Route Portion of the Preferred Alternative Route	722.49	0.66	11128	Irrigation	221	70	41.939738	-97.908806
Antelope	Re-Route Portion of the Preferred Alternative Route	722.86	0.29	56132	Irrigation	301	155	41.934311	-97.916075
Antelope	Re-Route Portion of the Preferred Alternative Route	722.88	0.92	12020	Irrigation	220	87	41.932492	-97.903846
Antelope	Re-Route Portion of the Preferred Alternative Route	723.07	-0.56	56590	Irrigation	262	140	41.932481	-97.933092
Antelope	Re-Route Portion of the Preferred Alternative Route	723.38	0.32	56133	Irrigation	286	195	41.927054	-97.916004
Antelope	Re-Route Portion of the Preferred Alternative Route	723.56	0.79	149530	Irrigation	340	160	41.926972	-97.906611
Antelope	Re-Route Portion of the Preferred Alternative Route	723.86	-0.73	183151	Irrigation	300	164	41.919698	-97.93527
Antelope	Re-Route Portion of the Preferred Alternative Route	723.87	-0.23	181863	Irrigation	340	174	41.919753	-97.925604
Antelope	Re-Route Portion of the Preferred Alternative Route	723.90	0.77	83059	Irrigation	360	181	41.919842	-97.906166
Boone	Re-Route Portion of the Preferred Alternative Route	724.40	0.78	149666	Irrigation	395	190	41.912389	-97.905806
Boone	Re-Route Portion of the Preferred Alternative Route	724.64	0.26	43412	Irrigation	204	83	41.908728	-97.915786
Boone	Re-Route Portion of the Preferred Alternative Route	724.83	0.26	18191	Irrigation	204	83	41.906038	-97.915766
Boone	Re-Route Portion of the Preferred Alternative Route	724.89	0.76	72668	Irrigation	218	100	41.905202	-97.906059

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Boone	Re-Route Portion of the Preferred Alternative Route	724.89	0.76	107420	Irrigation	240	104	41.905202	-97.906059
Boone	Re-Route Portion of the Preferred Alternative Route	725.27	0.82	31972	Irrigation	175	68	41.899307	-97.904801
Boone	Re-Route Portion of the Preferred Alternative Route	725.38	0.27	195998	Irrigation	240	100	41.897886	-97.915644
Boone	Re-Route Portion of the Preferred Alternative Route	725.40	-0.23	142576	Irrigation	280	147	41.897803	-97.925239
Boone	Re-Route Portion of the Preferred Alternative Route	725.41	-0.73	188772	Irrigation	280	161	41.897768	-97.934938
Boone	Re-Route Portion of the Preferred Alternative Route	725.78	0.85	79558	Irrigation	320	131	41.890497	-97.904913
Boone	Re-Route Portion of the Preferred Alternative Route	725.88	0.06	114427	Irrigation	218	95	41.890579	-97.92031
Boone	Re-Route Portion of the Preferred Alternative Route	726.47	-0.73	57577	Irrigation	315	144	41.879737	-97.934699
Boone	Re-Route Portion of the Preferred Alternative Route	726.47	0.31	208344	Irrigation	240	94	41.883397	-97.915128
Boone	Re-Route Portion of the Preferred Alternative Route	726.57	0.79	171725	Irrigation	321	58	41.883437	-97.905625
Boone	Re-Route Portion of the Preferred Alternative Route	726.78	0.40	65321	Irrigation	352	200	41.877993	-97.912826
Boone	Re-Route Portion of the Preferred Alternative Route	726.89	0.78	48925	Irrigation	238	120	41.876208	-97.905486
Boone	Re-Route Portion of the Preferred Alternative Route	726.92	-0.19	82290	Irrigation	391	221	41.875956	-97.924316
Boone	Re-Route Portion of the Preferred Alternative Route	727.89	0.80	94968	Irrigation	382	105	41.861728	-97.905323

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Boone	Re-Route Portion of the Preferred Alternative Route	727.90	-0.20	78044	Irrigation	460	188	41.861721	-97.924711
Boone	Re-Route Portion of the Preferred Alternative Route	727.90	-0.71	59974	Irrigation	312	230	41.861701	-97.934585
Boone	Re-Route Portion of the Preferred Alternative Route	728.35	0.68	77073	Irrigation	420	147	41.85627	-97.907819
Boone	Re-Route Portion of the Preferred Alternative Route	728.40	0.30	64434	Irrigation	500	200	41.854475	-97.914983
Boone	Re-Route Portion of the Preferred Alternative Route	728.47	-0.71	133249	Irrigation	426	126	41.853411	-97.934509
Boone	Re-Route Portion of the Preferred Alternative Route	728.97	-0.69	189246	Domestic	280	135	41.846111	-97.934167
Boone	Re-Route Portion of the Preferred Alternative Route	729.40	-0.72	55928	Irrigation	328	65	41.839895	-97.934604
Boone	Re-Route Portion of the Preferred Alternative Route	729.90	-0.21	82103	Irrigation	365	59	41.832683	-97.924679
Boone	Re-Route Portion of the Preferred Alternative Route	730.63	-0.28	40352	Irrigation	353	14	41.82151	-97.924792
Boone	Re-Route Portion of the Preferred Alternative Route	730.71	0.21	205472	Irrigation	417	131	41.8215	-97.915139
Boone	Re-Route Portion of the Preferred Alternative Route	731.34	0.68	37869	Irrigation	283	70	41.808362	-97.90645
Boone	Re-Route Portion of the Preferred Alternative Route	731.40	-0.32	98636	Domestic	110	46	41.813014	-97.92494
Boone	Re-Route Portion of the Preferred Alternative Route	731.48	-0.79	115311	Domestic	335	110	41.814414	-97.93386
Boone	Re-Route Portion of the Preferred Alternative Route	731.57	-0.74	70764	Irrigation	385	48	41.810612	-97.934511

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Boone	Re-Route Portion of the Preferred Alternative Route	731.79	-0.36	99640	Irrigation	360	95	41.80576	-97.927271
Boone	Re-Route Portion of the Preferred Alternative Route	731.93	0.28	13174	Irrigation	0	0	41.803745	-97.914916
Boone	Re-Route Portion of the Preferred Alternative Route	731.93	0.78	67078	Irrigation	376	100	41.803745	-97.905217
Boone	Re-Route Portion of the Preferred Alternative Route	732.10	0.24	96277	Livestock	270	129	41.801279	-97.915736
Boone	Re-Route Portion of the Preferred Alternative Route	732.63	0.77	151490	Irrigation	340	102	41.796499	-97.905252
Boone	Re-Route Portion of the Preferred Alternative Route	732.73	0.72	101563	Irrigation	384	85	41.792388	-97.905359
Boone	Re-Route Portion of the Preferred Alternative Route	732.86	-0.61	155570	Domestic	330	250	41.790278	-97.931111
Boone	Re-Route Portion of the Preferred Alternative Route	732.94	0.23	70295	Irrigation	428	94	41.789191	-97.914789
Boone	Re-Route Portion of the Preferred Alternative Route	733.42	-0.78	80381	Irrigation	462	180	41.782017	-97.934285
Boone	Re-Route Portion of the Preferred Alternative Route	733.73	-0.81	99050	Irrigation	466	190	41.774698	-97.934273
Boone	Re-Route Portion of the Preferred Alternative Route	734.08	-0.21	130431	Domestic	300	190	41.772046	-97.921003
Boone	Re-Route Portion of the Preferred Alternative Route	734.52	-0.86	157374	Irrigation	450	169	41.766889	-97.933528
Boone	Re-Route Portion of the Preferred Alternative Route	734.95	-0.89	154268	Irrigation	400	136	41.760206	-97.934017
Boone	Re-Route Portion of the Preferred Alternative Route	735.48	-0.85	83440	Irrigation	414	162	41.752904	-97.934013

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Boone	Re-Route Portion of the Preferred Alternative Route	735.84	0.67	114640	Irrigation	440	202	41.747425	-97.904779
Boone	Re-Route Portion of the Preferred Alternative Route	735.97	-0.82	189680	Irrigation	442	222	41.745746	-97.933674
Boone	Re-Route Portion of the Preferred Alternative Route	736.05	-0.34	37045	Irrigation	192	128	41.744617	-97.924274
Boone	Re-Route Portion of the Preferred Alternative Route	736.46	0.27	180309	Irrigation	400	0	41.73853	-97.912609
Boone	Re-Route Portion of the Preferred Alternative Route	736.46	0.77	96805	Irrigation	383	160	41.738393	-97.902974
Boone	Re-Route Portion of the Preferred Alternative Route	736.51	-0.81	37539	Irrigation	251	207	41.737914	-97.933463
Boone	Re-Route Portion of the Preferred Alternative Route	736.82	0.40	40165	Irrigation	174	127	41.733321	-97.910219
Boone	Re-Route Portion of the Preferred Alternative Route	736.95	-0.23	36539	Irrigation	172	98	41.731509	-97.922322
Boone	Re-Route Portion of the Preferred Alternative Route	737.44	0.78	50213	Irrigation	191	80	41.724262	-97.902996
Boone	Re-Route Portion of the Preferred Alternative Route	737.44	0.28	37381	Irrigation	195	127	41.724262	-97.91267
Boone	Re-Route Portion of the Preferred Alternative Route	737.45	-0.22	45345	Irrigation	205	126	41.724262	-97.922325
Boone	Re-Route Portion of the Preferred Alternative Route	737.45	-0.63	24487	Irrigation	250	183	41.724248	-97.930306
Boone	Re-Route Portion of the Preferred Alternative Route	737.94	0.91	37488	Irrigation	215	149	41.716981	-97.900583
Boone	Re-Route Portion of the Preferred Alternative Route	737.94	0.28	43354	Irrigation	166	84	41.717021	-97.912747

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Boone	Re-Route Portion of the Preferred Alternative Route	737.95	-0.22	56134	Irrigation	194	129	41.71698	-97.922381
Boone	Re-Route Portion of the Preferred Alternative Route	737.96	-0.71	126077	Irrigation	217	141	41.716896	-97.931999
Boone	Re-Route Portion of the Preferred Alternative Route	738.29	0.41	6347	Irrigation	151	89	41.711568	-97.910289
Boone	Re-Route Portion of the Preferred Alternative Route	738.30	0.32	76471	Irrigation	185	89	41.70975	-97.91274
Boone	Re-Route Portion of the Preferred Alternative Route	738.50	-0.10	43350	Irrigation	175	105	41.710062	-97.921854
Boone	Re-Route Portion of the Preferred Alternative Route	738.71	-0.56	41851	Irrigation	194	125	41.70969	-97.932156
Boone	Re-Route Portion of the Preferred Alternative Route	738.83	0.08	107543	Domestic	141	75	41.7048	-97.920846
Boone	Re-Route Portion of the Preferred Alternative Route	738.86	-0.98	52479	Irrigation	221	150	41.702382	-97.941086
Boone	Re-Route Portion of the Preferred Alternative Route	738.92	-0.53	49162	Irrigation	183	144	41.702433	-97.932304
Boone	Re-Route Portion of the Preferred Alternative Route	739.00	-0.04	204303	Irrigation	142	61	41.702472	-97.922667
Boone	Re-Route Portion of the Preferred Alternative Route	739.03	0.48	79631	Irrigation	158	94	41.702367	-97.912689
Boone	Re-Route Portion of the Preferred Alternative Route	739.04	0.97	74384	Irrigation	216	152	41.702559	-97.9032
Boone	Re-Route Portion of the Preferred Alternative Route	739.34	-0.71	120297	Livestock	243	160	41.697206	-97.935405
Boone	Re-Route Portion of the Preferred Alternative Route	739.35	-0.68	62874	Com / Ind	247	180	41.696994	-97.9348

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Boone	Re-Route Portion of the Preferred Alternative Route	739.47	-0.93	79596	Irrigation	205	149	41.695145	-97.939602
Boone	Re-Route Portion of the Preferred Alternative Route	739.52	-0.55	107262	Irrigation	230	129	41.694694	-97.932133
Boone	Re-Route Portion of the Preferred Alternative Route	739.52	0.45	41730	Irrigation	204	135	41.695257	-97.912873
Boone	Re-Route Portion of the Preferred Alternative Route	739.84	-0.62	69599	Irrigation	195	120	41.687946	-97.932405
Boone	Re-Route Portion of the Preferred Alternative Route	739.97	-0.13	159192	Irrigation	268	76	41.688002	-97.922738
Boone	Re-Route Portion of the Preferred Alternative Route	740.27	0.31	41984	Irrigation	182	70	41.688072	-97.912967
Boone	Re-Route Portion of the Preferred Alternative Route	740.28	0.75	99023	Irrigation	320	117	41.68814	-97.903299
Boone	Re-Route Portion of the Preferred Alternative Route	740.57	0.23	157382	Irrigation	220	72	41.680825	-97.913017
Boone	Re-Route Portion of the Preferred Alternative Route	740.57	-0.28	62712	Irrigation	254	149	41.680755	-97.922711
Boone	Re-Route Portion of the Preferred Alternative Route	740.57	-0.77	69684	Irrigation	156	103	41.680699	-97.932306
Boone	Re-Route Portion of the Preferred Alternative Route	741.07	0.48	188749	Irrigation	204	71	41.673501	-97.908076
Boone	Re-Route Portion of the Preferred Alternative Route	741.07	-0.28	49698	Irrigation	182	90	41.67352	-97.922713
Boone	Re-Route Portion of the Preferred Alternative Route	741.31	0.72	52524	Irrigation	175	80	41.669911	-97.903429
Boone	Re-Route Portion of the Preferred Alternative Route	741.57	0.22	158097	Irrigation	190	111	41.666259	-97.913159

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Boone	Re-Route Portion of the Preferred Alternative Route	741.57	-0.27	68190	Irrigation	255	168	41.6663	-97.922696
Boone	Re-Route Portion of the Preferred Alternative Route	741.98	-0.33	40437	Irrigation	179	89	41.658789	-97.922654
Boone	Re-Route Portion of the Preferred Alternative Route	742.09	-0.71	25991	Irrigation	124	8	41.655205	-97.928883
Boone	Re-Route Portion of the Preferred Alternative Route	742.14	0.14	45715	Irrigation	241	170	41.659011	-97.913217
Boone	Re-Route Portion of the Preferred Alternative Route	742.22	0.71	45676	Irrigation	146	67	41.659482	-97.901756
Boone	Re-Route Portion of the Preferred Alternative Route	742.42	0.46	180721	Irrigation	120	59	41.655391	-97.905779
Boone	Re-Route Portion of the Preferred Alternative Route	742.45	-0.89	25992	Irrigation	103	27	41.65167	-97.931348
Boone	Re-Route Portion of the Preferred Alternative Route	742.49	-0.56	24434	Irrigation	120	38	41.651879	-97.924957
Boone	Re-Route Portion of the Preferred Alternative Route	742.62	0.08	46901	Irrigation	185	100	41.651686	-97.912232
Boone	Re-Route Portion of the Preferred Alternative Route	742.69	0.52	52717	Irrigation	234	125	41.651749	-97.903674
Boone	Re-Route Portion of the Preferred Alternative Route	742.81	0.87	199	Irrigation	0	0	41.649968	-97.896433
Boone	Re-Route Portion of the Preferred Alternative Route	743.15	-0.31	15122	Irrigation	123	38	41.644674	-97.919468
Boone	Re-Route Portion of the Preferred Alternative Route	743.35	0.69	63932	Irrigation	195	111	41.639162	-97.901266
Boone	Re-Route Portion of the Preferred Alternative Route	743.42	-0.09	31852	Irrigation	121	30	41.64031	-97.916283

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Boone	Re-Route Portion of the Preferred Alternative Route	743.43	0.10	158101	Irrigation	148	62	41.639623	-97.912761
Boone	Re-Route Portion of the Preferred Alternative Route	743.45	0.84	160913	Irrigation	160	83	41.637282	-97.89868
Boone	Re-Route Portion of the Preferred Alternative Route	743.46	-0.58	170119	Domestic	88	15	41.64105	-97.925806
Boone	Re-Route Portion of the Preferred Alternative Route	743.55	-0.95	19871	Irrigation	100	20	41.640836	-97.933039
Boone	Re-Route Portion of the Preferred Alternative Route	743.64	0.68	55813	Irrigation	200	110	41.633704	-97.902936
Boone	Re-Route Portion of the Preferred Alternative Route	743.78	0.43	49790	Irrigation	121	35	41.632761	-97.908687
Boone	Re-Route Portion of the Preferred Alternative Route	743.92	-0.44	75026	Irrigation	88	14	41.635487	-97.925297
Boone	Re-Route Portion of the Preferred Alternative Route	743.95	-0.91	17214	Irrigation	129	32	41.637553	-97.933909
Boone	Re-Route Portion of the Preferred Alternative Route	744.02	0.70	173815	Irrigation	130	31	41.628028	-97.905583
Boone	Re-Route Portion of the Preferred Alternative Route	744.05	-0.41	21188	Irrigation	92	11	41.633591	-97.925686
Boone	Re-Route Portion of the Preferred Alternative Route	744.07	-0.80	129514	Irrigation	130	47	41.635349	-97.932777
Boone	Re-Route Portion of the Preferred Alternative Route	744.14	-0.62	21187	Irrigation	81	12	41.633489	-97.930149
Boone	Re-Route Portion of the Preferred Alternative Route	744.14	-0.64	21189	Irrigation	94	14	41.63357	-97.930516
Boone	Re-Route Portion of the Preferred Alternative Route	744.17	-0.21	72368	Irrigation	89	16	41.630885	-97.922923

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Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Boone	Re-Route Portion of the Preferred Alternative Route	744.38	-0.52	58051	Irrigation	102	11	41.626736	-97.93023
Boone	Re-Route Portion of the Preferred Alternative Route	744.43	-0.86	48320	Irrigation	160	40	41.626047	-97.936844
Boone	Re-Route Portion of the Preferred Alternative Route	744.43	0.16	190443	Monitoring	14	5.3	41.626178	-97.917121
Boone	Re-Route Portion of the Preferred Alternative Route	744.43	0.14	190448	Monitoring	14	5.3	41.626173	-97.917473
Boone	Re-Route Portion of the Preferred Alternative Route	744.43	0.17	190444	Monitoring	14	4.8	41.62609	-97.917058
Boone	Re-Route Portion of the Preferred Alternative Route	744.44	0.16	183799	Monitoring	15	7.6	41.626059	-97.917201
Boone	Re-Route Portion of the Preferred Alternative Route	744.44	0.14	190447	Monitoring	14	5.2	41.626022	-97.917471
Boone	Re-Route Portion of the Preferred Alternative Route	744.44	0.16	183798	Monitoring	15	7.7	41.625988	-97.91713
Boone	Re-Route Portion of the Preferred Alternative Route	744.44	0.16	183797	Monitoring	15	7.8	41.625955	-97.917185
Boone	Re-Route Portion of the Preferred Alternative Route	744.44	0.17	190445	Monitoring	14	6.1	41.625953	-97.917071
Boone	Re-Route Portion of the Preferred Alternative Route	744.45	0.17	183800	Monitoring	15	7.9	41.625857	-97.916997
Boone	Re-Route Portion of the Preferred Alternative Route	744.45	0.17	183801	Monitoring	25	8	41.625857	-97.91699
Boone	Re-Route Portion of the Preferred Alternative Route	744.45	0.15	190446	Monitoring	14	5.8	41.625842	-97.91737
Boone	Re-Route Portion of the Preferred Alternative Route	744.47	0.15	212202	Monitoring	13	5.8	41.625567	-97.917389

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Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Boone	Re-Route Portion of the Preferred Alternative Route	744.50	0.20	210825	Domestic	120	8	41.625167	-97.916333
Boone	Re-Route Portion of the Preferred Alternative Route	744.58	0.38	49789	Irrigation	107	12	41.623969	-97.912956
Boone	Re-Route Portion of the Preferred Alternative Route	744.62	-0.13	55812	Irrigation	125	30	41.623359	-97.92277
Boone	Re-Route Portion of the Preferred Alternative Route	744.62	-0.64	10760	Irrigation	161	40	41.622681	-97.932478
Boone	Re-Route Portion of the Preferred Alternative Route	744.62	-0.39	35924	Irrigation	142	34	41.622821	-97.927687
Boone	Re-Route Portion of the Preferred Alternative Route	744.70	0.97	32406	Irrigation	119	27	41.623736	-97.901483
Boone	Re-Route Portion of the Preferred Alternative Route	744.79	0.11	49788	Irrigation	123	10	41.621135	-97.917775
Boone	Re-Route Portion of the Preferred Alternative Route	744.84	-0.87	6235	Irrigation	0	0	41.618951	-97.936453
Boone	Re-Route Portion of the Preferred Alternative Route	745.02	0.63	51559	Irrigation	104	15	41.618508	-97.907283
Boone	Re-Route Portion of the Preferred Alternative Route	745.06	0.20	77596	Irrigation	120	11	41.617325	-97.915429
Boone	Re-Route Portion of the Preferred Alternative Route	745.11	-0.51	210291	Irrigation	200	35	41.615611	-97.929083
Boone	Re-Route Portion of the Preferred Alternative Route	745.15	-0.18	19872	Irrigation	140	30	41.615484	-97.922646
Boone	Re-Route Portion of the Preferred Alternative Route	745.21	-0.82	9061	Irrigation	139	43	41.613608	-97.934765
Boone	Re-Route Portion of the Preferred Alternative Route	745.27	0.77	128078	Irrigation	80	15	41.615214	-97.90414

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Boone	Re-Route Portion of the Preferred Alternative Route	745.33	0.07	27781	Irrigation	160	26	41.613254	-97.917526
Boone	Re-Route Portion of the Preferred Alternative Route	745.38	-0.45	19615	Irrigation	135	30	41.611703	-97.92746
Boone	Re-Route Portion of the Preferred Alternative Route	745.39	-0.43	171310	Irrigation	180	0	41.611705	-97.926948
Boone	Re-Route Portion of the Preferred Alternative Route	745.49	-0.21	12643	Irrigation	198	30	41.610763	-97.922533
Boone	Re-Route Portion of the Preferred Alternative Route	745.54	-0.08	1296	Irrigation	0	0	41.610055	-97.920165
Boone	Re-Route Portion of the Preferred Alternative Route	745.59	0.69	42256	Irrigation	161	14	41.609724	-97.905161
Boone	Re-Route Portion of the Preferred Alternative Route	745.75	0.39	49482	Irrigation	112	30	41.607269	-97.910966
Boone	Re-Route Portion of the Preferred Alternative Route	745.85	-0.10	108412	Irrigation	166	30	41.605529	-97.920267
Boone	Re-Route Portion of the Preferred Alternative Route	745.92	0.05	44875	Irrigation	241	25	41.604563	-97.917277
Boone	Re-Route Portion of the Preferred Alternative Route	746.09	0.92	32849	Irrigation	165	14	41.600611	-97.900594
Boone	Re-Route Portion of the Preferred Alternative Route	746.19	-0.32	1977	Irrigation	0	0	41.602789	-97.924849
Boone	Re-Route Portion of the Preferred Alternative Route	746.19	-0.81	1978	Irrigation	0	0	41.602724	-97.934671
Boone	Re-Route Portion of the Preferred Alternative Route	746.31	0.12	21071	Irrigation	150	44	41.599254	-97.916733
Boone	Re-Route Portion of the Preferred Alternative Route	746.54	-0.31	4909	Irrigation	0	0	41.59557	-97.924751

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Boone	Re-Route Portion of the Preferred Alternative Route	746.55	-0.06	259	Irrigation	207	50	41.595597	-97.919924
Boone	Re-Route Portion of the Preferred Alternative Route	746.64	-0.71	74615	Irrigation	325	135	41.593683	-97.93219
Boone	Re-Route Portion of the Preferred Alternative Route	746.88	0.77	22173	Irrigation	175	10	41.593793	-97.903003
Boone	Re-Route Portion of the Preferred Alternative Route	746.89	0.98	213	Irrigation	0	0	41.59115	-97.89852
Boone	Re-Route Portion of the Preferred Alternative Route	746.92	0.23	44660	Irrigation	211	30	41.590539	-97.913004
Boone	Re-Route Portion of the Preferred Alternative Route	746.97	-0.55	207180	Domestic	195	120	41.589733	-97.928
Boone	Re-Route Portion of the Preferred Alternative Route	747.06	0.35	33250	Irrigation	120	30	41.588567	-97.910527
Boone	Re-Route Portion of the Preferred Alternative Route	747.19	0.23	146628	Irrigation	140	30	41.586639	-97.912861
Boone	Re-Route Portion of the Preferred Alternative Route	747.19	-0.27	118309	Irrigation	140	54	41.586524	-97.922481
Boone	Re-Route Portion of the Preferred Alternative Route	747.22	0.68	47532	Irrigation	148	33	41.586159	-97.904288
Boone	Re-Route Portion of the Preferred Alternative Route	747.32	0.86	171	Irrigation	148	36	41.584835	-97.900673
Boone	Re-Route Portion of the Preferred Alternative Route	747.57	-0.14	264	Irrigation	0	0	41.581094	-97.919971
Boone	Re-Route Portion of the Preferred Alternative Route	747.58	0.86	270	Irrigation	0	0	41.58107	-97.90065
Boone	Re-Route Portion of the Preferred Alternative Route	747.67	0.71	89018	Irrigation	132	25	41.579713	-97.903506

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Boone	Re-Route Portion of the Preferred Alternative Route	747.82	0.11	2335	Irrigation	0	0	41.577456	-97.91511
Boone	Re-Route Portion of the Preferred Alternative Route	747.96	-0.46	4993	Irrigation	0	0	41.575345	-97.926124
Boone	Re-Route Portion of the Preferred Alternative Route	748.14	-0.78	49197	Irrigation	225	130	41.57226	-97.932159
Boone	Re-Route Portion of the Preferred Alternative Route	748.14	-0.17	40216	Irrigation	110	40	41.572036	-97.920402
Boone	Re-Route Portion of the Preferred Alternative Route	748.14	-0.51	92313	Domestic	175	0	41.571176	-97.926834
Boone	Re-Route Portion of the Preferred Alternative Route	748.23	0.09	171262	Irrigation	150	0	41.572103	-97.914949
Boone	Re-Route Portion of the Preferred Alternative Route	748.37	0.83	9068	Irrigation	138	72	41.573822	-97.900582
Boone	Re-Route Portion of the Preferred Alternative Route	748.41	0.97	89567	Irrigation	173	58	41.570863	-97.896898
Boone	Re-Route Portion of the Preferred Alternative Route	748.62	0.65	157411	Irrigation	168	95	41.564953	-97.902867
Boone	Re-Route Portion of the Preferred Alternative Route	748.69	0.16	140177	Irrigation	100	35	41.564767	-97.912438
Boone	Re-Route Portion of the Preferred Alternative Route	748.70	-0.75	109021	Domestic	160	105	41.566227	-97.930002
Boone	Re-Route Portion of the Preferred Alternative Route	748.75	-0.34	145802	Irrigation	100	44	41.564778	-97.922194
Boone	Re-Route Portion of the Preferred Alternative Route	748.81	-0.83	131071	Irrigation	135	53	41.564795	-97.93168
Boone	Re-Route Portion of the Preferred Alternative Route	749.08	-0.22	80730	Irrigation	150	64	41.559891	-97.920706

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Boone	Re-Route Portion of the Preferred Alternative Route	749.19	-0.78	170929	Irrigation	180	102	41.557579	-97.931479
Boone	Re-Route Portion of the Preferred Alternative Route	749.20	0.94	20984	Irrigation	95	27	41.557955	-97.898216
Boone	Re-Route Portion of the Preferred Alternative Route	749.21	-0.28	140178	Irrigation	170	83	41.557531	-97.921829
Boone	Re-Route Portion of the Preferred Alternative Route	749.22	0.21	140179	Irrigation	160	70	41.557531	-97.912313
Boone	Re-Route Portion of the Preferred Alternative Route	749.70	-0.78	170578	Irrigation	187	93	41.55025	-97.931361
Boone	Re-Route Portion of the Preferred Alternative Route	749.70	-0.28	10787	Irrigation	208	150	41.55034	-97.921622
Boone	Re-Route Portion of the Preferred Alternative Route	749.72	0.81	16571	Irrigation	103	27	41.55037	-97.900651
Boone	Re-Route Portion of the Preferred Alternative Route	750.14	0.73	33665	Irrigation	123	50	41.542983	-97.902422
Boone	Re-Route Portion of the Preferred Alternative Route	750.15	-0.64	74930	Irrigation	194	65	41.544869	-97.928694
Boone	Re-Route Portion of the Preferred Alternative Route	750.17	0.88	199685	Livestock	107	40	41.542294	-97.899617
Boone	Re-Route Portion of the Preferred Alternative Route	750.19	0.25	99120	Irrigation	150	50	41.543081	-97.911727
Boone	Re-Route Portion of the Preferred Alternative Route	750.24	-0.25	99121	Irrigation	173	57	41.543068	-97.921404
Boone	Re-Route Portion of the Preferred Alternative Route	750.65	0.69	114954	Livestock	230	110	41.53738	-97.903619
Boone	Re-Route Portion of the Preferred Alternative Route	750.65	0.69	114953	Livestock	230	110	41.53738	-97.903564

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Boone	Re-Route Portion of the Preferred Alternative Route	750.65	0.70	114952	Livestock	230	110	41.537381	-97.90351
Boone	Re-Route Portion of the Preferred Alternative Route	750.65	0.70	114950	Livestock	230	110	41.537381	-97.903455
Boone	Re-Route Portion of the Preferred Alternative Route	750.69	-0.42	171398	Irrigation	216	108	41.535817	-97.924886
Boone	Re-Route Portion of the Preferred Alternative Route	750.72	0.16	9438	Irrigation	130	63	41.535834	-97.913822
Boone	Re-Route Portion of the Preferred Alternative Route	751.19	-0.73	100103	Irrigation	272	118	41.528573	-97.930533
Boone	Re-Route Portion of the Preferred Alternative Route	751.28	0.30	105611	Livestock	230	160	41.527833	-97.910593
Boone	Re-Route Portion of the Preferred Alternative Route	751.28	0.30	105610	Livestock	230	160	41.527833	-97.91052
Boone	Re-Route Portion of the Preferred Alternative Route	751.28	0.31	105609	Livestock	230	160	41.527833	-97.910447
Boone	Re-Route Portion of the Preferred Alternative Route	751.28	0.31	105608	Livestock	230	160	41.527834	-97.910374
Boone	Re-Route Portion of the Preferred Alternative Route	751.33	-0.35	66063	Irrigation	188	82	41.526793	-97.923081
Boone	Re-Route Portion of the Preferred Alternative Route	751.58	-0.67	171465	Irrigation	292	180	41.523035	-97.929157
Boone	Re-Route Portion of the Preferred Alternative Route	751.61	0.89	59052	Irrigation	305	132	41.523283	-97.898992
Boone	Re-Route Portion of the Preferred Alternative Route	751.61	0.54	113886	Domestic	280	180	41.523024	-97.905793
Boone	Re-Route Portion of the Preferred Alternative Route	751.91	0.37	65537	Irrigation	325	158	41.519518	-97.908374

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Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Boone	Re-Route Portion of the Preferred Alternative Route	752.21	0.69	44691	Irrigation	353	190	41.51462	-97.901909
Boone	Re-Route Portion of the Preferred Alternative Route	752.40	-0.06	115016	Domestic	255	175	41.511537	-97.916183
Boone	Re-Route Portion of the Preferred Alternative Route	752.41	0.03	79653	Irrigation	344	183	41.511505	-97.914493
Nance	Re-Route Portion of the Preferred Alternative Route	752.81	0.11	133540	Livestock	310	180	41.505615	-97.912684
Nance	Re-Route Portion of the Preferred Alternative Route	753.24	0.16	79656	Irrigation	300	115	41.4996	-97.911121
Nance	Re-Route Portion of the Preferred Alternative Route	753.28	0.65	70093	Irrigation	309	105	41.499579	-97.901634
Nance	Re-Route Portion of the Preferred Alternative Route	753.70	-0.40	64170	Irrigation	390	185	41.492262	-97.92114
Nance	Re-Route Portion of the Preferred Alternative Route	753.71	0.93	121348	Livestock	355	150	41.493847	-97.895502
Nance	Re-Route Portion of the Preferred Alternative Route	753.71	0.93	120060	Livestock	355	150	41.493792	-97.895505
Nance	Re-Route Portion of the Preferred Alternative Route	753.77	0.17	59257	Irrigation	160	120	41.492028	-97.910028
Nance	Re-Route Portion of the Preferred Alternative Route	754.01	0.91	74738	Irrigation	360	135	41.492122	-97.895578
Nance	Re-Route Portion of the Preferred Alternative Route	754.26	-0.77	167810	Irrigation	427	191	41.481667	-97.925333
Nance	Re-Route Portion of the Preferred Alternative Route	754.28	-0.85	133537	Livestock	285	150	41.481098	-97.92682
Nance	Re-Route Portion of the Preferred Alternative Route	754.29	-0.05	149928	Irrigation	380	180	41.484306	-97.911833

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Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Nance	Re-Route Portion of the Preferred Alternative Route	754.52	0.92	125360	Irrigation	320	92	41.485028	-97.892673
Nance	Re-Route Portion of the Preferred Alternative Route	754.84	-0.96	151646	Livestock	360	180	41.4729	-97.925633
Nance	Re-Route Portion of the Preferred Alternative Route	754.92	0.29	170580	Irrigation	374	179	41.477778	-97.902417
Nance	Re-Route Portion of the Preferred Alternative Route	755.15	0.72	59660	Irrigation	377	0	41.477728	-97.892822
Nance	Re-Route Portion of the Preferred Alternative Route	756.43	-0.94	171013	Irrigation	311	165	41.452574	-97.919454
Nance	Re-Route Portion of the Preferred Alternative Route	756.55	0.51	182156	Livestock	275	135	41.453867	-97.891533
Nance	Re-Route Portion of the Preferred Alternative Route	756.67	-0.21	51064	Irrigation	330	146	41.450632	-97.904876
Nance	Re-Route Portion of the Preferred Alternative Route	756.81	-0.15	212684	Livestock	265	165	41.448778	-97.903222
Nance	Re-Route Portion of the Preferred Alternative Route	757.86	0.29	112660	Livestock	260	121	41.434064	-97.892271
Nance	Re-Route Portion of the Preferred Alternative Route	758.98	0.65	202198	Livestock	275	130	41.41765	-97.892233
Nance	Re-Route Portion of the Preferred Alternative Route	759.26	0.27	71474	Irrigation	179	68	41.414502	-97.900214
Nance	Re-Route Portion of the Preferred Alternative Route	759.41	-0.07	140935	Irrigation	145	42	41.413056	-97.907306
Nance	Re-Route Portion of the Preferred Alternative Route	759.42	0.42	22818	Irrigation	170	100	41.411842	-97.898005
Nance	Re-Route Portion of the Preferred Alternative Route	759.44	0.42	203665	Irrigation	174	77	41.41154	-97.897913

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Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Nance	Re-Route Portion of the Preferred Alternative Route	759.48	-0.47	28426	Irrigation	141	55	41.412993	-97.915113
Nance	Re-Route Portion of the Preferred Alternative Route	759.57	-0.24	170230	Irrigation	160	32	41.411222	-97.910889
Nance	Re-Route Portion of the Preferred Alternative Route	759.70	-0.26	92246	Irrigation	164	38	41.409433	-97.911723
Nance	Re-Route Portion of the Preferred Alternative Route	760.54	-0.19	206435	Livestock	235	155	41.396517	-97.9057
Nance	Re-Route Portion of the Preferred Alternative Route	760.55	-0.44	202201	Domestic	235	110	41.3951	-97.910217
Nance	Re-Route Portion of the Preferred Alternative Route	760.90	0.18	122866	Domestic	58	24	41.39333	-97.896769
Nance	Re-Route Portion of the Preferred Alternative Route	760.90	-0.03	192260	Irrigation	106	50	41.392361	-97.900472
Nance	Re-Route Portion of the Preferred Alternative Route	760.90	-0.27	113287	Domestic	65	30	41.391144	-97.904764
Nance	Re-Route Portion of the Preferred Alternative Route	761.15	-0.25	182387	Livestock	85	65	41.388717	-97.9043
Nance	Re-Route Portion of the Preferred Alternative Route	761.19	-0.28	171958	Irrigation	0	0	41.388139	-97.904972
Nance	Re-Route Portion of the Preferred Alternative Route	761.22	-0.31	204140	Irrigation	36	18	41.387778	-97.905472
Nance	Re-Route Portion of the Preferred Alternative Route	762.57	-0.67	194527	Livestock	12	2	41.368042	-97.911569
Nance	Re-Route Portion of the Preferred Alternative Route	763.28	0.18	70113	Irrigation	32	12	41.358061	-97.894697
Nance	Re-Route Portion of the Preferred Alternative Route	763.28	0.21	70112	Irrigation	32	12	41.358069	-97.894136

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Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Nance	Re-Route Portion of the Preferred Alternative Route	763.28	0.20	70111	Irrigation	32	12	41.358044	-97.894408
Nance	Re-Route Portion of the Preferred Alternative Route	763.30	0.19	70114	Irrigation	32	12	41.357856	-97.894683
Nance	Re-Route Portion of the Preferred Alternative Route	763.32	0.10	190240	Irrigation	20	1	41.357533	-97.896383
Nance	Re-Route Portion of the Preferred Alternative Route	763.34	0.10	190238	Irrigation	22	14	41.357219	-97.896389
Nance	Re-Route Portion of the Preferred Alternative Route	763.34	0.10	171232	Irrigation	32	12	41.357133	-97.896315
Nance	Re-Route Portion of the Preferred Alternative Route	763.35	0.11	190239	Irrigation	24	16	41.357083	-97.896158
Nance	Re-Route Portion of the Preferred Alternative Route	763.35	-0.98	189446	Irrigation	19	7	41.356558	-97.917028
Nance	Re-Route Portion of the Preferred Alternative Route	763.36	-0.98	189445	Irrigation	19	7	41.356461	-97.917028
Nance	Re-Route Portion of the Preferred Alternative Route	763.36	0.97	60797	Irrigation	30	11	41.357281	-97.879647
Nance	Re-Route Portion of the Preferred Alternative Route	763.40	0.19	157380	Irrigation	29	20	41.356389	-97.894472
Nance	Re-Route Portion of the Preferred Alternative Route	763.41	-0.95	81700	Irrigation	21	6	41.355689	-97.916469
Nance	Re-Route Portion of the Preferred Alternative Route	763.41	0.18	149923	Irrigation	27	20	41.356167	-97.894806
Nance	Re-Route Portion of the Preferred Alternative Route	763.42	0.19	157381	Irrigation	30	20	41.356111	-97.894472
Nance	Re-Route Portion of the Preferred Alternative Route	763.42	-0.95	81704	Irrigation	21	6	41.355536	-97.916389

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Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Nance	Re-Route Portion of the Preferred Alternative Route	763.43	0.51	190233	Irrigation	24	16	41.356028	-97.888306
Nance	Re-Route Portion of the Preferred Alternative Route	763.43	-0.93	81698	Irrigation	21	6	41.355375	-97.916067
Nance	Re-Route Portion of the Preferred Alternative Route	763.44	-0.95	81696	Irrigation	21	6	41.355256	-97.916442
Nance	Re-Route Portion of the Preferred Alternative Route	763.45	0.51	190235	Irrigation	24	16	41.355783	-97.888256
Nance	Re-Route Portion of the Preferred Alternative Route	763.46	-0.93	81697	Irrigation	21	6	41.35505	-97.9161
Nance	Re-Route Portion of the Preferred Alternative Route	763.46	-0.98	189444	Irrigation	19	7	41.355022	-97.91705
Nance	Re-Route Portion of the Preferred Alternative Route	763.46	-0.96	81703	Irrigation	21	6	41.354942	-97.916548
Nance	Re-Route Portion of the Preferred Alternative Route	763.47	-0.95	81699	Irrigation	21	6	41.354804	-97.916362
Nance	Re-Route Portion of the Preferred Alternative Route	763.47	0.53	33174	Irrigation	27	8	41.35544	-97.888038
Nance	Re-Route Portion of the Preferred Alternative Route	763.48	-0.95	81702	Irrigation	21	6	41.354722	-97.916432
Nance	Re-Route Portion of the Preferred Alternative Route	763.48	-0.97	81695	Irrigation	21	6	41.354689	-97.916839
Nance	Re-Route Portion of the Preferred Alternative Route	763.49	-0.95	81701	Irrigation	21	6	41.354612	-97.916428
Nance	Re-Route Portion of the Preferred Alternative Route	763.49	0.51	190241	Irrigation	24	16	41.355267	-97.888267
Nance	Re-Route Portion of the Preferred Alternative Route	763.50	0.51	190236	Irrigation	24	16	41.355022	-97.888306

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Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Nance	Re-Route Portion of the Preferred Alternative Route	763.52	0.95	60796	Irrigation	30	11	41.355007	-97.879884
Nance	Re-Route Portion of the Preferred Alternative Route	763.54	0.92	60795	Irrigation	30	11	41.354658	-97.880447
Nance	Re-Route Portion of the Preferred Alternative Route	763.55	0.95	60794	Irrigation	30	11	41.354514	-97.879903
Nance	Re-Route Portion of the Preferred Alternative Route	763.57	-0.64	81713	Irrigation	23	7	41.353466	-97.910308
Nance	Re-Route Portion of the Preferred Alternative Route	763.60	-0.60	81711	Irrigation	23	7	41.35316	-97.909558
Nance	Re-Route Portion of the Preferred Alternative Route	763.60	-0.60	81714	Irrigation	23	7	41.353044	-97.909528
Nance	Re-Route Portion of the Preferred Alternative Route	763.62	-0.95	81706	Irrigation	26	6	41.352719	-97.916366
Nance	Re-Route Portion of the Preferred Alternative Route	763.62	-0.93	81707	Irrigation	26	6	41.352607	-97.915998
Nance	Re-Route Portion of the Preferred Alternative Route	763.65	-0.95	81708	Irrigation	26	6	41.352197	-97.91624
Nance	Re-Route Portion of the Preferred Alternative Route	763.67	-0.97	81705	Irrigation	26	6	41.351925	-97.91669
Nance	Re-Route Portion of the Preferred Alternative Route	763.69	-0.96	81710	Irrigation	26	6	41.351704	-97.916442
Nance	Re-Route Portion of the Preferred Alternative Route	763.69	-0.94	81709	Irrigation	26	6	41.35162	-97.916075
Nance	Re-Route Portion of the Preferred Alternative Route	763.71	0.31	190234	Irrigation	20	13	41.351875	-97.892094
Nance	Re-Route Portion of the Preferred Alternative Route	763.73	0.29	171234	Irrigation	27	10	41.351651	-97.892398

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Nance	Re-Route Portion of the Preferred Alternative Route	763.75	0.31	190237	Irrigation	20	13	41.351306	-97.892069
Nance	Re-Route Portion of the Preferred Alternative Route	763.76	0.26	155218	Domestic	25	12	41.351111	-97.893056
Nance	Re-Route Portion of the Preferred Alternative Route	763.77	0.64	29926	Irrigation	29	8	41.351213	-97.885571
Nance	Re-Route Portion of the Preferred Alternative Route	763.79	0.64	29925	Irrigation	31	8	41.350966	-97.885562
Nance	Re-Route Portion of the Preferred Alternative Route	763.83	0.50	29887	Irrigation	30	9	41.34957	-97.888378
Nance	Re-Route Portion of the Preferred Alternative Route	763.83	0.65	64376	Irrigation	28	8	41.349012	-97.885449
Nance	Re-Route Portion of the Preferred Alternative Route	763.84	0.65	87830	Irrigation	30	5	41.348073	-97.885771
Nance	Re-Route Portion of the Preferred Alternative Route	763.87	-0.15	129846	Irrigation	0	0	41.350087	-97.90081
Nance	Re-Route Portion of the Preferred Alternative Route	763.94	-0.31	129844	Irrigation	0	0	41.349694	-97.90423
Nance	Re-Route Portion of the Preferred Alternative Route	764.00	-0.93	94459	Domestic	22	11	41.350988	-97.91602
Nance	Re-Route Portion of the Preferred Alternative Route	764.15	-0.28	129847	Irrigation	0	0	41.345459	-97.904252
Nance	Re-Route Portion of the Preferred Alternative Route	764.40	-0.29	55003	Irrigation	30	10	41.341906	-97.904444
Nance	Re-Route Portion of the Preferred Alternative Route	764.40	-0.29	55004	Irrigation	30	10	41.341906	-97.904444
Nance	Re-Route Portion of the Preferred Alternative Route	764.40	-0.29	55006	Irrigation	30	10	41.341906	-97.904444

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Nance	Re-Route Portion of the Preferred Alternative Route	764.40	-0.29	55005	Irrigation	30	10	41.341906	-97.904444
Nance	Re-Route Portion of the Preferred Alternative Route	764.40	-0.04	54998	Irrigation	30	8	41.341872	-97.899635
Nance	Re-Route Portion of the Preferred Alternative Route	764.40	-0.04	55000	Irrigation	30	8	41.341872	-97.899635
Nance	Re-Route Portion of the Preferred Alternative Route	764.40	-0.04	54999	Irrigation	30	8	41.341872	-97.899635
Nance	Re-Route Portion of the Preferred Alternative Route	764.40	-0.04	55002	Irrigation	30	10	41.341872	-97.899635
Nance	Re-Route Portion of the Preferred Alternative Route	764.40	-0.04	55001	Irrigation	30	8	41.341872	-97.899635
Nance	Re-Route Portion of the Preferred Alternative Route	764.56	-0.92	68457	Irrigation	44	10	41.339639	-97.9165
Nance	Re-Route Portion of the Preferred Alternative Route	764.98	-0.19	133880	Irrigation	0	8	41.333165	-97.902508
Nance	Re-Route Portion of the Preferred Alternative Route	764.99	-0.43	140602	Irrigation	20	12	41.33125	-97.906583
Nance	Re-Route Portion of the Preferred Alternative Route	764.99	-0.43	143751	Irrigation	20	12	41.33125	-97.906611
Nance	Re-Route Portion of the Preferred Alternative Route	765.02	-0.31	154550	Irrigation	20	10	41.330583	-97.903639
Nance	Re-Route Portion of the Preferred Alternative Route	765.03	-0.32	149758	Irrigation	20	10	41.330389	-97.903722
Nance	Re-Route Portion of the Preferred Alternative Route	765.04	-0.37	143750	Irrigation	100	12	41.329806	-97.904389
Nance	Re-Route Portion of the Preferred Alternative Route	765.16	-0.73	41284	Irrigation	47	12	41.325563	-97.909016

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Nance	Re-Route Portion of the Preferred Alternative Route	765.17	0.58	57070	Irrigation	24	8	41.335539	-97.887472
Nance	Re-Route Portion of the Preferred Alternative Route	765.18	-0.45	73444	Irrigation	25	5	41.32749	-97.904235
Nance	Re-Route Portion of the Preferred Alternative Route	765.18	-0.45	73445	Irrigation	25	5	41.32749	-97.904235
Nance	Re-Route Portion of the Preferred Alternative Route	765.18	-0.45	73446	Irrigation	25	5	41.32749	-97.904235
Nance	Re-Route Portion of the Preferred Alternative Route	765.22	0.53	107366	Irrigation	30	7	41.334569	-97.887876
Nance	Re-Route Portion of the Preferred Alternative Route	765.36	-0.41	5388	Irrigation	0	0	41.325664	-97.901805
Nance	Re-Route Portion of the Preferred Alternative Route	765.40	-0.58	73437	Irrigation	36	11	41.323866	-97.904182
Nance	Re-Route Portion of the Preferred Alternative Route	765.40	-0.58	73438	Irrigation	38	11	41.323866	-97.904182
Nance	Re-Route Portion of the Preferred Alternative Route	765.40	-0.58	73439	Irrigation	39	11	41.323866	-97.904182
Nance	Re-Route Portion of the Preferred Alternative Route	765.51	-0.78	146570	Irrigation	60	10	41.320972	-97.906222
Nance	Re-Route Portion of the Preferred Alternative Route	765.53	-0.37	73442	Irrigation	26	3	41.323839	-97.899375
Nance	Re-Route Portion of the Preferred Alternative Route	765.56	-0.81	61698	Irrigation	0	0	41.320145	-97.906289
Nance	Re-Route Portion of the Preferred Alternative Route	765.59	-0.87	61699	Irrigation	49	12	41.316681	-97.904047
Nance	Re-Route Portion of the Preferred Alternative Route	765.59	-0.18	73441	Irrigation	26	3	41.323812	-97.894568

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Nance	Re-Route Portion of the Preferred Alternative Route	765.59	-0.18	73440	Irrigation	26	5	41.323812	-97.894568
Nance	Re-Route Portion of the Preferred Alternative Route	765.59	-0.18	73443	Irrigation	26	5	41.323812	-97.894568
Nance	Re-Route Portion of the Preferred Alternative Route	765.60	-0.45	125636	Irrigation	30	5	41.320284	-97.896875
Nance	Re-Route Portion of the Preferred Alternative Route	765.98	0.97	57080	Irrigation	0	0	41.3345	-97.875443
Nance	Re-Route Portion of the Preferred Alternative Route	765.98	0.97	57079	Irrigation	34	16	41.3345	-97.875443
Nance	Re-Route Portion of the Preferred Alternative Route	766.00	0.97	57078	Irrigation	39	21	41.330821	-97.870587
Nance	Re-Route Portion of the Preferred Alternative Route	766.00	0.97	57081	Irrigation	34	5	41.330821	-97.870587
Nance	Re-Route Portion of the Preferred Alternative Route	766.00	0.97	57077	Irrigation	37	18	41.330821	-97.870587
Nance	Re-Route Portion of the Preferred Alternative Route	766.12	-0.13	177703	Irrigation	30	11	41.320389	-97.887111
Nance	Re-Route Portion of the Preferred Alternative Route	766.21	-0.32	8611	Irrigation	34	12	41.317991	-97.889439
Nance	Re-Route Portion of the Preferred Alternative Route	766.21	-0.33	8608	Irrigation	36	12	41.317855	-97.889618
Nance	Re-Route Portion of the Preferred Alternative Route	766.22	-0.19	125406	Irrigation	30	5	41.3188	-97.887161
Nance	Re-Route Portion of the Preferred Alternative Route	766.23	-0.20	125403	Irrigation	40	5	41.318526	-97.887155
Nance	Re-Route Portion of the Preferred Alternative Route	766.24	-0.52	60793	Irrigation	41	4	41.316114	-97.89246

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Nance	Re-Route Portion of the Preferred Alternative Route	766.30	-0.49	54065	Irrigation	39	4	41.315587	-97.891358
Nance	Re-Route Portion of the Preferred Alternative Route	766.31	-0.24	149221	Irrigation	30	12	41.317222	-97.887083
Nance	Re-Route Portion of the Preferred Alternative Route	766.40	-0.62	107377	Irrigation	40	5	41.313467	-97.892772
Nance	Re-Route Portion of the Preferred Alternative Route	766.40	0.85	49058	Irrigation	19	6	41.323791	-97.867908
Nance	Re-Route Portion of the Preferred Alternative Route	766.41	0.85	49056	Irrigation	19	6	41.323654	-97.867906
Nance	Re-Route Portion of the Preferred Alternative Route	766.41	0.85	49057	Irrigation	19	6	41.323654	-97.867906
Nance	Re-Route Portion of the Preferred Alternative Route	766.41	-0.16	42331	Irrigation	40	6	41.316497	-97.884813
Nance	Re-Route Portion of the Preferred Alternative Route	766.41	-0.16	37327	Irrigation	40	6	41.316497	-97.884813
Nance	Re-Route Portion of the Preferred Alternative Route	766.41	0.84	49048	Irrigation	24	6	41.323517	-97.868013
Nance	Re-Route Portion of the Preferred Alternative Route	766.42	0.84	49049	Irrigation	24	6	41.323504	-97.868013
Nance	Re-Route Portion of the Preferred Alternative Route	766.42	0.84	49050	Irrigation	24	6	41.32349	-97.868013
Nance	Re-Route Portion of the Preferred Alternative Route	766.42	0.83	49054	Irrigation	19	6	41.32338	-97.868011
Nance	Re-Route Portion of the Preferred Alternative Route	766.43	0.84	49055	Irrigation	19	6	41.32338	-97.867902
Nance	Re-Route Portion of the Preferred Alternative Route	766.43	0.83	49053	Irrigation	19	6	41.323243	-97.86801

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Nance	Re-Route Portion of the Preferred Alternative Route	766.43	-0.64	102505	Irrigation	40	10	41.312862	-97.892723
Nance	Re-Route Portion of the Preferred Alternative Route	766.44	0.82	49052	Irrigation	19	6	41.323106	-97.868008
Nance	Re-Route Portion of the Preferred Alternative Route	766.46	-0.53	108373	Irrigation	40	5	41.313336	-97.890712
Nance	Re-Route Portion of the Preferred Alternative Route	766.46	0.82	49051	Irrigation	19	6	41.322831	-97.868004
Nance	Re-Route Portion of the Preferred Alternative Route	766.47	-0.54	107589	Irrigation	40	5	41.313062	-97.890707
Nance	Re-Route Portion of the Preferred Alternative Route	766.55	-0.17	116594	Irrigation	40	9	41.314699	-97.883696
Nance	Re-Route Portion of the Preferred Alternative Route	766.58	-0.13	149220	Irrigation	30	12	41.314639	-97.882806
Nance	Re-Route Portion of the Preferred Alternative Route	766.62	-0.28	39368	Irrigation	40	6	41.313039	-97.884973
Nance	Re-Route Portion of the Preferred Alternative Route	766.72	0.62	189099	Irrigation	0	0	41.318161	-97.868903
Nance	Re-Route Portion of the Preferred Alternative Route	766.73	-0.25	167149	Irrigation	40	10	41.311889	-97.883333
Nance	Re-Route Portion of the Preferred Alternative Route	766.73	0.56	189101	Irrigation	0	0	41.317575	-97.869711
Nance	Re-Route Portion of the Preferred Alternative Route	766.73	-0.26	107288	Irrigation	40	8	41.311739	-97.883492
Nance	Re-Route Portion of the Preferred Alternative Route	766.74	-0.82	186222	Irrigation	44	5	41.307639	-97.892889
Nance	Re-Route Portion of the Preferred Alternative Route	766.78	0.52	189097	Irrigation	0	0	41.31665	-97.869992

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Nance	Re-Route Portion of the Preferred Alternative Route	766.84	-0.66	184251	Irrigation	60	5	41.3075	-97.889278
Nance	Re-Route Portion of the Preferred Alternative Route	766.85	-0.63	125423	Irrigation	40	8	41.307635	-97.88869
Nance	Re-Route Portion of the Preferred Alternative Route	766.89	-0.36	21671	Irrigation	38	12	41.309079	-97.883804
Nance	Re-Route Portion of the Preferred Alternative Route	766.92	0.45	81083	Irrigation	61	8	41.314403	-97.869778
Nance	Re-Route Portion of the Preferred Alternative Route	766.93	0.45	131718	Irrigation	61	5	41.314197	-97.869806
Merrick	Re-Route Portion of the Preferred Alternative Route	766.98	-0.71	125422	Irrigation	40	5	41.305413	-97.888834
Merrick	Re-Route Portion of the Preferred Alternative Route	767.01	-0.57	81568	Irrigation	40	11	41.306064	-97.886156
Merrick	Re-Route Portion of the Preferred Alternative Route	767.03	-0.57	126974	Irrigation	40	10	41.3058	-97.886017
Nance	Re-Route Portion of the Preferred Alternative Route	767.14	-0.06	60681	Irrigation	42	7	41.307947	-97.876353
Nance	Re-Route Portion of the Preferred Alternative Route	767.22	0.07	65351	Irrigation	34	10	41.3079	-97.873319
Merrick	Re-Route Portion of the Preferred Alternative Route	767.24	-0.73	84483	Irrigation	45	7	41.301962	-97.886738
Merrick	Re-Route Portion of the Preferred Alternative Route	767.26	-0.73	84484	Irrigation	45	7	41.301736	-97.886439
Merrick	Re-Route Portion of the Preferred Alternative Route	767.29	-0.20	201579	Irrigation	47	10	41.305084	-97.877392
Nance	Re-Route Portion of the Preferred Alternative Route	767.30	0.22	65350	Irrigation	35	8	41.307894	-97.870178

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Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Merrick	Re-Route Portion of the Preferred Alternative Route	767.32	-0.99	80105	Irrigation	55	8	41.299253	-97.890323
Merrick	Re-Route Portion of the Preferred Alternative Route	767.48	-0.31	201580	Irrigation	47	10	41.30194	-97.877307
Merrick	Re-Route Portion of the Preferred Alternative Route	767.52	-0.87	102413	Irrigation	50	7	41.297525	-97.886481
Merrick	Re-Route Portion of the Preferred Alternative Route	767.55	-0.89	97651	Irrigation	50	30	41.296983	-97.88651
Nance	Re-Route Portion of the Preferred Alternative Route	767.59	0.91	179134	Irrigation	39	7	41.309103	-97.855787
Merrick	Re-Route Portion of the Preferred Alternative Route	767.59	-0.37	102425	Irrigation	40	5	41.300097	-97.877274
Merrick	Re-Route Portion of the Preferred Alternative Route	767.67	-0.61	79866	Irrigation	50	0	41.297458	-97.880678
Merrick	Re-Route Portion of the Preferred Alternative Route	767.67	-0.64	80945	Irrigation	50	11	41.297256	-97.881144
Merrick	Re-Route Portion of the Preferred Alternative Route	767.67	-0.98	80946	Irrigation	60	11	41.294787	-97.886764
Merrick	Re-Route Portion of the Preferred Alternative Route	767.73	0.54	65304	Irrigation	60	15	41.304714	-97.860653
Merrick	Re-Route Portion of the Preferred Alternative Route	767.77	-0.22	79867	Irrigation	55	0	41.298844	-97.8732
Merrick	Re-Route Portion of the Preferred Alternative Route	767.79	-0.23	79345	Irrigation	0	0	41.298503	-97.873158
Merrick	Re-Route Portion of the Preferred Alternative Route	767.81	0.39	57030	Irrigation	74	8	41.302689	-97.862636
Merrick	Re-Route Portion of the Preferred Alternative Route	767.81	-0.22	79346	Irrigation	0	0	41.298408	-97.8728

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Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Merrick	Re-Route Portion of the Preferred Alternative Route	767.87	-0.87	171026	Irrigation	66	35	41.293056	-97.883056
Merrick	Re-Route Portion of the Preferred Alternative Route	767.88	-0.53	131720	Irrigation	50	12	41.295283	-97.877286
Merrick	Re-Route Portion of the Preferred Alternative Route	767.90	0.23	36019	Irrigation	74	7	41.3004	-97.864419
Merrick	Re-Route Portion of the Preferred Alternative Route	767.90	-0.54	42477	Irrigation	54	10	41.295011	-97.877292
Merrick	Re-Route Portion of the Preferred Alternative Route	767.96	-0.70	112154	Irrigation	55	11	41.293073	-97.879383
Merrick	Re-Route Portion of the Preferred Alternative Route	767.98	-0.58	79868	Irrigation	50	0	41.293642	-97.877219
Merrick	Re-Route Portion of the Preferred Alternative Route	768.00	-0.59	42478	Irrigation	50	9	41.293344	-97.877222
Merrick	Re-Route Portion of the Preferred Alternative Route	768.01	0.16	146724	Irrigation	77	17	41.298506	-97.864519
Merrick	Re-Route Portion of the Preferred Alternative Route	768.04	-0.31	138294	Irrigation	60	8	41.294908	-97.872119
Merrick	Re-Route Portion of the Preferred Alternative Route	768.06	-0.31	81569	Irrigation	45	11	41.294573	-97.872061
Merrick	Re-Route Portion of the Preferred Alternative Route	768.16	-0.11	154374	Irrigation	46	11	41.294722	-97.867722
Merrick	Re-Route Portion of the Preferred Alternative Route	768.17	0.57	60323	Irrigation	30	8	41.299455	-97.856149
Merrick	Re-Route Portion of the Preferred Alternative Route	768.19	-0.81	53771	Irrigation	75	29	41.289395	-97.879068
Merrick	Re-Route Portion of the Preferred Alternative Route	768.29	0.06	25805	Irrigation	33	12	41.294272	-97.863578

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Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Merrick	Re-Route Portion of the Preferred Alternative Route	768.30	0.51	58273	Irrigation	34	8	41.297314	-97.855949
Merrick	Re-Route Portion of the Preferred Alternative Route	768.31	0.46	141405	Irrigation	40	12	41.296778	-97.856722
Merrick	Re-Route Portion of the Preferred Alternative Route	768.34	-0.40	79902	Irrigation	64	15	41.290347	-97.87085
Merrick	Re-Route Portion of the Preferred Alternative Route	768.41	-0.69	33041	Irrigation	80	20	41.28745	-97.874972
Merrick	Re-Route Portion of the Preferred Alternative Route	768.44	-0.12	56844	Irrigation	56	20	41.291092	-97.865229
Merrick	Re-Route Portion of the Preferred Alternative Route	768.44	-0.57	8147	Irrigation	65	25	41.287414	-97.872442
Merrick	Re-Route Portion of the Preferred Alternative Route	768.44	-0.64	56845	Irrigation	120	25	41.285778	-97.872328
Merrick	Re-Route Portion of the Preferred Alternative Route	768.44	-0.89	48992	Irrigation	91	24	41.284363	-97.877113
Merrick	Re-Route Portion of the Preferred Alternative Route	768.45	-0.97	151828	Irrigation	84	28	41.282469	-97.877062
Merrick	Re-Route Portion of the Preferred Alternative Route	768.45	-0.82	98083	Irrigation	140	24	41.282073	-97.872143
Merrick	Re-Route Portion of the Preferred Alternative Route	768.49	0.15	33458	Irrigation	51	12	41.293239	-97.860819
Merrick	Re-Route Portion of the Preferred Alternative Route	768.55	-0.76	84899	Irrigation	74	30	41.282046	-97.869977
Merrick	Re-Route Portion of the Preferred Alternative Route	768.58	-0.11	168837	Irrigation	105	27	41.2895	-97.86225
Merrick	Re-Route Portion of the Preferred Alternative Route	768.65	0.65	60322	Irrigation	56	15	41.29779	-97.852749

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Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Merrick	Re-Route Portion of the Preferred Alternative Route	768.74	-0.16	8146	Irrigation	65	25	41.287496	-97.860422
Merrick	Re-Route Portion of the Preferred Alternative Route	768.74	0.92	58272	Irrigation	34	8	41.300272	-97.848292
Merrick	Re-Route Portion of the Preferred Alternative Route	768.77	0.93	125407	Irrigation	200	6	41.300113	-97.847745
Merrick	Re-Route Portion of the Preferred Alternative Route	768.79	-0.92	37819	Irrigation	72	30	41.278066	-97.867958
Merrick	Re-Route Portion of the Preferred Alternative Route	768.79	-0.89	23124	Irrigation	90	35	41.278434	-97.867518
Merrick	Re-Route Portion of the Preferred Alternative Route	768.80	-0.89	27049	Irrigation	72	25	41.278374	-97.867488
Merrick	Re-Route Portion of the Preferred Alternative Route	768.83	-0.52	22832	Irrigation	58	24	41.282486	-97.862822
Merrick	Re-Route Portion of the Preferred Alternative Route	768.85	-0.54	27050	Irrigation	80	25	41.282019	-97.862807
Merrick	Re-Route Portion of the Preferred Alternative Route	768.91	-0.18	27413	Irrigation	68	23	41.285888	-97.857875
Merrick	Re-Route Portion of the Preferred Alternative Route	768.95	0.16	31073	Irrigation	55	22	41.289552	-97.8534
Merrick	Re-Route Portion of the Preferred Alternative Route	769.01	0.26	122433	Irrigation	53	22	41.290244	-97.851325
Merrick	Re-Route Portion of the Preferred Alternative Route	769.07	-0.42	23110	Irrigation	58	16	41.281635	-97.857972
Merrick	Re-Route Portion of the Preferred Alternative Route	769.10	-0.68	157706	Irrigation	61	0	41.278327	-97.86035
Merrick	Re-Route Portion of the Preferred Alternative Route	769.16	-0.13	187516	Irrigation	0	0	41.284275	-97.853378

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Merrick	Re-Route Portion of the Preferred Alternative Route	769.19	-1.00	184799	Irrigation	0	10	41.2738	-97.862467
Merrick	Re-Route Portion of the Preferred Alternative Route	769.21	-0.61	112153	Irrigation	55	17	41.278313	-97.85787
Merrick	Re-Route Portion of the Preferred Alternative Route	769.33	-0.28	23111	Irrigation	58	16	41.280903	-97.85025
Merrick	Re-Route Portion of the Preferred Alternative Route	769.34	0.06	116007	Irrigation	52	23	41.285627	-97.848611
Merrick	Re-Route Portion of the Preferred Alternative Route	769.48	0.11	27087	Irrigation	55	22	41.285928	-97.845863
Merrick	Re-Route Portion of the Preferred Alternative Route	769.51	-0.03	10927	Irrigation	63	22	41.283936	-97.845876
Merrick	Re-Route Portion of the Preferred Alternative Route	769.56	0.11	10928	Irrigation	56	22	41.285746	-97.844334
Merrick	Re-Route Portion of the Preferred Alternative Route	769.56	-0.27	55322	Irrigation	58	26	41.280312	-97.845838
Merrick	Re-Route Portion of the Preferred Alternative Route	769.62	0.20	31036	Irrigation	53	22	41.286788	-97.842697
Merrick	Re-Route Portion of the Preferred Alternative Route	769.62	0.50	122430	Irrigation	55	22	41.291036	-97.841425
Merrick	Re-Route Portion of the Preferred Alternative Route	769.76	0.59	92243	Irrigation	205	33	41.289346	-97.833923
Merrick	Re-Route Portion of the Preferred Alternative Route	769.78	0.95	99188	Irrigation	52	24	41.293033	-97.828964
Merrick	Re-Route Portion of the Preferred Alternative Route	769.88	0.84	157588	Irrigation	0	0	41.290898	-97.828935
Merrick	Re-Route Portion of the Preferred Alternative Route	769.99	0.71	17984	Irrigation	54	0	41.288482	-97.828964

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Merrick	Re-Route Portion of the Preferred Alternative Route	770.00	0.84	198287	Irrigation	50	0	41.288561	-97.82555
Merrick	Re-Route Portion of the Preferred Alternative Route	770.01	0.58	31810	Irrigation	52	22	41.285339	-97.828677
Merrick	Re-Route Portion of the Preferred Alternative Route	770.01	0.91	17982	Irrigation	54	0	41.287816	-97.823261
Merrick	Re-Route Portion of the Preferred Alternative Route	770.05	0.37	115640	Irrigation	49	6	41.282734	-97.831324
Merrick	Re-Route Portion of the Preferred Alternative Route	770.05	0.73	32144	Irrigation	52	22	41.285344	-97.825292
Merrick	Re-Route Portion of the Preferred Alternative Route	770.06	0.70	80279	Irrigation	50	0	41.285015	-97.825616
Merrick	Re-Route Portion of the Preferred Alternative Route	770.15	-0.43	187517	Irrigation	0	0	41.275664	-97.843606
Merrick	Re-Route Portion of the Preferred Alternative Route	770.34	-0.19	10943	Irrigation	29	9	41.274947	-97.837765
Merrick	Re-Route Portion of the Preferred Alternative Route	770.36	-0.05	2376	Irrigation	0	0	41.275547	-97.83485
Merrick	Re-Route Portion of the Preferred Alternative Route	770.36	-0.33	6762	Irrigation	32	9	41.272525	-97.838517
Merrick	Re-Route Portion of the Preferred Alternative Route	770.36	-0.85	27391	Irrigation	56	8	41.267259	-97.845793
Merrick	Re-Route Portion of the Preferred Alternative Route	770.36	-0.39	35504	Irrigation	30	6	41.271444	-97.838583
Merrick	Re-Route Portion of the Preferred Alternative Route	770.36	-0.59	66150	Irrigation	39	5	41.269313	-97.841079
Merrick	Re-Route Portion of the Preferred Alternative Route	770.37	-0.49	30010	Irrigation	28	7	41.269722	-97.838517

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Merrick	Re-Route Portion of the Preferred Alternative Route	770.44	-0.17	45029	Irrigation	35	5	41.273403	-97.833761
Merrick	Re-Route Portion of the Preferred Alternative Route	770.46	0.06	150606	Irrigation	30	11	41.276528	-97.83225
Merrick	Re-Route Portion of the Preferred Alternative Route	770.83	0.69	58336	Irrigation	73	8	41.283919	-97.82208
Merrick	Re-Route Portion of the Preferred Alternative Route	770.85	0.25	72229	Irrigation	34	4	41.277675	-97.824119
Merrick	Re-Route Portion of the Preferred Alternative Route	770.87	-0.75	160063	Irrigation	40	9	41.263686	-97.828748
Merrick	Re-Route Portion of the Preferred Alternative Route	770.88	-0.74	126316	Irrigation	28	8	41.263742	-97.828653
Merrick	Re-Route Portion of the Preferred Alternative Route	770.93	0.84	17977	Irrigation	55	0	41.285679	-97.81952
Merrick	Re-Route Portion of the Preferred Alternative Route	770.95	-0.14	72230	Irrigation	34	4	41.271811	-97.824164
Merrick	Re-Route Portion of the Preferred Alternative Route	770.96	0.72	17978	Irrigation	55	0	41.283785	-97.819635
Merrick	Re-Route Portion of the Preferred Alternative Route	771.00	-0.92	153580	Irrigation	111	10	41.260833	-97.827278
Merrick	Re-Route Portion of the Preferred Alternative Route	771.06	-0.68	140845	Irrigation	40	12	41.26387	-97.824917
Merrick	Re-Route Portion of the Preferred Alternative Route	771.14	0.13	23742	Irrigation	35	8	41.274922	-97.81926
Merrick	Re-Route Portion of the Preferred Alternative Route	771.15	0.91	17979	Irrigation	55	0	41.285795	-97.814978
Merrick	Re-Route Portion of the Preferred Alternative Route	771.21	-0.14	185785	Irrigation	40	6	41.270861	-97.819306

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Merrick	Re-Route Portion of the Preferred Alternative Route	771.22	0.67	157707	Irrigation	48	0	41.282118	-97.815083
Merrick	Re-Route Portion of the Preferred Alternative Route	771.24	0.15	168157	Irrigation	27	5	41.274722	-97.816944
Merrick	Re-Route Portion of the Preferred Alternative Route	771.24	0.99	198286	Irrigation	46.5	29.9	41.285656	-97.810064
Merrick	Re-Route Portion of the Preferred Alternative Route	771.25	0.78	17970	Irrigation	40	0	41.282098	-97.809878
Merrick	Re-Route Portion of the Preferred Alternative Route	771.25	0.93	131211	Domestic	45	15	41.284166	-97.808715
Merrick	Re-Route Portion of the Preferred Alternative Route	771.25	0.76	162589	Livestock	30	15	41.281944	-97.81
Merrick	Re-Route Portion of the Preferred Alternative Route	771.34	0.26	114704	Irrigation	30	7	41.274902	-97.813583
Merrick	Re-Route Portion of the Preferred Alternative Route	771.35	0.13	23744	Irrigation	35	6	41.273259	-97.814948
Merrick	Re-Route Portion of the Preferred Alternative Route	771.36	0.11	96527	Irrigation	40	6	41.273061	-97.815043
Merrick	Re-Route Portion of the Preferred Alternative Route	771.41	0.29	171219	Irrigation	30	5	41.274722	-97.812222
Merrick	Re-Route Portion of the Preferred Alternative Route	771.48	-0.28	65696	Irrigation	41	8	41.267392	-97.817515
Merrick	Re-Route Portion of the Preferred Alternative Route	771.48	-0.24	23739	Irrigation	32	10	41.267822	-97.817019
Merrick	Re-Route Portion of the Preferred Alternative Route	771.49	-0.50	23740	Irrigation	35	10	41.264697	-97.819683
Merrick	Re-Route Portion of the Preferred Alternative Route	771.49	-0.50	108103	Irrigation	30	7	41.26467	-97.819683

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Merrick	Re-Route Portion of the Preferred Alternative Route	771.51	-0.13	96526	Irrigation	40	6	41.268907	-97.815306
Merrick	Re-Route Portion of the Preferred Alternative Route	771.51	0.38	30794	Irrigation	35	8	41.27488	-97.80967
Merrick	Re-Route Portion of the Preferred Alternative Route	771.57	-0.87	34121	Irrigation	87	7	41.259648	-97.822665
Merrick	Re-Route Portion of the Preferred Alternative Route	771.62	0.30	159640	Irrigation	40	12	41.273125	-97.808747
Merrick	Re-Route Portion of the Preferred Alternative Route	771.68	0.52	20144	Irrigation	35	9	41.275216	-97.805467
Merrick	Re-Route Portion of the Preferred Alternative Route	771.68	-0.19	145464	Irrigation	40	10	41.266778	-97.813222
Merrick	Re-Route Portion of the Preferred Alternative Route	771.69	-0.73	20056	Irrigation	28	12	41.260336	-97.81918
Merrick	Re-Route Portion of the Preferred Alternative Route	771.70	0.94	2294	Irrigation	32	8	41.280014	-97.8004
Merrick	Re-Route Portion of the Preferred Alternative Route	771.71	0.93	102458	Irrigation	30	5	41.279728	-97.800417
Merrick	Re-Route Portion of the Preferred Alternative Route	771.76	0.50	20145	Irrigation	27	9	41.274285	-97.804377
Merrick	Re-Route Portion of the Preferred Alternative Route	771.78	-0.35	23738	Irrigation	34	10	41.264091	-97.813426
Merrick	Re-Route Portion of the Preferred Alternative Route	771.81	-0.48	20051	Irrigation	30	16	41.262271	-97.814448
Merrick	Re-Route Portion of the Preferred Alternative Route	771.83	-0.08	7998	Irrigation	37	10	41.266812	-97.809672
Merrick	Re-Route Portion of the Preferred Alternative Route	771.86	-0.69	140984	Irrigation	34	10	41.259417	-97.816083

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Merrick	Re-Route Portion of the Preferred Alternative Route	771.86	-0.29	23737	Irrigation	35	12	41.264107	-97.811534
Merrick	Re-Route Portion of the Preferred Alternative Route	771.86	-0.68	140048	Irrigation	28	16	41.259459	-97.815869
Merrick	Re-Route Portion of the Preferred Alternative Route	771.89	-0.26	65695	Irrigation	53	8	41.264114	-97.81077
Merrick	Re-Route Portion of the Preferred Alternative Route	771.91	0.14	8000	Irrigation	36	12	41.268767	-97.806102
Merrick	Re-Route Portion of the Preferred Alternative Route	771.98	0.12	149258	Irrigation	39	9	41.267999	-97.805121
Merrick	Re-Route Portion of the Preferred Alternative Route	772.00	0.10	149257	Irrigation	39	9	41.267588	-97.805104
Merrick	Re-Route Portion of the Preferred Alternative Route	772.10	-0.06	7997	Irrigation	38	9	41.264842	-97.805311
Merrick	Re-Route Portion of the Preferred Alternative Route	772.14	-0.36	20050	Irrigation	68	12	41.26094	-97.807935
Merrick	Re-Route Portion of the Preferred Alternative Route	772.16	-0.10	201393	Livestock	21	9	41.263833	-97.80475
Merrick	Re-Route Portion of the Preferred Alternative Route	772.19	0.55	110714	Irrigation	45	5	41.271276	-97.797013
Merrick	Re-Route Portion of the Preferred Alternative Route	772.22	0.41	7999	Irrigation	44	12	41.269409	-97.798195
Merrick	Re-Route Portion of the Preferred Alternative Route	772.23	0.65	139350	Irrigation	34	4	41.272047	-97.795382
Merrick	Re-Route Portion of the Preferred Alternative Route	772.33	0.96	35053	Irrigation	34	9	41.274952	-97.790315
Merrick	Re-Route Portion of the Preferred Alternative Route	772.48	0.53	35054	Irrigation	28	5	41.266507	-97.790781

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Merrick	Re-Route Portion of the Preferred Alternative Route	772.65	-0.56	21287	Irrigation	46	0	41.253037	-97.802667
Merrick	Re-Route Portion of the Preferred Alternative Route	772.65	-0.99	21352	Irrigation	46	12	41.249341	-97.809851
Merrick	Re-Route Portion of the Preferred Alternative Route	772.65	-0.64	68351	Irrigation	45	5	41.25304	-97.805243
Merrick	Re-Route Portion of the Preferred Alternative Route	772.65	-0.57	81875	Irrigation	50	15	41.253698	-97.804267
Merrick	Re-Route Portion of the Preferred Alternative Route	772.70	-0.67	71473	Irrigation	47	4	41.251225	-97.802826
Merrick	Re-Route Portion of the Preferred Alternative Route	772.76	-0.20	23187	Irrigation	37	8	41.256653	-97.797325
Merrick	Re-Route Portion of the Preferred Alternative Route	772.80	0.39	154989	Irrigation	80	5	41.263818	-97.790828
Merrick	Re-Route Portion of the Preferred Alternative Route	772.88	-0.12	75916	Irrigation	37	10	41.256759	-97.794475
Merrick	Re-Route Portion of the Preferred Alternative Route	772.90	-0.76	21897	Irrigation	43	8	41.248586	-97.80035
Merrick	Re-Route Portion of the Preferred Alternative Route	772.94	0.33	66543	Irrigation	62	5	41.262056	-97.789117
Merrick	Re-Route Portion of the Preferred Alternative Route	772.95	0.36	21898	Irrigation	36	8	41.262311	-97.788741
Merrick	Re-Route Portion of the Preferred Alternative Route	772.96	-0.86	25604	Irrigation	28	8	41.247022	-97.800325
Merrick	Re-Route Portion of the Preferred Alternative Route	772.96	-0.83	102460	Irrigation	35	5	41.247345	-97.800042
Merrick	Re-Route Portion of the Preferred Alternative Route	773.02	0.52	169617	Irrigation	35	6	41.263833	-97.786083

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Merrick	Re-Route Portion of the Preferred Alternative Route	773.03	-0.30	23186	Irrigation	29	6	41.253477	-97.793694
Merrick	Re-Route Portion of the Preferred Alternative Route	773.18	0.30	128337	Irrigation	25	6	41.259886	-97.785555
Merrick	Re-Route Portion of the Preferred Alternative Route	773.20	0.38	117727	Irrigation	24	0	41.260778	-97.784399
Merrick	Re-Route Portion of the Preferred Alternative Route	773.21	-0.07	102450	Irrigation	25	5	41.255031	-97.788492
Merrick	Re-Route Portion of the Preferred Alternative Route	773.26	0.59	9969	Irrigation	26	8	41.261973	-97.779512
Merrick	Re-Route Portion of the Preferred Alternative Route	773.26	0.91	89420	Domestic	24	8	41.264124	-97.773695
Merrick	Re-Route Portion of the Preferred Alternative Route	773.27	0.78	9972	Irrigation	66	12	41.261931	-97.77471
Merrick	Re-Route Portion of the Preferred Alternative Route	773.27	0.86	37739	Irrigation	49	5	41.261026	-97.772059
Merrick	Re-Route Portion of the Preferred Alternative Route	773.46	0.77	37740	Irrigation	50	5	41.257403	-97.771928
Merrick	Re-Route Portion of the Preferred Alternative Route	773.58	-0.31	26190	Irrigation	30	7	41.249526	-97.789933
Merrick	Re-Route Portion of the Preferred Alternative Route	773.59	-0.61	181380	Irrigation	44.599998	4	41.247667	-97.795194
Merrick	Re-Route Portion of the Preferred Alternative Route	773.59	-0.36	25605	Irrigation	28	8	41.249121	-97.790746
Merrick	Re-Route Portion of the Preferred Alternative Route	773.60	-0.08	26193	Irrigation	30	7	41.250506	-97.785832
Merrick	Re-Route Portion of the Preferred Alternative Route	773.62	-0.23	192596	Irrigation	25	5	41.249472	-97.788222

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Merrick	Re-Route Portion of the Preferred Alternative Route	773.65	-0.85	1943	Irrigation	0	0	41.243986	-97.797982
Merrick	Re-Route Portion of the Preferred Alternative Route	773.74	-0.60	21896	Irrigation	40	8	41.244402	-97.792601
Merrick	Re-Route Portion of the Preferred Alternative Route	773.79	0.10	190507	Irrigation	74.599998	4	41.249558	-97.780988
Merrick	Re-Route Portion of the Preferred Alternative Route	773.83	0.97	115141	Irrigation	29	6	41.256253	-97.766682
Merrick	Re-Route Portion of the Preferred Alternative Route	773.88	0.73	47014	Irrigation	33	10	41.253679	-97.770009
Merrick	Re-Route Portion of the Preferred Alternative Route	774.08	0.20	30198	Irrigation	29	0	41.247689	-97.776542
Merrick	Re-Route Portion of the Preferred Alternative Route	774.10	0.36	42493	Irrigation	29	10	41.24939	-97.774292
Merrick	Re-Route Portion of the Preferred Alternative Route	774.14	-0.56	26650	Irrigation	84	50	41.238696	-97.784995
Merrick	Re-Route Portion of the Preferred Alternative Route	774.14	0.66	40292	Irrigation	31	6	41.252334	-97.769961
Merrick	Re-Route Portion of the Preferred Alternative Route	774.17	0.12	140013	Irrigation	25	5	41.245976	-97.776139
Merrick	Re-Route Portion of the Preferred Alternative Route	774.22	0.13	113965	Irrigation	30	10	41.24564	-97.775368
Merrick	Re-Route Portion of the Preferred Alternative Route	774.22	-0.19	79580	Irrigation	91	8	41.242079	-97.779214
Merrick	Re-Route Portion of the Preferred Alternative Route	774.23	-0.18	18522	Irrigation	82	8	41.242076	-97.778887
Merrick	Re-Route Portion of the Preferred Alternative Route	774.24	-0.31	102447	Irrigation	120	8	41.240493	-97.780381

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Merrick	Re-Route Portion of the Preferred Alternative Route	774.29	-0.80	44620	Irrigation	113	6	41.234639	-97.785583
Merrick	Re-Route Portion of the Preferred Alternative Route	774.33	-0.98	39677	Irrigation	129	10	41.23225	-97.787389
Merrick	Re-Route Portion of the Preferred Alternative Route	774.37	0.25	25602	Irrigation	30	8	41.24561	-97.771658
Merrick	Re-Route Portion of the Preferred Alternative Route	774.44	0.46	25601	Irrigation	29	12	41.247309	-97.768095
Merrick	Re-Route Portion of the Preferred Alternative Route	774.47	0.68	115142	Irrigation	0	0	41.249468	-97.764945
Merrick	Re-Route Portion of the Preferred Alternative Route	774.48	0.63	168295	Domestic	25	10	41.248778	-97.765417
Merrick	Re-Route Portion of the Preferred Alternative Route	774.50	0.86	158358	Irrigation	25	7	41.251236	-97.762278
Merrick	Re-Route Portion of the Preferred Alternative Route	774.51	-0.70	44619	Irrigation	120	5	41.233667	-97.781306
Merrick	Re-Route Portion of the Preferred Alternative Route	774.53	0.60	124847	Irrigation	25	15	41.247957	-97.765018
Merrick	Re-Route Portion of the Preferred Alternative Route	774.54	0.85	197954	Irrigation	25	7	41.250722	-97.761833
Merrick	Re-Route Portion of the Preferred Alternative Route	774.59	0.94	65588	Irrigation	22	7	41.251216	-97.759877
Merrick	Re-Route Portion of the Preferred Alternative Route	774.59	0.94	65590	Irrigation	20	7	41.251216	-97.759877
Merrick	Re-Route Portion of the Preferred Alternative Route	774.59	0.94	65589	Irrigation	0	0	41.251216	-97.759877
Merrick	Re-Route Portion of the Preferred Alternative Route	774.59	0.94	65591	Irrigation	0	0	41.251216	-97.759877

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Merrick	Re-Route Portion of the Preferred Alternative Route	774.59	0.94	65592	Irrigation	0	0	41.251216	-97.759877
Merrick	Re-Route Portion of the Preferred Alternative Route	774.62	0.77	133243	Domestic	25	6	41.249026	-97.76153
Polk	Re-Route Portion of the Preferred Alternative Route	775.98	0.83	75552	Irrigation	82	3	41.237184	-97.740641
Polk	Re-Route Portion of the Preferred Alternative Route	776.14	-0.50	13583	Irrigation	132	14	41.220939	-97.754677
Polk	Re-Route Portion of the Preferred Alternative Route	776.22	0.14	11411	Irrigation	82	18	41.227285	-97.745525
Polk	Re-Route Portion of the Preferred Alternative Route	776.27	0.26	201467	Domestic	92	16	41.2281	-97.743333
Polk	Re-Route Portion of the Preferred Alternative Route	776.44	0.84	49437	Irrigation	80	12	41.228311	-97.7307
Polk	Re-Route Portion of the Preferred Alternative Route	776.45	-0.30	41784	Irrigation	114	25	41.221067	-97.75019
Polk	Re-Route Portion of the Preferred Alternative Route	776.56	0.21	15688	Irrigation	104	18	41.222742	-97.740542
Polk	Re-Route Portion of the Preferred Alternative Route	776.67	0.43	57384	Irrigation	102	12	41.222756	-97.735743
Polk	Re-Route Portion of the Preferred Alternative Route	776.74	-0.85	30249	Irrigation	152	26	41.213696	-97.757288
Polk	Re-Route Portion of the Preferred Alternative Route	776.78	-0.61	82687	Irrigation	166	35	41.213759	-97.752196
Polk	Re-Route Portion of the Preferred Alternative Route	776.91	0.18	11410	Irrigation	125	41	41.219016	-97.738118
Polk	Re-Route Portion of the Preferred Alternative Route	776.97	-0.49	82617	Irrigation	223	58	41.211684	-97.746382

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Polk	Re-Route Portion of the Preferred Alternative Route	777.00	0.09	11408	Irrigation	122	0	41.217314	-97.738112
Polk	Re-Route Portion of the Preferred Alternative Route	777.04	0.51	75756	Irrigation	94	16	41.221147	-97.731936
Polk	Re-Route Portion of the Preferred Alternative Route	777.11	0.44	198487	Monitoring	24	16	41.21975	-97.731833
Polk	Re-Route Portion of the Preferred Alternative Route	777.18	0.37	198488	Monitoring	24	16.5	41.218389	-97.731861
Polk	Re-Route Portion of the Preferred Alternative Route	777.18	0.81	2849	Irrigation	0	0	41.222826	-97.726011
Polk	Re-Route Portion of the Preferred Alternative Route	777.20	0.84	7070	Irrigation	97	14	41.221214	-97.723417
Polk	Re-Route Portion of the Preferred Alternative Route	777.21	0.78	22494	Irrigation	96	20	41.217507	-97.722112
Polk	Re-Route Portion of the Preferred Alternative Route	777.21	0.18	198489	Monitoring	37	29	41.214722	-97.733028
Polk	Re-Route Portion of the Preferred Alternative Route	777.21	0.31	6459	Irrigation	132	29	41.215349	-97.73075
Polk	Re-Route Portion of the Preferred Alternative Route	777.40	0.88	12003	Irrigation	121	28	41.212875	-97.718903
Polk	Re-Route Portion of the Preferred Alternative Route	777.48	0.44	124567	Irrigation	154	0	41.210165	-97.727327
Polk	Re-Route Portion of the Preferred Alternative Route	777.54	-0.51	12098	Irrigation	102	22	41.209724	-97.745548
Polk	Re-Route Portion of the Preferred Alternative Route	777.62	0.77	150499	Domestic	220	97	41.20775	-97.721111
Polk	Re-Route Portion of the Preferred Alternative Route	777.94	0.92	39205	Irrigation	230	135	41.202771	-97.718703

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Polk	Re-Route Portion of the Preferred Alternative Route	778.07	-1.00	203548	Domestic	145	85	41.2028	-97.7556
Polk	Re-Route Portion of the Preferred Alternative Route	778.22	-0.97	192590	Domestic	170	146	41.200583	-97.755167
Polk	Re-Route Portion of the Preferred Alternative Route	778.28	-0.33	146126	Domestic	133	110	41.198994	-97.743018
Polk	Re-Route Portion of the Preferred Alternative Route	778.57	0.19	175334	Livestock	170	70	41.195	-97.733139
Polk	Re-Route Portion of the Preferred Alternative Route	778.72	0.17	39158	Irrigation	249	142	41.192852	-97.733063
Polk	Re-Route Portion of the Preferred Alternative Route	778.90	0.53	31140	Irrigation	250	152	41.189961	-97.72583
Polk	Re-Route Portion of the Preferred Alternative Route	779.04	-0.09	2691	Irrigation	0	0	41.187802	-97.737691
Polk	Re-Route Portion of the Preferred Alternative Route	779.27	0.40	205744	Irrigation	280	135	41.184639	-97.728222
Polk	Re-Route Portion of the Preferred Alternative Route	779.28	0.90	32509	Irrigation	300	124	41.184721	-97.718595
Polk	Re-Route Portion of the Preferred Alternative Route	779.47	0.13	139956	Irrigation	300	105	41.181639	-97.733222
Polk	Re-Route Portion of the Preferred Alternative Route	779.53	0.74	28432	Irrigation	261	134	41.181001	-97.721489
Polk	Re-Route Portion of the Preferred Alternative Route	779.60	-0.06	2692	Irrigation	0	0	41.179707	-97.73673
Polk	Re-Route Portion of the Preferred Alternative Route	779.64	0.26	1336	Irrigation	0	0	41.179195	-97.730554
Polk	Re-Route Portion of the Preferred Alternative Route	779.70	-0.15	152619	Domestic	255	156	41.17813	-97.738408

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Polk	Re-Route Portion of the Preferred Alternative Route	779.73	-0.37	5738	Irrigation	0	0	41.177616	-97.742673
Polk	Re-Route Portion of the Preferred Alternative Route	779.76	-0.81	137203	Irrigation	270	132	41.177028	-97.751083
Polk	Re-Route Portion of the Preferred Alternative Route	780.00	0.88	116746	Irrigation	283	100	41.173849	-97.718526
Polk	Re-Route Portion of the Preferred Alternative Route	780.12	0.06	11867	Irrigation	254	113	41.171868	-97.735524
Polk	Re-Route Portion of the Preferred Alternative Route	780.25	0.58	61959	Irrigation	255	105	41.166437	-97.728272
Polk	Re-Route Portion of the Preferred Alternative Route	780.34	0.19	59262	Irrigation	247	108	41.168244	-97.735485
Polk	Re-Route Portion of the Preferred Alternative Route	780.37	0.50	148124	Irrigation	250	0	41.165528	-97.73066
Polk	Re-Route Portion of the Preferred Alternative Route	780.45	0.78	158448	Irrigation	260	94	41.161694	-97.727472
Polk	Re-Route Portion of the Preferred Alternative Route	780.57	0.45	36602	Irrigation	226	110	41.162863	-97.734243
Polk	Re-Route Portion of the Preferred Alternative Route	780.60	-0.41	97447	Irrigation	240	105	41.170132	-97.747748
Polk	Re-Route Portion of the Preferred Alternative Route	780.71	-0.91	147625	Irrigation	260	112	41.173278	-97.756722
Polk	Re-Route Portion of the Preferred Alternative Route	780.74	-0.72	34029	Irrigation	243	124	41.166412	-97.756696
Polk	Re-Route Portion of the Preferred Alternative Route	780.88	-0.21	11409	Irrigation	149	110	41.162929	-97.747047
Polk	Re-Route Portion of the Preferred Alternative Route	780.93	-0.70	97327	Irrigation	250	133	41.162514	-97.756636

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Polk	Re-Route Portion of the Preferred Alternative Route	781.02	-0.34	1752	Irrigation	0	0	41.160972	-97.749792
Polk	Re-Route Portion of the Preferred Alternative Route	781.18	-0.94	33229	Irrigation	256	120	41.158972	-97.761339
Polk	Re-Route Portion of the Preferred Alternative Route	781.49	0.43	25363	Irrigation	225	0	41.153773	-97.735329
Polk	Re-Route Portion of the Preferred Alternative Route	781.49	0.06	33362	Irrigation	238	114	41.153914	-97.742378
Polk	Re-Route Portion of the Preferred Alternative Route	781.60	-0.13	53489	Irrigation	247	85	41.152365	-97.746013
Polk	Re-Route Portion of the Preferred Alternative Route	781.63	-0.32	61958	Irrigation	256	116	41.151913	-97.749645
Polk	Re-Route Portion of the Preferred Alternative Route	781.63	-0.93	28571	Irrigation	262	117	41.15177	-97.761339
Polk	Re-Route Portion of the Preferred Alternative Route	781.64	0.82	188690	Irrigation	240	100	41.151889	-97.727889
Polk	Re-Route Portion of the Preferred Alternative Route	781.70	-0.26	26046	Irrigation	151	109	41.150874	-97.748408
Polk	Re-Route Portion of the Preferred Alternative Route	781.82	-0.94	74136	Irrigation	260	115	41.149097	-97.761453
Polk	Re-Route Portion of the Preferred Alternative Route	781.84	0.19	90208	Domestic	153	88	41.148956	-97.73993
Polk	Re-Route Portion of the Preferred Alternative Route	782.02	-0.82	124459	Irrigation	247	99	41.14616	-97.75921
Polk	Re-Route Portion of the Preferred Alternative Route	782.02	0.93	55771	Irrigation	238	99	41.14645	-97.725563
Polk	Re-Route Portion of the Preferred Alternative Route	782.25	-0.19	18211	Irrigation	155	98	41.142945	-97.747049

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Polk	Re-Route Portion of the Preferred Alternative Route	782.65	0.43	54111	Irrigation	225	95	41.137311	-97.735126
Polk	Re-Route Portion of the Preferred Alternative Route	782.76	-0.70	180902	Irrigation	231	90	41.135503	-97.756742
Polk	Re-Route Portion of the Preferred Alternative Route	782.76	-0.07	64629	Irrigation	221	99	41.13554	-97.744689
Polk	Re-Route Portion of the Preferred Alternative Route	782.77	0.18	10833	Irrigation	156	80	41.135547	-97.739896
Polk	Re-Route Portion of the Preferred Alternative Route	782.87	0.68	23228	Irrigation	130	89	41.13411	-97.730145
Polk	Re-Route Portion of the Preferred Alternative Route	782.89	0.98	18430	Irrigation	121	85	41.133907	-97.72455
Polk	Re-Route Portion of the Preferred Alternative Route	782.90	-0.05	29677	Irrigation	151	88	41.133619	-97.744171
Polk	Re-Route Portion of the Preferred Alternative Route	782.95	0.80	151252	Irrigation	240	90	41.13265	-97.727981
Polk	Re-Route Portion of the Preferred Alternative Route	782.98	0.55	31518	Irrigation	130	75	41.132373	-97.732618
Polk	Re-Route Portion of the Preferred Alternative Route	783.11	0.34	53703	Irrigation	228	110	41.130528	-97.73666
Polk	Re-Route Portion of the Preferred Alternative Route	783.11	0.80	23230	Irrigation	130	79	41.130413	-97.727878
Polk	Re-Route Portion of the Preferred Alternative Route	783.13	-0.20	153912	Irrigation	240	70	41.130278	-97.747056
Polk	Re-Route Portion of the Preferred Alternative Route	783.14	-0.70	30238	Irrigation	234	91	41.130115	-97.756722
Polk	Re-Route Portion of the Preferred Alternative Route	783.15	-0.95	50582	Irrigation	240	105	41.130135	-97.761548

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Polk	Re-Route Portion of the Preferred Alternative Route	783.39	-0.45	25796	Irrigation	0	0	41.126553	-97.751994
Polk	Re-Route Portion of the Preferred Alternative Route	783.48	-0.32	10541	Irrigation	132	87	41.12516	-97.749507
Polk	Re-Route Portion of the Preferred Alternative Route	783.49	0.41	4148	Irrigation	247	98	41.124972	-97.735531
Polk	Re-Route Portion of the Preferred Alternative Route	783.51	0.80	54481	Irrigation	230	100	41.124558	-97.727975
Polk	Re-Route Portion of the Preferred Alternative Route	783.62	0.40	26691	Irrigation	232	90	41.123011	-97.735758
Polk	Re-Route Portion of the Preferred Alternative Route	783.80	0.06	46720	Irrigation	225	90	41.12055	-97.742239
Polk	Re-Route Portion of the Preferred Alternative Route	783.83	-0.95	160281	Monitoring	114.1	93	41.119442	-97.761667
Polk	Re-Route Portion of the Preferred Alternative Route	783.90	0.39	23226	Irrigation	130	90	41.119306	-97.735914
Polk	Re-Route Portion of the Preferred Alternative Route	784.03	0.67	6954	Irrigation	124	76	41.117691	-97.730335
Polk	Re-Route Portion of the Preferred Alternative Route	784.07	-0.77	100896	Irrigation	240	74	41.116128	-97.757993
Polk	Re-Route Portion of the Preferred Alternative Route	784.19	0.86	6955	Irrigation	142	73	41.115409	-97.726584
Polk	Re-Route Portion of the Preferred Alternative Route	784.35	-0.96	25716	Irrigation	256	90	41.111891	-97.761245
Polk	Re-Route Portion of the Preferred Alternative Route	784.43	-0.23	41626	Irrigation	240	83	41.110576	-97.747079
Polk	Re-Route Portion of the Preferred Alternative Route	784.45	0.30	19185	Irrigation	140	80	41.112222	-97.737219

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Polk	Re-Route Portion of the Preferred Alternative Route	784.57	-0.66	28976	Irrigation	227	78	41.106994	-97.754334
Polk	Re-Route Portion of the Preferred Alternative Route	784.63	0.41	56994	Irrigation	248	103	41.110189	-97.734331
Polk	Re-Route Portion of the Preferred Alternative Route	784.65	0.74	190740	Irrigation	220	85	41.108667	-97.727472
Polk	Re-Route Portion of the Preferred Alternative Route	784.83	0.62	159422	Domestic	120	67	41.105789	-97.729858
Polk	Re-Route Portion of the Preferred Alternative Route	784.99	-0.91	77855	Irrigation	247	94	41.103272	-97.759091
Polk	Re-Route Portion of the Preferred Alternative Route	785.11	-0.23	29529	Irrigation	234	78	41.101549	-97.745885
Polk	Re-Route Portion of the Preferred Alternative Route	785.12	-0.09	41627	Irrigation	231	79	41.101432	-97.743255
Polk	Re-Route Portion of the Preferred Alternative Route	785.14	0.38	182656	Irrigation	240	75	41.101361	-97.734278
Polk	Re-Route Portion of the Preferred Alternative Route	785.14	0.73	8420	Irrigation	209	70	41.101325	-97.727656
Polk	Re-Route Portion of the Preferred Alternative Route	785.15	0.47	21980	Irrigation	217	59	41.100043	-97.732706
Polk	Re-Route Portion of the Preferred Alternative Route	785.15	0.83	55100	Irrigation	234	82	41.101142	-97.725583
Polk	Re-Route Portion of the Preferred Alternative Route	785.31	-0.82	29989	Irrigation	239	72	41.099314	-97.758072
Polk	Re-Route Portion of the Preferred Alternative Route	785.42	0.51	125048	Domestic	120	39	41.097302	-97.732654
Polk	Re-Route Portion of the Preferred Alternative Route	786.25	0.02	41278	Irrigation	250	80	41.085239	-97.743464

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Polk	Re-Route Portion of the Preferred Alternative Route	786.29	-0.90	37265	Irrigation	250	70	41.087049	-97.761122
Polk	Re-Route Portion of the Preferred Alternative Route	786.30	-0.26	13458	Irrigation	222	76	41.084907	-97.74919
Polk	Re-Route Portion of the Preferred Alternative Route	786.65	0.41	12897	Irrigation	224	65	41.079444	-97.73635
Polk	Re-Route Portion of the Preferred Alternative Route	786.72	-0.37	12898	Irrigation	236	71	41.07877	-97.751444
Polk	Re-Route Portion of the Preferred Alternative Route	786.80	0.87	30090	Irrigation	226	76	41.077144	-97.727692
Polk	Re-Route Portion of the Preferred Alternative Route	786.91	-0.49	12881	Irrigation	238	75	41.076064	-97.753819
Polk	Re-Route Portion of the Preferred Alternative Route	787.10	-0.50	39008	Irrigation	260	81	41.072412	-97.753877
Polk	Re-Route Portion of the Preferred Alternative Route	787.15	-0.15	21515	Irrigation	240	81	41.072008	-97.747117
Polk	Re-Route Portion of the Preferred Alternative Route	787.22	0.35	76673	Irrigation	234	81	41.07225	-97.737386
Polk	Re-Route Portion of the Preferred Alternative Route	787.23	0.57	199121	Domestic	145	77	41.072683	-97.733283
Polk	Re-Route Portion of the Preferred Alternative Route	787.27	0.59	21513	Irrigation	198	80	41.072104	-97.732744
Polk	Re-Route Portion of the Preferred Alternative Route	787.53	-0.76	33710	Irrigation	272	79	41.065071	-97.757401
Polk	Re-Route Portion of the Preferred Alternative Route	787.67	0.59	49747	Irrigation	146	100	41.066471	-97.731482
Polk	Re-Route Portion of the Preferred Alternative Route	787.88	-0.21	30128	Irrigation	260	76	41.062062	-97.746581

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Polk	Re-Route Portion of the Preferred Alternative Route	787.93	0.57	106676	Domestic	190	63	41.061027	-97.731709
Polk	Re-Route Portion of the Preferred Alternative Route	787.95	-0.19	23227	Irrigation	170	82	41.060959	-97.746179
Polk	Re-Route Portion of the Preferred Alternative Route	788.04	0.92	3667	Irrigation	0	0	41.059362	-97.725017
Polk	Re-Route Portion of the Preferred Alternative Route	788.12	-0.63	40371	Irrigation	280	70	41.058682	-97.754662
Polk	Re-Route Portion of the Preferred Alternative Route	788.13	0.78	24771	Irrigation	190	81	41.058041	-97.727621
Polk	Re-Route Portion of the Preferred Alternative Route	788.17	0.29	8235	Irrigation	166	60	41.057604	-97.737177
Polk	Re-Route Portion of the Preferred Alternative Route	788.52	0.78	80556	Irrigation	220	60	41.053925	-97.727838
Polk	Re-Route Portion of the Preferred Alternative Route	788.54	-0.09	58197	Irrigation	208	72	41.052252	-97.74423
Polk	Re-Route Portion of the Preferred Alternative Route	788.71	0.27	63478	Irrigation	170	70	41.050357	-97.737009
Polk	Re-Route Portion of the Preferred Alternative Route	789.05	0.75	35884	Irrigation	201	43	41.046734	-97.727353
York	Re-Route Portion of the Preferred Alternative Route	789.13	-1.00	34304	Irrigation	182	75	41.041564	-97.760044
York	Re-Route Portion of the Preferred Alternative Route	789.18	-0.22	176015	Irrigation	210	43	41.042611	-97.745167
York	Re-Route Portion of the Preferred Alternative Route	789.23	0.26	155705	Irrigation	225	60	41.043056	-97.736
York	Re-Route Portion of the Preferred Alternative Route	789.31	0.75	101098	Irrigation	240	90	41.043023	-97.72644

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	Re-Route Portion of the Preferred Alternative Route	789.38	0.49	1610	Irrigation	0	0	41.041425	-97.731139
York	Re-Route Portion of the Preferred Alternative Route	789.46	0.19	24627	Irrigation	156	72	41.039289	-97.736653
York	Re-Route Portion of the Preferred Alternative Route	789.68	-0.78	29245	Irrigation	215	71	41.035769	-97.755255
York	Re-Route Portion of the Preferred Alternative Route	789.68	-0.29	135299	Irrigation	230	45	41.035822	-97.745799
York	Re-Route Portion of the Preferred Alternative Route	789.71	0.53	24626	Irrigation	184	73	41.035674	-97.730151
York	Re-Route Portion of the Preferred Alternative Route	789.73	0.97	100943	Irrigation	240	90	41.035609	-97.721627
York	Re-Route Portion of the Preferred Alternative Route	789.83	0.15	26283	Irrigation	180	78	41.033901	-97.737338
York	Re-Route Portion of the Preferred Alternative Route	790.08	0.21	33005	Irrigation	251	77	41.030269	-97.736134
York	Re-Route Portion of the Preferred Alternative Route	790.17	-0.90	30607	Irrigation	201	80	41.028511	-97.757191
York	Re-Route Portion of the Preferred Alternative Route	790.19	-0.30	55644	Irrigation	240	75	41.028545	-97.745689
York	Re-Route Portion of the Preferred Alternative Route	790.22	0.71	4804	Irrigation	165	0	41.028405	-97.726427
York	Re-Route Portion of the Preferred Alternative Route	790.45	0.20	32542	Irrigation	224	84	41.024902	-97.73609
York	Re-Route Portion of the Preferred Alternative Route	790.59	-0.83	34205	Irrigation	231	81	41.02131	-97.755292
York	Re-Route Portion of the Preferred Alternative Route	790.70	-0.97	4106	Irrigation	196	82	41.019481	-97.757681

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	Re-Route Portion of the Preferred Alternative Route	790.73	0.17	16237	Irrigation	201	83	41.021148	-97.735987
York	Re-Route Portion of the Preferred Alternative Route	790.78	0.73	13382	Irrigation	163	82	41.021352	-97.725296
York	Re-Route Portion of the Preferred Alternative Route	790.79	-0.22	8422	Irrigation	222	85	41.019462	-97.743222
York	Re-Route Portion of the Preferred Alternative Route	790.94	0.09	79841	Irrigation	240	93	41.017649	-97.737481
York	Re-Route Portion of the Preferred Alternative Route	791.07	-0.40	33592	Irrigation	250	84	41.016038	-97.746859
York	Re-Route Portion of the Preferred Alternative Route	791.10	-0.71	1025	Irrigation	0	0	41.015804	-97.752872
York	Re-Route Portion of the Preferred Alternative Route	791.20	0.06	34293	Irrigation	240	93	41.013978	-97.738265
York	Re-Route Portion of the Preferred Alternative Route	791.26	0.93	265	Irrigation	0	0	41.012206	-97.721683
York	Re-Route Portion of the Preferred Alternative Route	791.38	0.54	22272	Irrigation	172	82	41.010903	-97.729208
York	Re-Route Portion of the Preferred Alternative Route	791.70	0.21	27449	Irrigation	222	80	41.006594	-97.735922
York	Re-Route Portion of the Preferred Alternative Route	791.72	-0.29	38348	Irrigation	253	110	41.00672	-97.745562
York	Re-Route Portion of the Preferred Alternative Route	791.77	0.87	22274	Irrigation	172	88	41.004912	-97.72345
York	Re-Route Portion of the Preferred Alternative Route	791.86	-0.91	8774	Irrigation	186	85	41.004912	-97.757532
York	Re-Route Portion of the Preferred Alternative Route	792.09	0.34	10789	Irrigation	164	84	41.001105	-97.733596

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	Re-Route Portion of the Preferred Alternative Route	792.21	-0.79	152925	Irrigation	240	87	40.999417	-97.755222
York	Re-Route Portion of the Preferred Alternative Route	792.21	0.72	69991	Irrigation	221	90	40.999279	-97.726304
York	Re-Route Portion of the Preferred Alternative Route	792.28	-0.24	49652	Irrigation	215	0	40.998317	-97.744706
York	Re-Route Portion of the Preferred Alternative Route	792.29	-0.40	27715	Irrigation	186	93	40.998256	-97.74775
York	Re-Route Portion of the Preferred Alternative Route	792.34	0.09	4813	Irrigation	170	0	40.997495	-97.738389
York	Re-Route Portion of the Preferred Alternative Route	792.59	-0.16	70190	Irrigation	230	88	40.993885	-97.743181
York	Re-Route Portion of the Preferred Alternative Route	792.72	0.22	38811	Irrigation	219	88	40.992052	-97.736011
York	Re-Route Portion of the Preferred Alternative Route	792.73	0.47	82795	Irrigation	200	96	40.99201	-97.73112
York	Re-Route Portion of the Preferred Alternative Route	792.80	-0.79	42185	Irrigation	236	90	40.99041	-97.755161
York	Re-Route Portion of the Preferred Alternative Route	792.82	0.71	18629	Irrigation	159	89	40.990878	-97.726395
York	Re-Route Portion of the Preferred Alternative Route	793.12	-0.81	28298	Irrigation	197	94	40.985744	-97.755253
York	Re-Route Portion of the Preferred Alternative Route	793.19	-0.48	26385	Irrigation	209	91	40.984944	-97.748933
York	Re-Route Portion of the Preferred Alternative Route	793.25	0.68	47902	Irrigation	220	86	40.984729	-97.726716
York	Re-Route Portion of the Preferred Alternative Route	793.33	0.07	7962	Irrigation	194	80	40.983104	-97.738421

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	Re-Route Portion of the Preferred Alternative Route	793.56	-0.31	37267	Irrigation	251	103	40.979589	-97.745439
York	Re-Route Portion of the Preferred Alternative Route	793.58	-0.07	19588	Irrigation	189	89	40.979503	-97.740763
York	Re-Route Portion of the Preferred Alternative Route	793.83	0.82	8666	Irrigation	182	96	40.975774	-97.723824
York	Re-Route Portion of the Preferred Alternative Route	793.83	-0.83	113247	Domestic	170	78	40.975898	-97.755477
York	Re-Route Portion of the Preferred Alternative Route	793.86	-0.72	19685	Other	212	80	40.975516	-97.753345
York	Re-Route Portion of the Preferred Alternative Route	794.20	-0.81	32327	Irrigation	254	105	40.970616	-97.755161
York	Re-Route Portion of the Preferred Alternative Route	794.20	-0.44	36368	Irrigation	233	90	40.970517	-97.747986
York	Re-Route Portion of the Preferred Alternative Route	794.20	0.68	30893	Irrigation	211	80	40.970386	-97.726538
York	Re-Route Portion of the Preferred Alternative Route	794.21	0.19	17807	Irrigation	178	89	40.970357	-97.73598
York	Re-Route Portion of the Preferred Alternative Route	794.37	-0.21	18663	Irrigation	250	99	40.968086	-97.743662
York	Re-Route Portion of the Preferred Alternative Route	794.59	0.07	59828	Irrigation	234	83	40.964915	-97.738271
York	Re-Route Portion of the Preferred Alternative Route	794.59	-0.68	1617	Irrigation	0	0	40.964888	-97.752646
York	Re-Route Portion of the Preferred Alternative Route	794.71	-0.31	103074	Irrigation	250	83	40.963027	-97.745508
York	Re-Route Portion of the Preferred Alternative Route	794.74	0.95	71236	Irrigation	234	95	40.962989	-97.721422

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	Re-Route Portion of the Preferred Alternative Route	794.96	0.45	7884	Irrigation	181	66	40.959661	-97.730822
York	Re-Route Portion of the Preferred Alternative Route	795.00	-0.80	16448	Irrigation	201	88	40.958638	-97.754843
York	Re-Route Portion of the Preferred Alternative Route	795.21	-0.31	29834	Irrigation	221	90	40.955756	-97.745347
York	Re-Route Portion of the Preferred Alternative Route	795.22	0.19	195647	Irrigation	220	97	40.955808	-97.735715
York	Re-Route Portion of the Preferred Alternative Route	795.22	0.68	80968	Irrigation	255	80	40.955911	-97.726335
York	Re-Route Portion of the Preferred Alternative Route	795.23	0.45	6989	Livestock	210	74	40.955822	-97.730844
York	Re-Route Portion of the Preferred Alternative Route	795.37	-0.68	29114	Irrigation	201	88	40.953358	-97.752276
York	Re-Route Portion of the Preferred Alternative Route	795.41	-0.82	29115	Irrigation	201	91	40.952681	-97.75488
York	Re-Route Portion of the Preferred Alternative Route	795.47	-0.56	50172	Irrigation	208	100	40.951865	-97.750022
York	Re-Route Portion of the Preferred Alternative Route	795.59	-0.07	33371	Irrigation	219	81	40.950341	-97.740575
York	Re-Route Portion of the Preferred Alternative Route	795.60	0.56	75593	Irrigation	0	0	40.950376	-97.728559
York	Re-Route Portion of the Preferred Alternative Route	795.70	-0.73	12239	Irrigation	186	82	40.948477	-97.753061
York	Re-Route Portion of the Preferred Alternative Route	795.71	-0.33	76357	Irrigation	221	85	40.948508	-97.745357
York	Re-Route Portion of the Preferred Alternative Route	795.72	0.17	48186	Irrigation	236	80	40.94855	-97.735798

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	Re-Route Portion of the Preferred Alternative Route	795.96	0.41	141292	Domestic	170	55	40.94511	-97.731271
York	Re-Route Portion of the Preferred Alternative Route	796.21	-0.34	8181	Irrigation	260	78	40.9413	-97.745369
York	Re-Route Portion of the Preferred Alternative Route	796.22	0.13	30499	Irrigation	210	78	40.941354	-97.736464
York	Re-Route Portion of the Preferred Alternative Route	796.26	-0.68	19728	Irrigation	163	68	40.940409	-97.751848
York	Re-Route Portion of the Preferred Alternative Route	796.31	-0.97	39636	Irrigation	244	71	40.934187	-97.755807
York	Re-Route Portion of the Preferred Alternative Route	796.31	-0.87	63484	Irrigation	240	66	40.9367	-97.7548
York	FEIS Portion of the Preferred Alternative Route	796.37	-0.48	17171	Irrigation	182	78	40.934055	-97.743789
York	FEIS Portion of the Preferred Alternative Route	796.38	-0.22	40058	Irrigation	244	70	40.936778	-97.740526
York	FEIS Portion of the Preferred Alternative Route	796.43	-0.10	33373	Irrigation	217	77	40.937682	-97.738208
York	FEIS Portion of the Preferred Alternative Route	796.44	-0.49	135505	Domestic	175	80	40.933178	-97.742809
York	FEIS Portion of the Preferred Alternative Route	796.64	-0.90	38358	Irrigation	220	68	40.92675	-97.744932
York	FEIS Portion of the Preferred Alternative Route	796.66	-0.57	16229	Irrigation	178	85	40.930325	-97.740536
York	FEIS Portion of the Preferred Alternative Route	796.68	-0.20	13538	Irrigation	74	62	40.934341	-97.735766
York	FEIS Portion of the Preferred Alternative Route	796.87	0.29	3416	Irrigation	0	0	40.939512	-97.728553

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	796.87	0.45	51774	Irrigation	221	90	40.941328	-97.726174
York	FEIS Portion of the Preferred Alternative Route	796.88	0.80	100798	Irrigation	190	75	40.941282	-97.716688
York	FEIS Portion of the Preferred Alternative Route	797.06	0.42	30468	Irrigation	185	72	40.936178	-97.721297
York	FEIS Portion of the Preferred Alternative Route	797.11	-0.04	8180	Irrigation	160	64	40.932265	-97.728512
York	FEIS Portion of the Preferred Alternative Route	797.14	0.85	66280	Irrigation	140	72	40.934478	-97.711722
York	FEIS Portion of the Preferred Alternative Route	797.27	0.58	10135	Irrigation	138	57	40.930372	-97.716639
York	FEIS Portion of the Preferred Alternative Route	797.39	0.45	72114	Irrigation	150	90	40.928602	-97.718953
York	FEIS Portion of the Preferred Alternative Route	797.51	-0.44	171967	Irrigation	154	62	40.926778	-97.735944
York	FEIS Portion of the Preferred Alternative Route	797.51	0.08	4558	Irrigation	0	0	40.926759	-97.726128
York	FEIS Portion of the Preferred Alternative Route	797.56	-0.94	50601	Irrigation	188	65	40.923209	-97.745146
York	FEIS Portion of the Preferred Alternative Route	797.63	-0.44	1832	Irrigation	0	0	40.921323	-97.733436
York	FEIS Portion of the Preferred Alternative Route	797.69	-0.22	21258	Irrigation	100	25	40.922571	-97.7296
York	FEIS Portion of the Preferred Alternative Route	797.75	-0.53	97077	Domestic	70	25	40.919149	-97.733471
York	FEIS Portion of the Preferred Alternative Route	797.97	-0.88	45848	Irrigation	94	34	40.912275	-97.734705

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	797.98	0.15	153838	Irrigation	120	23	40.922806	-97.720778
York	FEIS Portion of the Preferred Alternative Route	798.12	0.85	4973	Irrigation	0	0	40.928643	-97.70951
York	FEIS Portion of the Preferred Alternative Route	798.12	0.63	106605	Domestic	100	41	40.926191	-97.712177
York	FEIS Portion of the Preferred Alternative Route	798.39	-0.78	112634	Domestic	100	72	40.90998	-97.730398
York	FEIS Portion of the Preferred Alternative Route	798.60	0.26	154509	Irrigation	240	40	40.916167	-97.711667
York	FEIS Portion of the Preferred Alternative Route	798.67	-0.11	181917	Irrigation	108	73	40.912297	-97.716756
York	FEIS Portion of the Preferred Alternative Route	798.77	-0.62	6993	Irrigation	116	78	40.906888	-97.723782
York	FEIS Portion of the Preferred Alternative Route	798.77	-0.62	54905	Irrigation	125	85	40.906888	-97.723782
York	FEIS Portion of the Preferred Alternative Route	798.78	0.28	60688	Irrigation	260	63	40.914175	-97.709491
York	FEIS Portion of the Preferred Alternative Route	798.85	-0.07	10134	Irrigation	120	73	40.910512	-97.71423
York	FEIS Portion of the Preferred Alternative Route	798.88	-0.42	10136	Irrigation	0	0	40.906888	-97.719005
York	FEIS Portion of the Preferred Alternative Route	798.88	-0.94	580	Irrigation	0	0	40.901331	-97.725994
York	FEIS Portion of the Preferred Alternative Route	798.89	-0.43	581	Irrigation	0	0	40.9051	-97.716764
York	FEIS Portion of the Preferred Alternative Route	798.97	0.47	164391	Irrigation	220	27	40.916222	-97.706778

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	798.99	0.25	164882	Irrigation	240	90	40.912291	-97.707066
York	FEIS Portion of the Preferred Alternative Route	799.28	-0.13	78615	Irrigation	130	85	40.905576	-97.709669
York	FEIS Portion of the Preferred Alternative Route	799.28	0.67	201755	Irrigation	189	90	40.912444	-97.697361
York	FEIS Portion of the Preferred Alternative Route	799.34	-0.93	66977	Irrigation	112	98	40.897986	-97.721333
York	FEIS Portion of the Preferred Alternative Route	799.34	0.31	36623	Irrigation	226	82	40.908686	-97.702233
York	FEIS Portion of the Preferred Alternative Route	799.35	0.90	68816	Irrigation	260	85	40.913683	-97.693019
York	FEIS Portion of the Preferred Alternative Route	799.45	-0.39	32348	Irrigation	110	76	40.901342	-97.711784
York	FEIS Portion of the Preferred Alternative Route	799.46	0.22	81385	Irrigation	160	80	40.906464	-97.702181
York	FEIS Portion of the Preferred Alternative Route	799.66	0.42	208481	Irrigation	107	65	40.905194	-97.696361
York	FEIS Portion of the Preferred Alternative Route	799.66	0.82	18999	Irrigation	248	79	40.908818	-97.690346
York	FEIS Portion of the Preferred Alternative Route	799.66	0.36	208482	Irrigation	110	65	40.905194	-97.697528
York	FEIS Portion of the Preferred Alternative Route	799.68	0.65	45537	Irrigation	115	28	40.905121	-97.691422
York	FEIS Portion of the Preferred Alternative Route	799.77	-0.54	133705	Livestock	120	67	40.897142	-97.711655
York	FEIS Portion of the Preferred Alternative Route	799.80	-0.74	28162	Irrigation	102	72	40.895385	-97.714767

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	799.99	-0.69	97538	Monitoring	103	67	40.892586	-97.71123
York	FEIS Portion of the Preferred Alternative Route	800.05	-0.16	27273	Irrigation	100	0	40.895989	-97.702259
York	FEIS Portion of the Preferred Alternative Route	800.15	-0.22	86398	Irrigation	120	80	40.894342	-97.702158
York	FEIS Portion of the Preferred Alternative Route	800.25	-0.53	50290	Irrigation	110	90	40.890617	-97.705974
York	FEIS Portion of the Preferred Alternative Route	800.26	0.60	26522	Irrigation	96	63	40.899661	-97.687985
York	FEIS Portion of the Preferred Alternative Route	800.27	-0.90	32489	Irrigation	120	59	40.887446	-97.711724
York	FEIS Portion of the Preferred Alternative Route	800.29	-0.92	101127	Irrigation	108	64	40.887089	-97.71176
York	FEIS Portion of the Preferred Alternative Route	800.29	-0.02	50627	Irrigation	111	80	40.894246	-97.697454
York	FEIS Portion of the Preferred Alternative Route	800.31	0.93	168690	Monitoring	77.099998	57.900002	40.901667	-97.682222
York	FEIS Portion of the Preferred Alternative Route	800.34	0.17	14460	Irrigation	99	68	40.895189	-97.693976
York	FEIS Portion of the Preferred Alternative Route	800.36	-0.69	33374	Irrigation	109	68	40.888102	-97.707492
York	FEIS Portion of the Preferred Alternative Route	800.36	0.52	63084	Irrigation	90	68	40.897763	-97.688021
York	FEIS Portion of the Preferred Alternative Route	800.42	-0.90	95837	Irrigation	110	68	40.885704	-97.710092
York	FEIS Portion of the Preferred Alternative Route	800.54	-0.19	197470	Other	120	55	40.889956	-97.697486

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	800.54	-0.16	82418	Irrigation	120	80	40.890141	-97.697003
York	FEIS Portion of the Preferred Alternative Route	800.59	-0.27	82416	Irrigation	100	30	40.88875	-97.698275
York	FEIS Portion of the Preferred Alternative Route	800.61	-0.24	82417	Irrigation	100	30	40.888745	-97.697552
York	FEIS Portion of the Preferred Alternative Route	800.61	-0.24	82417	Irrigation	100	30	40.888745	-97.697552
York	FEIS Portion of the Preferred Alternative Route	800.61	-0.73	95836	Irrigation	110	68	40.884239	-97.704807
York	FEIS Portion of the Preferred Alternative Route	800.61	-0.50	20874	Irrigation	90	60	40.884561	-97.699086
York	FEIS Portion of the Preferred Alternative Route	800.61	-0.50	20875	Irrigation	110	68	40.885134	-97.699945
York	FEIS Portion of the Preferred Alternative Route	800.61	-0.55	20876	Irrigation	90	50	40.884069	-97.699669
York	FEIS Portion of the Preferred Alternative Route	800.70	0.17	75706	Irrigation	110	65	40.892331	-97.690449
York	FEIS Portion of the Preferred Alternative Route	800.70	0.45	197902	Injection	100	65	40.895886	-97.687717
York	FEIS Portion of the Preferred Alternative Route	800.70	0.43	26521	Irrigation	97	63	40.895597	-97.687932
York	FEIS Portion of the Preferred Alternative Route	800.70	0.03	33722	Irrigation	105	73	40.890521	-97.691683
York	FEIS Portion of the Preferred Alternative Route	800.70	0.77	45674	Irrigation	100	65	40.897272	-97.680744
York	FEIS Portion of the Preferred Alternative Route	800.70	0.53	188821	Observation	35	0	40.896194	-97.685778

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	800.70	0.54	188828	Observation	55	0	40.896028	-97.685111
York	FEIS Portion of the Preferred Alternative Route	800.70	0.49	196949	Other	50	0	40.895561	-97.685878
York	FEIS Portion of the Preferred Alternative Route	800.70	0.48	196956	Other	50	0	40.895328	-97.685858
York	FEIS Portion of the Preferred Alternative Route	800.70	0.48	196962	Other	50	0	40.895111	-97.685719
York	FEIS Portion of the Preferred Alternative Route	800.70	0.47	196967	Other	50	0	40.895006	-97.685858
York	FEIS Portion of the Preferred Alternative Route	800.70	0.46	196970	Other	50	0	40.895114	-97.686097
York	FEIS Portion of the Preferred Alternative Route	800.70	0.46	196971	Other	50	0	40.895067	-97.686047
York	FEIS Portion of the Preferred Alternative Route	800.70	0.46	196975	Other	50	0	40.895136	-97.686253
York	FEIS Portion of the Preferred Alternative Route	800.70	0.45	196979	Other	50	0	40.895136	-97.686383
York	FEIS Portion of the Preferred Alternative Route	800.70	0.45	196981	Other	50	0	40.895039	-97.686242
York	FEIS Portion of the Preferred Alternative Route	800.70	0.50	197905	Other	88	65	40.8952	-97.685092
York	FEIS Portion of the Preferred Alternative Route	800.70	0.52	197906	Other	95	65	40.895478	-97.685092
York	FEIS Portion of the Preferred Alternative Route	800.70	0.54	188822	L	45	0	40.89625	-97.685472
York	FEIS Portion of the Preferred Alternative Route	800.70	0.50	196945	Other	50	0	40.8955	-97.685497

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	800.70	0.50	196946	Other	50	0	40.895558	-97.685725
York	FEIS Portion of the Preferred Alternative Route	800.70	0.49	196950	Other	50	0	40.895503	-97.6858
York	FEIS Portion of the Preferred Alternative Route	800.70	0.49	196952	Other	50	0	40.895389	-97.685642
York	FEIS Portion of the Preferred Alternative Route	800.70	0.49	196955	Other	50	0	40.895342	-97.685747
York	FEIS Portion of the Preferred Alternative Route	800.70	0.48	196957	Other	50	0	40.895278	-97.685792
York	FEIS Portion of the Preferred Alternative Route	800.70	0.48	196958	Other	50	0	40.895214	-97.685722
York	FEIS Portion of the Preferred Alternative Route	800.70	0.48	196959	Other	50	0	40.895153	-97.685644
York	FEIS Portion of the Preferred Alternative Route	800.70	0.49	196960	Other	50	0	40.895231	-97.685644
York	FEIS Portion of the Preferred Alternative Route	800.70	0.48	196961	Other	50	0	40.895169	-97.685783
York	FEIS Portion of the Preferred Alternative Route	800.70	0.47	196966	Other	50	0	40.895061	-97.685914
York	FEIS Portion of the Preferred Alternative Route	800.70	0.46	196968	Other	50	0	40.895214	-97.686253
York	FEIS Portion of the Preferred Alternative Route	800.70	0.46	196974	Other	50	0	40.895172	-97.686331
York	FEIS Portion of the Preferred Alternative Route	800.70	0.45	196982	Other	50	0	40.895053	-97.686372
York	FEIS Portion of the Preferred Alternative Route	800.70	0.54	188824	Observation	55	0	40.896194	-97.685417

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	800.70	0.53	188825	Observation	35	0	40.895972	-97.685444
York	FEIS Portion of the Preferred Alternative Route	800.70	0.53	188826	Observation	55	0	40.896	-97.685417
York	FEIS Portion of the Preferred Alternative Route	800.70	0.50	196944	Other	50	0	40.89555	-97.685578
York	FEIS Portion of the Preferred Alternative Route	800.70	0.50	196947	Other	50	0	40.895506	-97.685639
York	FEIS Portion of the Preferred Alternative Route	800.70	0.49	196954	Other	50	0	40.895389	-97.6858
York	FEIS Portion of the Preferred Alternative Route	800.70	0.47	196964	Other	50	0	40.895061	-97.685781
York	FEIS Portion of the Preferred Alternative Route	800.70	0.46	196969	Other	50	0	40.895175	-97.686183
York	FEIS Portion of the Preferred Alternative Route	800.70	0.46	196972	Other	50	0	40.895025	-97.685978
York	FEIS Portion of the Preferred Alternative Route	800.70	0.46	196973	Other	50	0	40.895219	-97.686386
York	FEIS Portion of the Preferred Alternative Route	800.70	0.45	196978	Other	50	0	40.895172	-97.686453
York	FEIS Portion of the Preferred Alternative Route	800.70	0.45	196980	Other	50	0	40.895083	-97.686314
York	FEIS Portion of the Preferred Alternative Route	800.70	0.50	211440	Injection	30	0	40.895469	-97.685694
York	FEIS Portion of the Preferred Alternative Route	800.70	0.49	197904	Other	90	65	40.894928	-97.685094
York	FEIS Portion of the Preferred Alternative Route	800.70	0.49	211144	Injection	30	0	40.895472	-97.685758

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	800.70	0.49	211145	Injection	40	0	40.895467	-97.685758
York	FEIS Portion of the Preferred Alternative Route	800.70	0.54	188820	Other	55	50	40.896222	-97.685444
York	FEIS Portion of the Preferred Alternative Route	800.70	0.55	188823	Observatio n	55	0	40.896333	-97.685417
York	FEIS Portion of the Preferred Alternative Route	800.70	0.55	188827	Observatio n	45	0	40.896167	-97.685083
York	FEIS Portion of the Preferred Alternative Route	800.70	0.50	196948	Other	50	0	40.895453	-97.685564
York	FEIS Portion of the Preferred Alternative Route	800.70	0.49	196951	Other	50	0	40.895456	-97.685719
York	FEIS Portion of the Preferred Alternative Route	800.70	0.49	196953	Other	50	0	40.89545	-97.685869
York	FEIS Portion of the Preferred Alternative Route	800.70	0.47	196963	Other	50	0	40.895108	-97.685847
York	FEIS Portion of the Preferred Alternative Route	800.70	0.47	196965	Other	50	0	40.895106	-97.685972
York	FEIS Portion of the Preferred Alternative Route	800.70	0.46	196976	Other	50	0	40.895069	-97.686178
York	FEIS Portion of the Preferred Alternative Route	800.70	0.46	196977	Other	50	0	40.895033	-97.686108
York	FEIS Portion of the Preferred Alternative Route	800.70	0.55	197901	Injection	85	65	40.896197	-97.685083
York	FEIS Portion of the Preferred Alternative Route	800.70	0.50	211437	Injection	30	0	40.895469	-97.685703
York	FEIS Portion of the Preferred Alternative Route	800.70	0.49	211458	Injection	30	0	40.895519	-97.685803

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	800.70	0.49	211622	Injection	20	0	40.895472	-97.685758
York	FEIS Portion of the Preferred Alternative Route	800.70	0.47	197903	Injection	100	65	40.894389	-97.685114
York	FEIS Portion of the Preferred Alternative Route	800.71	0.59	72349	Irrigation	102	65	40.895383	-97.683119
York	FEIS Portion of the Preferred Alternative Route	800.84	0.00	75707	Irrigation	110	65	40.888707	-97.690476
York	FEIS Portion of the Preferred Alternative Route	800.85	0.50	155264	Irrigation	100	50	40.893083	-97.682889
York	FEIS Portion of the Preferred Alternative Route	800.91	0.39	26908	Irrigation	98	63	40.890661	-97.683119
York	FEIS Portion of the Preferred Alternative Route	800.91	0.12	104551	Domestic	110	70	40.888813	-97.687748
York	FEIS Portion of the Preferred Alternative Route	800.92	0.88	196416	Irrigation	90	31	40.892141	-97.673809
York	FEIS Portion of the Preferred Alternative Route	801.00	-0.45	20877	Irrigation	110	68	40.884188	-97.697556
York	FEIS Portion of the Preferred Alternative Route	801.00	-0.19	101637	Irrigation	120	70	40.885251	-97.692602
York	FEIS Portion of the Preferred Alternative Route	801.04	0.10	100946	Irrigation	103	60	40.886685	-97.687359
York	FEIS Portion of the Preferred Alternative Route	801.06	-0.23	100983	Irrigation	120	62	40.884153	-97.692745
York	FEIS Portion of the Preferred Alternative Route	801.20	0.84	105022	Domestic	90	54	40.889808	-97.673562
York	FEIS Portion of the Preferred Alternative Route	801.29	0.19	127041	Irrigation	97	53	40.882932	-97.683233

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	801.33	-0.05	108513	Irrigation	110	73	40.882224	-97.687714
York	FEIS Portion of the Preferred Alternative Route	801.33	-0.12	108512	Irrigation	110	73	40.882226	-97.689161
York	FEIS Portion of the Preferred Alternative Route	801.37	-0.74	56693	Irrigation	115	80	40.877886	-97.699933
York	FEIS Portion of the Preferred Alternative Route	801.42	-0.51	74402	Irrigation	123	70	40.877872	-97.695158
York	FEIS Portion of the Preferred Alternative Route	801.47	-0.39	15971	Irrigation	112	73	40.877865	-97.692717
York	FEIS Portion of the Preferred Alternative Route	801.49	-0.07	59843	Irrigation	120	72	40.879742	-97.686928
York	FEIS Portion of the Preferred Alternative Route	801.52	0.27	9652	Irrigation	106	60	40.881456	-97.680908
York	FEIS Portion of the Preferred Alternative Route	801.70	-0.66	160290	Monitoring	98.199997	77.400002	40.873278	-97.695444
York	FEIS Portion of the Preferred Alternative Route	801.72	0.87	63639	Irrigation	114	71	40.882511	-97.6689
York	FEIS Portion of the Preferred Alternative Route	801.77	-0.84	11380	Irrigation	112	74	40.871217	-97.697922
York	FEIS Portion of the Preferred Alternative Route	801.80	-0.54	15989	Irrigation	110	0	40.872761	-97.692564
York	FEIS Portion of the Preferred Alternative Route	801.82	0.27	26513	Irrigation	109	64	40.877441	-97.678462
York	FEIS Portion of the Preferred Alternative Route	801.85	0.53	42639	Irrigation	105	70	40.8788	-97.673732
York	FEIS Portion of the Preferred Alternative Route	801.92	0.23	139612	Irrigation	130	80	40.875958	-97.678382

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	802.03	0.84	63640	Irrigation	130	75	40.877791	-97.666564
York	FEIS Portion of the Preferred Alternative Route	802.04	0.29	11189	Irrigation	105	69	40.874195	-97.676093
York	FEIS Portion of the Preferred Alternative Route	802.04	0.77	34296	Irrigation	113	71	40.875954	-97.667133
York	FEIS Portion of the Preferred Alternative Route	802.06	-0.10	11188	Irrigation	108	57	40.872361	-97.683119
York	FEIS Portion of the Preferred Alternative Route	802.11	-0.89	47845	Irrigation	100	65	40.868842	-97.697634
York	FEIS Portion of the Preferred Alternative Route	802.13	-0.44	53317	Irrigation	112	80	40.868928	-97.688417
York	FEIS Portion of the Preferred Alternative Route	802.19	0.53	72933	Irrigation	130	71	40.874181	-97.67134
York	FEIS Portion of the Preferred Alternative Route	802.25	-0.31	6654	Irrigation	107	60	40.868217	-97.685322
York	FEIS Portion of the Preferred Alternative Route	802.38	-1.00	31796	Irrigation	79	27	40.860768	-97.695069
York	FEIS Portion of the Preferred Alternative Route	802.38	-0.66	63004	Irrigation	90	50	40.863161	-97.68935
York	FEIS Portion of the Preferred Alternative Route	802.39	-0.61	63003	Irrigation	78	47	40.862697	-97.687683
York	FEIS Portion of the Preferred Alternative Route	802.54	0.21	11190	Irrigation	106	58	40.868961	-97.673981
York	FEIS Portion of the Preferred Alternative Route	802.55	0.39	72932	Irrigation	115	70	40.870685	-97.671376
York	FEIS Portion of the Preferred Alternative Route	802.76	0.88	11998	Irrigation	114	66	40.874153	-97.661792

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	802.76	0.70	40510	Irrigation	119	70	40.872294	-97.664222
York	FEIS Portion of the Preferred Alternative Route	802.85	0.50	95261	Irrigation	0	0	40.867407	-97.664172
York	FEIS Portion of the Preferred Alternative Route	802.88	-0.11	16987	Irrigation	83	35	40.862631	-97.674058
York	FEIS Portion of the Preferred Alternative Route	803.00	-0.54	152127	Irrigation	80	20	40.858044	-97.680028
York	FEIS Portion of the Preferred Alternative Route	803.03	-0.29	99842	Domestic	68	20	40.859388	-97.675504
York	FEIS Portion of the Preferred Alternative Route	803.06	0.07	60329	Irrigation	104	40	40.86161	-97.669294
York	FEIS Portion of the Preferred Alternative Route	803.24	0.12	59912	Irrigation	104	42	40.859781	-97.666821
York	FEIS Portion of the Preferred Alternative Route	803.26	0.62	82366	Irrigation	140	72	40.861526	-97.657456
York	FEIS Portion of the Preferred Alternative Route	803.34	0.91	14241	Irrigation	128	70	40.861511	-97.651569
York	FEIS Portion of the Preferred Alternative Route	803.43	-0.39	134366	Domestic	72	24	40.85479	-97.674712
York	FEIS Portion of the Preferred Alternative Route	803.48	0.09	46890	Irrigation	78	25	40.856014	-97.665626
York	FEIS Portion of the Preferred Alternative Route	803.57	0.89	201726	Irrigation	130	52	40.857873	-97.650497
York	FEIS Portion of the Preferred Alternative Route	803.66	0.04	51161	Irrigation	80	35	40.853294	-97.665757
York	FEIS Portion of the Preferred Alternative Route	803.83	0.44	69219	Irrigation	130	25	40.852459	-97.657369

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	803.86	-0.22	16299	Irrigation	125	0	40.849474	-97.669466
York	FEIS Portion of the Preferred Alternative Route	803.86	-0.82	82393	Irrigation	100	20	40.847054	-97.680343
York	FEIS Portion of the Preferred Alternative Route	803.87	-0.77	82392	Irrigation	110	30	40.847057	-97.679331
York	FEIS Portion of the Preferred Alternative Route	803.90	0.04	153611	Irrigation	140	71	40.849833	-97.664417
York	FEIS Portion of the Preferred Alternative Route	804.12	0.22	153617	Irrigation	120	50	40.847167	-97.659944
York	FEIS Portion of the Preferred Alternative Route	804.14	-0.50	26700	Irrigation	128	72	40.845093	-97.673407
York	FEIS Portion of the Preferred Alternative Route	804.17	0.48	21501	Irrigation	90	30	40.847237	-97.654948
York	FEIS Portion of the Preferred Alternative Route	804.19	-0.17	9552	Irrigation	138	75	40.845239	-97.66699
York	FEIS Portion of the Preferred Alternative Route	804.23	0.73	65368	Irrigation	196	39	40.847052	-97.650009
York	FEIS Portion of the Preferred Alternative Route	804.33	-0.77	182793	Irrigation	140	75	40.843083	-97.67825
York	FEIS Portion of the Preferred Alternative Route	804.41	-0.92	29052	Irrigation	134	74	40.836177	-97.678816
York	FEIS Portion of the Preferred Alternative Route	804.49	0.02	57180	Irrigation	248	80	40.841615	-97.662228
York	FEIS Portion of the Preferred Alternative Route	804.65	-0.67	9553	Irrigation	127	68	40.834409	-97.671736
York	FEIS Portion of the Preferred Alternative Route	804.71	-0.11	57181	Irrigation	130	79	40.837992	-97.662211

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	804.71	0.70	38026	Irrigation	105	47	40.844261	-97.649017
York	FEIS Portion of the Preferred Alternative Route	804.77	0.45	73719	Irrigation	135	85	40.841584	-97.652389
York	FEIS Portion of the Preferred Alternative Route	804.84	0.10	57179	Irrigation	128	76	40.837971	-97.657439
York	FEIS Portion of the Preferred Alternative Route	804.86	-0.66	132394	Livestock	0	0	40.831862	-97.669398
York	FEIS Portion of the Preferred Alternative Route	804.92	-0.25	72963	Irrigation	238	88	40.834368	-97.662193
York	FEIS Portion of the Preferred Alternative Route	805.22	0.73	73717	Irrigation	135	85	40.841584	-97.642845
York	FEIS Portion of the Preferred Alternative Route	805.23	0.30	37500	Irrigation	234	88	40.836088	-97.647888
York	FEIS Portion of the Preferred Alternative Route	805.33	0.82	73718	Irrigation	135	85	40.83796	-97.638058
York	FEIS Portion of the Preferred Alternative Route	805.45	0.49	73721	Irrigation	135	85	40.834336	-97.642814
York	FEIS Portion of the Preferred Alternative Route	805.53	0.72	73720	Irrigation	135	85	40.834336	-97.638043
York	FEIS Portion of the Preferred Alternative Route	805.56	-0.11	37501	Irrigation	141	80	40.829765	-97.652756
York	FEIS Portion of the Preferred Alternative Route	805.71	0.08	37499	Irrigation	140	80	40.827421	-97.649384
York	FEIS Portion of the Preferred Alternative Route	805.71	0.57	36669	Irrigation	239	84	40.825301	-97.64039
York	FEIS Portion of the Preferred Alternative Route	805.82	-0.20	183945	Irrigation	160	69	40.827083	-97.655167

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	805.99	-0.13	51761	Irrigation	248	88	40.824358	-97.654764
York	FEIS Portion of the Preferred Alternative Route	806.05	-0.50	132395	Livestock	0	0	40.823949	-97.662096
York	FEIS Portion of the Preferred Alternative Route	806.05	-0.50	132395	Livestock	0	0	40.823949	-97.662096
York	FEIS Portion of the Preferred Alternative Route	806.12	-0.50	132396	Livestock	0	0	40.821867	-97.662304
York	FEIS Portion of the Preferred Alternative Route	806.25	-0.89	168804	Irrigation	146	70	40.817694	-97.669306
York	FEIS Portion of the Preferred Alternative Route	806.25	-0.64	27047	Irrigation	149	70	40.817187	-97.664347
York	FEIS Portion of the Preferred Alternative Route	806.26	-0.85	170216	Irrigation	160	55	40.815278	-97.667528
York	FEIS Portion of the Preferred Alternative Route	806.28	-0.37	95955	Irrigation	160	84	40.817617	-97.659053
York	FEIS Portion of the Preferred Alternative Route	806.39	0.64	38539	Irrigation	229	87	40.821708	-97.640376
York	FEIS Portion of the Preferred Alternative Route	806.46	-0.48	62461	Irrigation	156	90	40.814592	-97.659578
York	FEIS Portion of the Preferred Alternative Route	806.49	0.09	27093	Irrigation	182	107	40.817436	-97.649282
York	FEIS Portion of the Preferred Alternative Route	806.58	0.29	16746	Irrigation	138	81	40.817168	-97.645054
York	FEIS Portion of the Preferred Alternative Route	806.61	0.66	32391	Irrigation	154	80	40.817727	-97.637901
York	FEIS Portion of the Preferred Alternative Route	806.61	-0.25	28289	Irrigation	147	83	40.814367	-97.654749

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	806.73	-0.69	15233	Irrigation	165	85	40.810477	-97.662085
York	FEIS Portion of the Preferred Alternative Route	806.77	-0.31	6922	Irrigation	149	77	40.811592	-97.654975
York	FEIS Portion of the Preferred Alternative Route	807.06	-0.39	28712	Irrigation	188	87	40.807243	-97.654699
York	FEIS Portion of the Preferred Alternative Route	807.06	0.40	16752	Irrigation	162	98	40.810798	-97.640348
York	FEIS Portion of the Preferred Alternative Route	807.15	-0.95	63598	Irrigation	160	80	40.803502	-97.664325
York	FEIS Portion of the Preferred Alternative Route	807.22	0.87	54746	Irrigation	156	81	40.810777	-97.630876
York	FEIS Portion of the Preferred Alternative Route	807.29	-0.51	16749	Irrigation	154	85	40.803515	-97.655477
York	FEIS Portion of the Preferred Alternative Route	807.38	-0.23	33021	Irrigation	158	97	40.803605	-97.649878
York	FEIS Portion of the Preferred Alternative Route	807.42	-0.51	44193	Irrigation	156	95	40.801759	-97.654675
York	FEIS Portion of the Preferred Alternative Route	807.54	0.24	16754	Irrigation	162	83	40.80355	-97.640352
York	FEIS Portion of the Preferred Alternative Route	807.59	-0.41	147159	Irrigation	160	70	40.799889	-97.651917
York	FEIS Portion of the Preferred Alternative Route	807.66	0.63	22972	Irrigation	160	81	40.803644	-97.632603
York	FEIS Portion of the Preferred Alternative Route	807.66	0.63	22972	Irrigation	160	81	40.803644	-97.632603
York	FEIS Portion of the Preferred Alternative Route	807.72	-0.05	32376	Irrigation	150	85	40.799823	-97.64498

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	807.77	-0.84	63321	Irrigation	156	90	40.796313	-97.6595
York	FEIS Portion of the Preferred Alternative Route	807.82	-0.60	28720	Irrigation	149	87	40.79635	-97.654786
York	FEIS Portion of the Preferred Alternative Route	807.89	-0.35	47911	Irrigation	175	95	40.796316	-97.649891
York	FEIS Portion of the Preferred Alternative Route	808.05	0.13	81435	Irrigation	161	75	40.796809	-97.639924
York	FEIS Portion of the Preferred Alternative Route	808.12	-0.61	41358	Irrigation	190	90	40.789059	-97.649898
York	FEIS Portion of the Preferred Alternative Route	808.24	0.11	76938	Irrigation	185	89	40.794511	-97.637974
York	FEIS Portion of the Preferred Alternative Route	808.26	-0.83	9236	Irrigation	173	85	40.784786	-97.650433
York	FEIS Portion of the Preferred Alternative Route	808.35	-0.87	28713	Irrigation	149	79	40.782536	-97.648019
York	FEIS Portion of the Preferred Alternative Route	808.36	0.11	201276	Domestic	154	82	40.793642	-97.636444
York	FEIS Portion of the Preferred Alternative Route	808.39	-0.26	167598	Irrigation	182	82	40.789017	-97.64029
York	FEIS Portion of the Preferred Alternative Route	808.45	-0.99	54606	Irrigation	182	85	40.780013	-97.647506
York	FEIS Portion of the Preferred Alternative Route	808.45	-0.50	153280	Domestic	151	75	40.78475	-97.63975
York	FEIS Portion of the Preferred Alternative Route	808.54	0.63	26553	Irrigation	156	82	40.799878	-97.630745
York	FEIS Portion of the Preferred Alternative Route	808.60	0.08	72839	Irrigation	169	90	40.791897	-97.632958

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	808.64	-0.74	31963	Irrigation	175	82	40.780728	-97.638569
York	FEIS Portion of the Preferred Alternative Route	808.75	-0.07	46232	Irrigation	187	82	40.789058	-97.631594
York	FEIS Portion of the Preferred Alternative Route	808.97	-0.52	66357	Irrigation	117	80	40.781805	-97.63091
York	FEIS Portion of the Preferred Alternative Route	809.06	0.60	9486	Irrigation	143	80	40.796323	-97.621334
York	FEIS Portion of the Preferred Alternative Route	809.15	-0.98	51591	Irrigation	145	80	40.774557	-97.630955
York	FEIS Portion of the Preferred Alternative Route	809.27	-0.26	69839	Irrigation	178	82	40.783614	-97.623747
York	FEIS Portion of the Preferred Alternative Route	809.30	-0.66	72926	Irrigation	169	80	40.778125	-97.625978
York	FEIS Portion of the Preferred Alternative Route	809.53	0.76	52404	Irrigation	208	95	40.796254	-97.611797
York	FEIS Portion of the Preferred Alternative Route	809.68	0.31	27995	Irrigation	195	88	40.789066	-97.6118
York	FEIS Portion of the Preferred Alternative Route	809.71	-0.81	64031	Irrigation	156	70	40.774553	-97.621421
York	FEIS Portion of the Preferred Alternative Route	809.74	0.05	44157	Irrigation	186	96	40.785368	-97.613106
York	FEIS Portion of the Preferred Alternative Route	809.79	-0.48	72927	Irrigation	170	70	40.778097	-97.616781
York	FEIS Portion of the Preferred Alternative Route	809.79	-0.19	82968	Irrigation	185	85	40.7818	-97.614267
York	FEIS Portion of the Preferred Alternative Route	810.01	0.58	72329	Irrigation	195	85	40.790868	-97.604645

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	810.08	-0.61	42971	Irrigation	150	55	40.77451	-97.61196
York	FEIS Portion of the Preferred Alternative Route	810.13	-0.18	34269	Irrigation	192	87	40.779972	-97.606971
York	FEIS Portion of the Preferred Alternative Route	810.39	0.00	42653	Irrigation	141	55	40.782133	-97.601828
York	FEIS Portion of the Preferred Alternative Route	810.46	-0.49	155978	Irrigation	160	72	40.774917	-97.602444
York	FEIS Portion of the Preferred Alternative Route	810.57	-0.45	159365	Irrigation	160	83	40.775139	-97.598333
York	FEIS Portion of the Preferred Alternative Route	810.62	0.26	29085	Irrigation	177	94	40.785366	-97.597503
York	FEIS Portion of the Preferred Alternative Route	810.69	0.43	16922	Irrigation	172	90	40.787172	-97.59266
York	FEIS Portion of the Preferred Alternative Route	810.80	0.37	152262	Domestic	145	97	40.785545	-97.591001
York	FEIS Portion of the Preferred Alternative Route	811.04	0.40	187810	Domestic	140	60	40.784389	-97.586806
York	FEIS Portion of the Preferred Alternative Route	811.11	-0.86	122081	Domestic	160	85	40.767691	-97.596382
York	FEIS Portion of the Preferred Alternative Route	811.12	-0.90	45822	Irrigation	170	85	40.767086	-97.596745
York	FEIS Portion of the Preferred Alternative Route	811.14	-0.17	59270	Irrigation	130	40	40.776439	-97.590045
York	FEIS Portion of the Preferred Alternative Route	811.26	0.64	211009	Domestic	157	0	40.786111	-97.580833
York	FEIS Portion of the Preferred Alternative Route	811.29	0.33	155525	Irrigation	180	40	40.781806	-97.582944

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	811.34	0.97	35790	Irrigation	192	92	40.788966	-97.575182
York	FEIS Portion of the Preferred Alternative Route	811.42	0.30	55017	Irrigation	221	85	40.780091	-97.580484
York	FEIS Portion of the Preferred Alternative Route	811.48	0.66	77374	Irrigation	208	98	40.781888	-97.57342
York	FEIS Portion of the Preferred Alternative Route	811.56	0.47	27934	Irrigation	186	90	40.779234	-97.575217
York	FEIS Portion of the Preferred Alternative Route	811.62	-0.52	152259	Domestic	123	59	40.769571	-97.589157
York	FEIS Portion of the Preferred Alternative Route	811.66	-0.47	133582	Domestic	180	74	40.769637	-97.588001
York	FEIS Portion of the Preferred Alternative Route	811.75	0.45	95062	Domestic	140	90	40.776919	-97.573183
York	FEIS Portion of the Preferred Alternative Route	811.83	0.51	55016	Irrigation	208	85	40.776443	-97.571132
York	FEIS Portion of the Preferred Alternative Route	811.83	0.82	28664	Irrigation	180	87	40.77534	-97.563928
York	FEIS Portion of the Preferred Alternative Route	812.01	-0.71	51592	Irrigation	186	80	40.766825	-97.591979
York	FEIS Portion of the Preferred Alternative Route	812.03	-0.98	28496	Irrigation	125	23	40.759203	-97.592104
York	FEIS Portion of the Preferred Alternative Route	812.11	-0.60	76475	Irrigation	145	65	40.761961	-97.585336
York	FEIS Portion of the Preferred Alternative Route	812.12	-0.07	170746	Irrigation	200	63	40.767427	-97.578302
York	FEIS Portion of the Preferred Alternative Route	812.26	0.46	60645	Irrigation	221	90	40.770928	-97.568797

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	812.48	0.52	66289	Irrigation	182	90	40.767467	-97.564025
York	FEIS Portion of the Preferred Alternative Route	812.55	-0.75	76552	Irrigation	0	0	40.758337	-97.585344
York	FEIS Portion of the Preferred Alternative Route	812.72	0.83	30461	Irrigation	177	99	40.766358	-97.556862
York	FEIS Portion of the Preferred Alternative Route	812.72	0.81	33692	Irrigation	100	40	40.762489	-97.555847
York	FEIS Portion of the Preferred Alternative Route	812.79	0.18	6469	Irrigation	70	24	40.760133	-97.567597
York	FEIS Portion of the Preferred Alternative Route	812.80	0.43	110840	Irrigation	110	18	40.760274	-97.562761
York	FEIS Portion of the Preferred Alternative Route	812.95	-0.75	92029	Heat Pump	64	16	40.75639	-97.585098
York	FEIS Portion of the Preferred Alternative Route	812.95	-0.83	101891	Domestic	67	18	40.756293	-97.586533
York	FEIS Portion of the Preferred Alternative Route	812.95	-0.83	101892	Domestic	64	18	40.756431	-97.586533
York	FEIS Portion of the Preferred Alternative Route	812.95	-0.55	137633	Domestic	55	14	40.756389	-97.581111
York	FEIS Portion of the Preferred Alternative Route	812.95	-0.73	133866	Domestic	56	14	40.75571	-97.5845
York	FEIS Portion of the Preferred Alternative Route	812.95	-0.73	127547	Domestic	50	19	40.755628	-97.584446
York	FEIS Portion of the Preferred Alternative Route	812.95	-0.85	191672	Domestic	78	20	40.756361	-97.586917
York	FEIS Portion of the Preferred Alternative Route	812.95	-0.75	92028	Heat Pump	68	16	40.75639	-97.585062

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	812.95	-0.60	108299	Domestic	80	12	40.756104	-97.582132
York	FEIS Portion of the Preferred Alternative Route	812.95	-0.62	119322	Domestic	54	17	40.755648	-97.582369
York	FEIS Portion of the Preferred Alternative Route	812.96	-0.76	122512	Domestic	70	25	40.75395	-97.584452
York	FEIS Portion of the Preferred Alternative Route	812.96	-0.62	123779	Domestic	55	18	40.754158	-97.581805
York	FEIS Portion of the Preferred Alternative Route	812.96	-0.48	122857	Domestic	51	17	40.755402	-97.579569
York	FEIS Portion of the Preferred Alternative Route	812.96	-0.50	115761	Domestic	60	15	40.755085	-97.579688
York	FEIS Portion of the Preferred Alternative Route	812.96	-0.53	210731	Domestic	62	20	40.755133	-97.580333
York	FEIS Portion of the Preferred Alternative Route	812.96	-0.51	115849	Domestic	60	15	40.754769	-97.579687
York	FEIS Portion of the Preferred Alternative Route	812.96	-0.63	119356	Domestic	53	16	40.753933	-97.581769
York	FEIS Portion of the Preferred Alternative Route	812.96	-0.58	119185	Domestic	53	16	40.753825	-97.580721
York	FEIS Portion of the Preferred Alternative Route	812.96	-0.61	122722	Domestic	66	21	40.753955	-97.581473
York	FEIS Portion of the Preferred Alternative Route	812.96	-0.57	134178	Domestic	96	3	40.754101	-97.580577
York	FEIS Portion of the Preferred Alternative Route	813.11	0.99	51558	Irrigation	105	35	40.762012	-97.552251
York	FEIS Portion of the Preferred Alternative Route	813.27	-0.16	45628	Irrigation	207	25	40.753378	-97.572083

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	813.31	0.52	81302	Irrigation	230	125	40.752972	-97.559242
York	FEIS Portion of the Preferred Alternative Route	813.33	0.78	154932	Irrigation	220	45	40.752816	-97.554299
York	FEIS Portion of the Preferred Alternative Route	813.41	-0.60	61155	Irrigation	78	21	40.751223	-97.580569
York	FEIS Portion of the Preferred Alternative Route	813.44	0.17	49083	Irrigation	199	29	40.751089	-97.565911
York	FEIS Portion of the Preferred Alternative Route	813.53	-0.30	33481	Irrigation	225	25	40.749658	-97.574794
York	FEIS Portion of the Preferred Alternative Route	813.54	-0.83	150139	Monitoring	30	0	40.747389	-97.584639
York	FEIS Portion of the Preferred Alternative Route	813.56	-0.97	82258	Irrigation	100	20	40.746761	-97.587097
York	FEIS Portion of the Preferred Alternative Route	813.56	-0.93	150141	Monitoring	30	0	40.746833	-97.586278
York	FEIS Portion of the Preferred Alternative Route	813.58	0.12	51254	Irrigation	214	26	40.749261	-97.566547
York	FEIS Portion of the Preferred Alternative Route	813.61	-0.84	150140	Monitoring	30	0	40.746278	-97.584556
York	FEIS Portion of the Preferred Alternative Route	813.63	-0.65	60536	Irrigation	78	21	40.745319	-97.580486
York	FEIS Portion of the Preferred Alternative Route	813.66	0.39	51704	Irrigation	210	24	40.749595	-97.561443
York	FEIS Portion of the Preferred Alternative Route	813.71	-0.30	76553	Irrigation	214	40	40.745784	-97.573503
York	FEIS Portion of the Preferred Alternative Route	813.80	-0.85	31482	Irrigation	70	18	40.742071	-97.58293

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	813.82	-0.06	7557	Irrigation	77	38	40.745375	-97.568575
York	FEIS Portion of the Preferred Alternative Route	813.88	0.17	79323	Irrigation	260	26	40.745587	-97.563979
York	FEIS Portion of the Preferred Alternative Route	813.90	1.00	61680	Irrigation	234	45	40.749106	-97.548946
York	FEIS Portion of the Preferred Alternative Route	814.04	-0.52	121227	Domestic	105	66	40.739447	-97.575026
York	FEIS Portion of the Preferred Alternative Route	814.04	-0.88	210294	Irrigation	225	26	40.738583	-97.582028
York	FEIS Portion of the Preferred Alternative Route	814.04	-0.41	16921	Irrigation	105	59	40.740348	-97.573413
York	FEIS Portion of the Preferred Alternative Route	814.18	-0.35	44563	Irrigation	98	30	40.738529	-97.570827
York	FEIS Portion of the Preferred Alternative Route	814.25	0.34	36564	Irrigation	150	50	40.742162	-97.558525
York	FEIS Portion of the Preferred Alternative Route	814.34	-0.02	153843	Irrigation	340	88	40.738556	-97.563917
York	FEIS Portion of the Preferred Alternative Route	814.41	0.65	45665	Irrigation	234	30	40.742097	-97.551885
York	FEIS Portion of the Preferred Alternative Route	814.44	0.86	10792	Irrigation	247	25	40.743167	-97.548058
York	FEIS Portion of the Preferred Alternative Route	814.46	0.32	101711	Livestock	100	70	40.739336	-97.557082
York	FEIS Portion of the Preferred Alternative Route	814.56	0.09	207098	Domestic	165	80	40.73655	-97.5601
York	FEIS Portion of the Preferred Alternative Route	814.59	-0.64	205856	Monitoring	97	89	40.731083	-97.571889

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	814.64	-0.74	205854	Monitoring	100	92.5	40.729722	-97.573083
York	FEIS Portion of the Preferred Alternative Route	814.72	-0.28	72928	Irrigation	234	75	40.731256	-97.564011
York	FEIS Portion of the Preferred Alternative Route	814.72	-0.83	99597	Irrigation	327	105	40.726846	-97.572853
York	FEIS Portion of the Preferred Alternative Route	814.72	-0.74	205855	Monitoring	100	92	40.727889	-97.571833
York	FEIS Portion of the Preferred Alternative Route	814.81	0.25	8900	Irrigation	271	66	40.736638	-97.556345
York	FEIS Portion of the Preferred Alternative Route	815.12	0.20	95695	Irrigation	240	105	40.731154	-97.552102
York	FEIS Portion of the Preferred Alternative Route	815.23	0.54	203926	Irrigation	360	88	40.731013	-97.544613
York	FEIS Portion of the Preferred Alternative Route	815.24	0.80	171719	Irrigation	350	126	40.731944	-97.539806
York	FEIS Portion of the Preferred Alternative Route	815.33	-0.56	139417	Irrigation	327	120	40.724008	-97.563939
York	FEIS Portion of the Preferred Alternative Route	815.54	-0.29	77375	Irrigation	338	118	40.722201	-97.556783
York	FEIS Portion of the Preferred Alternative Route	815.61	0.59	194177	Livestock	225	113	40.727595	-97.541519
York	FEIS Portion of the Preferred Alternative Route	815.68	-0.80	148883	Irrigation	315	113	40.716755	-97.56394
York	FEIS Portion of the Preferred Alternative Route	815.68	0.71	92023	Livestock	124	96	40.727462	-97.538854
York	FEIS Portion of the Preferred Alternative Route	815.74	0.31	61607	Irrigation	345	90	40.723926	-97.544866

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
York	FEIS Portion of the Preferred Alternative Route	815.79	0.86	156354	Irrigation	360	112	40.727278	-97.535306
York	FEIS Portion of the Preferred Alternative Route	815.94	0.49	119369	Livestock	180	80	40.722667	-97.539929
York	FEIS Portion of the Preferred Alternative Route	816.18	-0.66	69692	Irrigation	234	100	40.711411	-97.556826
York	FEIS Portion of the Preferred Alternative Route	816.31	-0.44	69597	Irrigation	217	114	40.711404	-97.552063
York	FEIS Portion of the Preferred Alternative Route	816.41	0.19	156066	Irrigation	312	102	40.71379	-97.540391
York	FEIS Portion of the Preferred Alternative Route	816.41	0.08	88806	Domestic	147	115	40.713447	-97.542324
York	FEIS Portion of the Preferred Alternative Route	816.50	-0.89	37886	Irrigation	299	105	40.702348	-97.554424
York	FEIS Portion of the Preferred Alternative Route	816.71	-0.98	37888	Irrigation	290	105	40.69938	-97.552473
York	FEIS Portion of the Preferred Alternative Route	816.74	-0.03	37318	Irrigation	240	105	40.709423	-97.540136
York	FEIS Portion of the Preferred Alternative Route	817.33	0.47	181208	Irrigation	240	86	40.709288	-97.525445
York	FEIS Portion of the Preferred Alternative Route	817.40	0.85	85644	Irrigation	305	0	40.70958	-97.516209
York	FEIS Portion of the Preferred Alternative Route	817.54	0.21	57037	Irrigation	247	90	40.702325	-97.525767
York	FEIS Portion of the Preferred Alternative Route	817.55	-0.15	122010	Irrigation	255	85	40.700743	-97.532217
York	FEIS Portion of the Preferred Alternative Route	817.68	0.69	82999	Irrigation	300	92	40.702333	-97.516306

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Fillmore	FEIS Portion of the Preferred Alternative Route	817.87	-0.43	179097	Irrigation	293	92	40.695082	-97.535811
Fillmore	FEIS Portion of the Preferred Alternative Route	818.04	0.06	55605	Irrigation	260	105	40.694764	-97.52607
Fillmore	FEIS Portion of the Preferred Alternative Route	818.26	0.50	73060	Irrigation	260	108	40.694831	-97.51667
Fillmore	FEIS Portion of the Preferred Alternative Route	818.27	-0.50	180467	Domestic	210	101	40.68835	-97.533633
Fillmore	FEIS Portion of the Preferred Alternative Route	818.55	-0.05	51285	Irrigation	261	110	40.68753	-97.523711
Fillmore	FEIS Portion of the Preferred Alternative Route	818.64	-0.62	36135	Irrigation	278	92	40.6803	-97.530354
Fillmore	FEIS Portion of the Preferred Alternative Route	818.73	0.28	31734	Irrigation	290	90	40.68915	-97.516566
Fillmore	FEIS Portion of the Preferred Alternative Route	818.73	0.90	208480	Irrigation	270	78	40.694639	-97.507167
Fillmore	FEIS Portion of the Preferred Alternative Route	818.90	0.60	7497	Irrigation	288	90	40.687089	-97.507611
Fillmore	FEIS Portion of the Preferred Alternative Route	819.28	-0.03	19979	Irrigation	264	85	40.679225	-97.515783
Fillmore	FEIS Portion of the Preferred Alternative Route	819.36	0.45	38315	Irrigation	299	91	40.681328	-97.507065
Fillmore	FEIS Portion of the Preferred Alternative Route	819.54	-0.94	140260	Domestic	240	90	40.669996	-97.529232
Fillmore	FEIS Portion of the Preferred Alternative Route	819.64	0.86	13008	Irrigation	290	92	40.680334	-97.497529
Fillmore	FEIS Portion of the Preferred Alternative Route	819.64	-0.26	5268	Irrigation	0	0	40.673009	-97.516631

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Fillmore	FEIS Portion of the Preferred Alternative Route	819.85	-0.96	15069	Irrigation	250	80	40.665804	-97.526747
Fillmore	FEIS Portion of the Preferred Alternative Route	819.86	0.19	168805	Irrigation	300	96	40.673077	-97.507076
Fillmore	FEIS Portion of the Preferred Alternative Route	820.10	-0.46	55190	Irrigation	286	90	40.665775	-97.516591
Fillmore	FEIS Portion of the Preferred Alternative Route	820.29	0.64	84201	Irrigation	312	122	40.673086	-97.497467
Fillmore	FEIS Portion of the Preferred Alternative Route	820.32	-0.09	31257	Irrigation	280	90	40.665381	-97.507089
Fillmore	FEIS Portion of the Preferred Alternative Route	820.46	0.40	97457	Irrigation	300	90	40.665857	-97.497434
Fillmore	FEIS Portion of the Preferred Alternative Route	820.72	-0.69	186477	Irrigation	300	97	40.658556	-97.516475
Fillmore	FEIS Portion of the Preferred Alternative Route	820.83	-0.21	76468	Irrigation	310	110	40.658582	-97.50708
Fillmore	FEIS Portion of the Preferred Alternative Route	820.86	-0.88	73320	Irrigation	312	80	40.651239	-97.516584
Fillmore	FEIS Portion of the Preferred Alternative Route	820.96	0.87	95972	Irrigation	295	97	40.665694	-97.487916
Fillmore	FEIS Portion of the Preferred Alternative Route	821.06	0.18	169829	Irrigation	300	92	40.658623	-97.497581
Fillmore	FEIS Portion of the Preferred Alternative Route	821.20	0.62	1958	Irrigation	300	97	40.65861	-97.487911
Fillmore	FEIS Portion of the Preferred Alternative Route	821.28	-0.50	177347	Irrigation	300	92	40.651224	-97.507214
Fillmore	FEIS Portion of the Preferred Alternative Route	821.32	-0.85	136197	Irrigation	300	98	40.647599	-97.51221

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Fillmore	FEIS Portion of the Preferred Alternative Route	821.49	-0.06	129627	Irrigation	307	96	40.651307	-97.497589
Fillmore	FEIS Portion of the Preferred Alternative Route	821.58	-0.44	99861	Domestic	235	110	40.647309	-97.502943
Fillmore	FEIS Portion of the Preferred Alternative Route	821.63	0.45	34948	Irrigation	310	101	40.653174	-97.487903
Fillmore	FEIS Portion of the Preferred Alternative Route	822.00	0.81	29643	Irrigation	296	90	40.65119	-97.47838
Fillmore	FEIS Portion of the Preferred Alternative Route	822.14	0.40	30065	Irrigation	276	100	40.643705	-97.482969
Fillmore	FEIS Portion of the Preferred Alternative Route	822.31	0.26	11840	Irrigation	172	100	40.642227	-97.485487
Fillmore	FEIS Portion of the Preferred Alternative Route	822.37	0.22	173251	Domestic	258	130	40.641226	-97.485884
Fillmore	FEIS Portion of the Preferred Alternative Route	822.46	-0.96	18202	Irrigation	254	90	40.63461	-97.506551
Fillmore	FEIS Portion of the Preferred Alternative Route	822.47	-0.46	51897	Irrigation	285	108	40.636816	-97.497477
Fillmore	FEIS Portion of the Preferred Alternative Route	822.48	0.31	32185	Irrigation	290	101	40.640081	-97.483463
Fillmore	FEIS Portion of the Preferred Alternative Route	822.56	-0.21	109148	Irrigation	300	66	40.636751	-97.492399
Fillmore	FEIS Portion of the Preferred Alternative Route	822.84	0.56	102880	Other	300	0	40.636276	-97.476888
Fillmore	FEIS Portion of the Preferred Alternative Route	822.94	-0.61	60023	Irrigation	288	115	40.629599	-97.497366
Fillmore	FEIS Portion of the Preferred Alternative Route	823.10	-0.13	27735	Irrigation	292	123	40.629613	-97.487853

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Fillmore	FEIS Portion of the Preferred Alternative Route	823.18	0.16	7636	Other	297	102	40.629756	-97.482016
Fillmore	FEIS Portion of the Preferred Alternative Route	823.19	-0.69	29767	Irrigation	299	92	40.625893	-97.497379
Fillmore	FEIS Portion of the Preferred Alternative Route	823.42	-0.17	62852	Irrigation	290	152	40.624152	-97.485462
Fillmore	FEIS Portion of the Preferred Alternative Route	823.47	-0.76	141276	Irrigation	278	100	40.615158	-97.487717
Fillmore	FEIS Portion of the Preferred Alternative Route	823.71	-0.18	168882	Irrigation	287	142.5	40.622421	-97.478391
Fillmore	FEIS Portion of the Preferred Alternative Route	823.76	-0.69	115096	Irrigation	268	88	40.61502	-97.47835
Fillmore	FEIS Portion of the Preferred Alternative Route	824.10	0.36	210210	Irrigation	300	91	40.629611	-97.468556
Fillmore	FEIS Portion of the Preferred Alternative Route	824.38	0.17	187821	Domestic	285	116	40.6245	-97.464389
Fillmore	FEIS Portion of the Preferred Alternative Route	824.49	-0.47	209804	Irrigation	289	95	40.615317	-97.468333
Fillmore	FEIS Portion of the Preferred Alternative Route	824.56	0.61	83244	Irrigation	300	95	40.629595	-97.458982
Fillmore	FEIS Portion of the Preferred Alternative Route	824.67	0.20	98952	Irrigation	300	100	40.622303	-97.458954
Fillmore	FEIS Portion of the Preferred Alternative Route	824.68	-0.15	22998	Irrigation	280	78	40.618624	-97.463546
Fillmore	FEIS Portion of the Preferred Alternative Route	825.02	0.56	178135	Irrigation	295	94	40.622375	-97.4493
Fillmore	FEIS Portion of the Preferred Alternative Route	825.03	-0.85	91305	Irrigation	277	98	40.607877	-97.46829

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Fillmore	FEIS Portion of the Preferred Alternative Route	825.11	0.83	35130	Irrigation	299	52	40.623704	-97.444039
Fillmore	FEIS Portion of the Preferred Alternative Route	825.26	0.93	159877	Irrigation	299	95	40.622251	-97.440002
Fillmore	FEIS Portion of the Preferred Alternative Route	825.35	0.24	99319	Irrigation	284	102	40.615055	-97.449339
Fillmore	FEIS Portion of the Preferred Alternative Route	825.54	0.10	181346	Irrigation	311	99	40.611706	-97.44922
Fillmore	FEIS Portion of the Preferred Alternative Route	825.60	-0.26	50916	Irrigation	273	105	40.607808	-97.454026
Fillmore	FEIS Portion of the Preferred Alternative Route	825.64	-0.95	149919	Domestic	240	92	40.601225	-97.4638
Fillmore	FEIS Portion of the Preferred Alternative Route	825.66	0.64	173986	Irrigation	305	101	40.615086	-97.439833
Fillmore	FEIS Portion of the Preferred Alternative Route	825.98	-0.57	164671	Irrigation	269	94	40.60069	-97.454132
Fillmore	FEIS Portion of the Preferred Alternative Route	825.99	-0.39	62897	Irrigation	282	105	40.600731	-97.449312
Fillmore	FEIS Portion of the Preferred Alternative Route	826.30	0.03	56057	Irrigation	286	105	40.604308	-97.439867
Fillmore	FEIS Portion of the Preferred Alternative Route	826.39	-0.75	146043	Irrigation	280	95	40.593523	-97.44482
Fillmore	FEIS Portion of the Preferred Alternative Route	826.43	0.92	148340	Irrigation	322	90	40.615019	-97.430118
Fillmore	FEIS Portion of the Preferred Alternative Route	826.47	0.38	14120	Irrigation	258	90	40.607877	-97.43401
Fillmore	FEIS Portion of the Preferred Alternative Route	826.51	-0.41	169825	Irrigation	300	92	40.597266	-97.439884

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Fillmore	FEIS Portion of the Preferred Alternative Route	826.74	-0.87	147804	Irrigation	300	95	40.589764	-97.439831
Fillmore	FEIS Portion of the Preferred Alternative Route	826.86	0.58	121831	Irrigation	300	92	40.607832	-97.425651
Fillmore	FEIS Portion of the Preferred Alternative Route	826.87	0.02	169826	Irrigation	329	170	40.6006	-97.430136
Fillmore	FEIS Portion of the Preferred Alternative Route	827.09	-0.43	64500	Irrigation	299	95	40.593318	-97.430182
Fillmore	FEIS Portion of the Preferred Alternative Route	827.14	0.13	37674	Irrigation	304	92	40.600512	-97.425293
Fillmore	FEIS Portion of the Preferred Alternative Route	827.18	0.91	27194	Irrigation	300	105	40.611341	-97.420715
Fillmore	FEIS Portion of the Preferred Alternative Route	827.18	0.68	126156	Irrigation	340	119	40.607827	-97.420644
Fillmore	FEIS Portion of the Preferred Alternative Route	827.25	0.24	209806	Irrigation	320	94	40.600556	-97.420833
Fillmore	FEIS Portion of the Preferred Alternative Route	827.29	0.86	5479	Irrigation	299	110	40.606003	-97.411177
Fillmore	FEIS Portion of the Preferred Alternative Route	827.33	-0.07	9625	Irrigation	270	85	40.596847	-97.424461
Fillmore	FEIS Portion of the Preferred Alternative Route	827.61	0.90	26654	Irrigation	268	80	40.601551	-97.406636
Fillmore	FEIS Portion of the Preferred Alternative Route	827.61	-0.04	60133	Irrigation	312	110	40.593276	-97.420806
Fillmore	FEIS Portion of the Preferred Alternative Route	827.75	-0.69	40831	Irrigation	290	92	40.586058	-97.429049
Fillmore	FEIS Portion of the Preferred Alternative Route	827.91	0.36	99103	Irrigation	332	104	40.593385	-97.411373

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Fillmore	FEIS Portion of the Preferred Alternative Route	828.05	-0.74	110887	Livestock	270	95	40.582179	-97.426404
Fillmore	FEIS Portion of the Preferred Alternative Route	828.22	0.76	62124	Irrigation	351	87	40.59329	-97.401716
Fillmore	FEIS Portion of the Preferred Alternative Route	828.36	-0.30	14131	Irrigation	270	90	40.582412	-97.416114
Fillmore	FEIS Portion of the Preferred Alternative Route	828.49	0.08	66636	Irrigation	352	84	40.584234	-97.40888
Fillmore	FEIS Portion of the Preferred Alternative Route	828.61	-0.63	118764	Irrigation	300	78	40.578726	-97.420706
Fillmore	FEIS Portion of the Preferred Alternative Route	828.67	0.41	59362	Irrigation	329	109	40.583077	-97.401601
Fillmore	FEIS Portion of the Preferred Alternative Route	828.78	-0.17	61349	Irrigation	283	121	40.578755	-97.411259
Fillmore	FEIS Portion of the Preferred Alternative Route	828.92	-0.76	91267	Domestic	240	90	40.573375	-97.420789
Fillmore	FEIS Portion of the Preferred Alternative Route	828.95	-0.46	155976	Irrigation	248	82	40.571576	-97.411245
Fillmore	FEIS Portion of the Preferred Alternative Route	829.01	0.14	19318	Irrigation	260	87	40.578881	-97.404526
Fillmore	FEIS Portion of the Preferred Alternative Route	829.06	0.24	139100	Irrigation	260	88	40.57885	-97.401825
Fillmore	FEIS Portion of the Preferred Alternative Route	829.28	0.07	60670	Irrigation	327	108	40.574897	-97.401514
Fillmore	FEIS Portion of the Preferred Alternative Route	829.40	0.78	72309	Irrigation	351	117	40.580493	-97.389909
Fillmore	FEIS Portion of the Preferred Alternative Route	829.51	0.33	36247	Irrigation	250	92	40.57497	-97.394923

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Fillmore	FEIS Portion of the Preferred Alternative Route	829.74	0.98	136198	Irrigation	280	77	40.578777	-97.382794
Fillmore	FEIS Portion of the Preferred Alternative Route	829.89	-0.41	119455	Irrigation	320	81	40.564295	-97.402032
Fillmore	FEIS Portion of the Preferred Alternative Route	829.91	-0.03	205091	Domestic	200	65	40.566833	-97.395611
Fillmore	FEIS Portion of the Preferred Alternative Route	830.03	0.25	28045	Irrigation	190	85	40.567753	-97.389931
Fillmore	FEIS Portion of the Preferred Alternative Route	830.04	0.70	136865	Irrigation	300	64	40.571389	-97.382927
Fillmore	FEIS Portion of the Preferred Alternative Route	830.15	-0.73	204484	Domestic	114	52	40.558383	-97.4042
Fillmore	FEIS Portion of the Preferred Alternative Route	830.16	0.01	104461	Irrigation	210	65	40.564252	-97.392373
Fillmore	FEIS Portion of the Preferred Alternative Route	830.48	-0.83	73978	Irrigation	296	112	40.553429	-97.401758
Fillmore	FEIS Portion of the Preferred Alternative Route	830.52	-0.90	42353	Irrigation	208	62	40.550651	-97.400601
Fillmore	FEIS Portion of the Preferred Alternative Route	830.60	0.59	206175	Domestic	172	77	40.566778	-97.381
Fillmore	FEIS Portion of the Preferred Alternative Route	830.84	-0.64	124335	Irrigation	212	66	40.549736	-97.39232
Fillmore	FEIS Portion of the Preferred Alternative Route	831.22	0.35	82123	Irrigation	136	20	40.553942	-97.373264
Fillmore	FEIS Portion of the Preferred Alternative Route	831.36	-0.40	35350	Domestic	130	62	40.549756	-97.386508
Saline	FEIS Portion of the Preferred Alternative Route	831.36	0.83	69809	Irrigation	130	30	40.553459	-97.363763

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Fillmore	FEIS Portion of the Preferred Alternative Route	831.40	-0.16	19317	Irrigation	100	12	40.549861	-97.3819
Fillmore	FEIS Portion of the Preferred Alternative Route	831.44	-0.43	60669	Irrigation	177	47	40.548511	-97.386756
Fillmore	FEIS Portion of the Preferred Alternative Route	831.46	0.13	72588	Irrigation	143	13	40.549914	-97.376283
Fillmore	FEIS Portion of the Preferred Alternative Route	831.54	0.33	171143	Irrigation	120	16	40.549322	-97.372272
Fillmore	FEIS Portion of the Preferred Alternative Route	831.56	-0.69	32152	Irrigation	140	21	40.546043	-97.391162
Fillmore	FEIS Portion of the Preferred Alternative Route	831.62	-0.26	83466	Irrigation	150	19	40.546417	-97.382964
Fillmore	FEIS Portion of the Preferred Alternative Route	831.66	-0.96	43322	Irrigation	120	20	40.541074	-97.394679
Fillmore	FEIS Portion of the Preferred Alternative Route	831.76	-0.37	83358	Irrigation	160	20	40.54253	-97.38278
Saline	FEIS Portion of the Preferred Alternative Route	832.28	0.97	201070	Monitoring	77.5	34	40.5515	-97.359694
Fillmore	FEIS Portion of the Preferred Alternative Route	832.29	-0.09	197028	Livestock	188	70	40.538861	-97.371111
Saline	FEIS Portion of the Preferred Alternative Route	832.29	0.98	201071	Monitoring	79.300003	31	40.551611	-97.359444
Saline	FEIS Portion of the Preferred Alternative Route	832.29	0.99	199954	Observation	35.200001	25.200001	40.551667	-97.359361
Fillmore	FEIS Portion of the Preferred Alternative Route	832.29	-0.09	197027	Livestock	186	74	40.538806	-97.371028
Saline	FEIS Portion of the Preferred Alternative Route	832.30	1.00	201072	Monitoring	76.599998	25	40.551694	-97.359167

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Saline	FEIS Portion of the Preferred Alternative Route	832.30	0.55	209098	Irrigation	185	74	40.546278	-97.363972
Saline	FEIS Portion of the Preferred Alternative Route	832.56	0.82	33882	Irrigation	208	72	40.54244	-97.353237
Saline	FEIS Portion of the Preferred Alternative Route	832.78	0.54	173193	Livestock	140	50	40.537694	-97.355805
Saline	FEIS Portion of the Preferred Alternative Route	832.88	0.88	63850	Irrigation	162	82	40.538703	-97.349358
Saline	FEIS Portion of the Preferred Alternative Route	833.01	-0.19	74110	Irrigation	168	76	40.529867	-97.366267
Saline	FEIS Portion of the Preferred Alternative Route	837.83	0.10	128865	Domestic	105	23	40.474502	-97.311259
Saline	FEIS Portion of the Preferred Alternative Route	839.11	0.21	93213	Domestic	165	36	40.464275	-97.293027
Saline	FEIS Portion of the Preferred Alternative Route	840.02	1.00	181052	Livestock	138	39	40.451194	-97.269778
Saline	Re-Route Portion of the Preferred Alternative Route	841.08	-0.44	164535	Domestic	145	30	40.433108	-97.293222
Saline	Re-Route Portion of the Preferred Alternative Route	841.28	0.17	172076	Domestic	134	35	40.434388	-97.281194
Saline	Re-Route Portion of the Preferred Alternative Route	845.80	-1.00	64731	Irrigation	154	94	40.366521	-97.28095
Saline	Re-Route Portion of the Preferred Alternative Route	845.82	0.32	209097	Irrigation	155	112	40.371889	-97.256861
Saline	Re-Route Portion of the Preferred Alternative Route	845.99	0.14	167335	Irrigation	150	103	40.368278	-97.259333
Saline	Re-Route Portion of the Preferred Alternative Route	846.03	-0.59	207221	Domestic	176	136	40.367139	-97.273222

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Saline	Re-Route Portion of the Preferred Alternative Route	846.09	-0.25	54496	Irrigation	169	124	40.36649	-97.266725
Saline	Re-Route Portion of the Preferred Alternative Route	846.39	-0.33	82318	Irrigation	170	120	40.362035	-97.267749
Saline	Re-Route Portion of the Preferred Alternative Route	846.51	-0.27	20339	Irrigation	167	110	40.361054	-97.266747
Saline	Re-Route Portion of the Preferred Alternative Route	846.87	0.54	18684	Irrigation	164	88	40.354451	-97.252469
Saline	Re-Route Portion of the Preferred Alternative Route	846.98	0.05	31722	Irrigation	180	120	40.353792	-97.261939
Saline	Re-Route Portion of the Preferred Alternative Route	846.98	-0.96	5011	Irrigation	0	0	40.355608	-97.280975
Saline	Re-Route Portion of the Preferred Alternative Route	847.03	-0.33	146556	Irrigation	180	111	40.353727	-97.269211
Jefferson	Re-Route Portion of the Preferred Alternative Route	847.12	-0.80	168021	Domestic	165	63	40.349778	-97.278139
Jefferson	Re-Route Portion of the Preferred Alternative Route	847.39	-0.42	146782	Irrigation	143	66	40.346528	-97.269639
Saline	Re-Route Portion of the Preferred Alternative Route	847.39	0.64	122375	Domestic	118	93	40.350432	-97.250156
Jefferson	Re-Route Portion of the Preferred Alternative Route	847.51	0.07	63475	Irrigation	143	70	40.346676	-97.260035
Jefferson	Re-Route Portion of the Preferred Alternative Route	847.75	-0.57	22695	Irrigation	140	42	40.339539	-97.269946
Jefferson	Re-Route Portion of the Preferred Alternative Route	847.76	-0.90	170160	Irrigation	187	82	40.332236	-97.269681
Jefferson	Re-Route Portion of the Preferred Alternative Route	847.83	-0.23	14893	Irrigation	134	46	40.339429	-97.259987

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Jefferson	Re-Route Portion of the Preferred Alternative Route	847.96	0.12	179070	Domestic	156	85	40.34375	-97.25575
Jefferson	Re-Route Portion of the Preferred Alternative Route	847.98	-0.71	124058	Irrigation	150	46	40.332182	-97.260001
Jefferson	Re-Route Portion of the Preferred Alternative Route	848.16	0.36	201247	Irrigation	131	49.5	40.34625	-97.250694
Jefferson	Re-Route Portion of the Preferred Alternative Route	848.30	-0.09	157312	Irrigation	140	52	40.339333	-97.250722
Jefferson	Re-Route Portion of the Preferred Alternative Route	848.37	0.59	81969	Irrigation	130	53	40.346287	-97.241297
Jefferson	Re-Route Portion of the Preferred Alternative Route	848.64	0.96	197820	Irrigation	108	72	40.346331	-97.231717
Jefferson	Re-Route Portion of the Preferred Alternative Route	848.69	-0.11	182633	Irrigation	160	68	40.335694	-97.246472
Jefferson	Re-Route Portion of the Preferred Alternative Route	848.74	-0.28	6224	Irrigation	0	0	40.333635	-97.248354
Jefferson	Re-Route Portion of the Preferred Alternative Route	848.92	-0.80	144761	Irrigation	212	82	40.324585	-97.250539
Jefferson	Re-Route Portion of the Preferred Alternative Route	849.04	0.21	31648	Irrigation	143	60	40.336089	-97.237752
Jefferson	Re-Route Portion of the Preferred Alternative Route	849.34	-0.56	25347	Irrigation	212	120	40.324454	-97.241313
Jefferson	Re-Route Portion of the Preferred Alternative Route	849.57	-0.16	154556	Irrigation	238	132	40.328111	-97.231694
Jefferson	Re-Route Portion of the Preferred Alternative Route	849.61	-0.65	207528	Irrigation	249	130	40.321083	-97.232639
Jefferson	Re-Route Portion of the Preferred Alternative Route	849.71	-0.90	155302	Irrigation	260	129	40.317194	-97.231861

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Jefferson	Re-Route Portion of the Preferred Alternative Route	849.71	0.61	36797	Irrigation	136	51	40.338701	-97.226236
Jefferson	Re-Route Portion of the Preferred Alternative Route	849.91	0.31	97965	Livestock	156	98	40.333874	-97.223613
Jefferson	Re-Route Portion of the Preferred Alternative Route	849.99	0.18	208982	Irrigation	197	90	40.331744	-97.222628
Jefferson	Re-Route Portion of the Preferred Alternative Route	850.07	-0.33	35614	Irrigation	220	130	40.324294	-97.223008
Jefferson	Re-Route Portion of the Preferred Alternative Route	850.21	0.78	68097	Irrigation	162	57	40.338831	-97.212793
Jefferson	Re-Route Portion of the Preferred Alternative Route	850.34	-0.53	112536	Domestic	177	123	40.32112	-97.222603
Jefferson	Re-Route Portion of the Preferred Alternative Route	850.45	-0.76	109145	Irrigation	247	130	40.317097	-97.222216
Jefferson	Re-Route Portion of the Preferred Alternative Route	850.72	-0.34	169433	Domestic	170	100	40.321111	-97.215306
Jefferson	Re-Route Portion of the Preferred Alternative Route	850.83	0.07	202526	Irrigation	230	111	40.324472	-97.208472
Jefferson	Re-Route Portion of the Preferred Alternative Route	850.98	0.41	171179	Irrigation	225	113	40.327972	-97.203444
Jefferson	Re-Route Portion of the Preferred Alternative Route	851.04	-0.11	129655	Domestic	190	118	40.320881	-97.206858
Jefferson	Re-Route Portion of the Preferred Alternative Route	851.05	-0.55	3350	Irrigation	0	0	40.31517	-97.210562
Jefferson	Re-Route Portion of the Preferred Alternative Route	851.05	-0.55	77651	Irrigation	214	100	40.31517	-97.210562
Jefferson	Re-Route Portion of the Preferred Alternative Route	851.10	0.18	130223	Irrigation	235	116	40.324193	-97.203455

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Jefferson	Re-Route Portion of the Preferred Alternative Route	851.16	0.87	5826	Irrigation	216	130	40.331427	-97.194005
Jefferson	Re-Route Portion of the Preferred Alternative Route	851.46	0.48	74892	Irrigation	214	113	40.32418	-97.194023
Jefferson	Re-Route Portion of the Preferred Alternative Route	851.55	-0.24	6349	Irrigation	0	0	40.315143	-97.201094
Jefferson	Re-Route Portion of the Preferred Alternative Route	851.57	-0.05	161504	Irrigation	235	117	40.317194	-97.198528
Jefferson	Re-Route Portion of the Preferred Alternative Route	851.77	0.08	31570	Irrigation	200	120	40.316926	-97.193978
Jefferson	Re-Route Portion of the Preferred Alternative Route	851.86	0.78	74893	Irrigation	186	83	40.324125	-97.184554
Jefferson	Re-Route Portion of the Preferred Alternative Route	851.89	0.41	213250	Domestic	210	112	40.3188	-97.187317
Jefferson	Re-Route Portion of the Preferred Alternative Route	852.07	0.61	111584	Irrigation	220	100	40.318676	-97.18217
Jefferson	Re-Route Portion of the Preferred Alternative Route	852.13	-0.34	32199	Irrigation	211	98	40.308996	-97.195134
Jefferson	Re-Route Portion of the Preferred Alternative Route	852.41	0.81	36153	Irrigation	200	95	40.316823	-97.175042
Jefferson	Re-Route Portion of the Preferred Alternative Route	852.46	0.10	152036	Irrigation	220	101	40.309528	-97.184639
Jefferson	Re-Route Portion of the Preferred Alternative Route	853.30	-0.30	170627	Irrigation	220	88	40.298761	-97.174902
Jefferson	Re-Route Portion of the Preferred Alternative Route	853.53	0.37	212179	Domestic	200	107	40.30675	-97.1664
Jefferson	Re-Route Portion of the Preferred Alternative Route	853.67	0.10	55201	Irrigation	221	116	40.302412	-97.165644

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Jefferson	Re-Route Portion of the Preferred Alternative Route	853.82	-0.38	118873	Irrigation	234	80	40.295137	-97.165683
Jefferson	Re-Route Portion of the Preferred Alternative Route	854.04	0.44	167639	Domestic	200	90	40.305444	-97.157083
Jefferson	Re-Route Portion of the Preferred Alternative Route	854.12	0.25	27339	Irrigation	200	116	40.302455	-97.156787
Jefferson	Re-Route Portion of the Preferred Alternative Route	854.30	0.63	37347	Irrigation	220	106	40.306886	-97.151301
Jefferson	Re-Route Portion of the Preferred Alternative Route	854.30	-0.22	30118	Irrigation	200	100	40.295158	-97.15614
Jefferson	Re-Route Portion of the Preferred Alternative Route	854.44	-0.58	31830	Irrigation	220	113	40.289612	-97.155808
Jefferson	Re-Route Portion of the Preferred Alternative Route	854.48	0.88	111927	Irrigation	207	93	40.309665	-97.146575
Jefferson	Re-Route Portion of the Preferred Alternative Route	854.62	-0.39	54896	Irrigation	221	114	40.291486	-97.151372
Jefferson	Re-Route Portion of the Preferred Alternative Route	854.80	-0.06	175316	Irrigation	248	119	40.295168	-97.146672
Jefferson	FEIS Portion of the Preferred Alternative Route	855.03	-0.48	172668	Irrigation	240	106	40.288053	-97.146835
Jefferson	FEIS Portion of the Preferred Alternative Route	855.15	0.41	53722	Irrigation	255	122	40.298925	-97.13744
Jefferson	FEIS Portion of the Preferred Alternative Route	855.22	0.17	194508	Irrigation	250	116	40.295194	-97.1375
Jefferson	FEIS Portion of the Preferred Alternative Route	855.24	0.56	36501	Irrigation	238	120	40.298716	-97.131227
Jefferson	FEIS Portion of the Preferred Alternative Route	855.30	0.67	33685	Irrigation	235	118	40.298858	-97.12861

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Jefferson	FEIS Portion of the Preferred Alternative Route	855.40	-0.40	160273	Monitoring	128.5	108.8	40.287444	-97.143361
Jefferson	FEIS Portion of the Preferred Alternative Route	855.57	-0.12	172813	Irrigation	257	114	40.287931	-97.137306
Jefferson	FEIS Portion of the Preferred Alternative Route	855.67	-0.82	46973	Irrigation	221	95	40.28059	-97.146739
Jefferson	FEIS Portion of the Preferred Alternative Route	855.68	0.22	55202	Irrigation	221	110	40.289674	-97.130823
Jefferson	FEIS Portion of the Preferred Alternative Route	855.85	0.25	78151	Irrigation	208	102	40.287865	-97.128455
Jefferson	FEIS Portion of the Preferred Alternative Route	855.97	-0.43	172733	Irrigation	234	112	40.280553	-97.137384
Jefferson	FEIS Portion of the Preferred Alternative Route	856.05	-0.33	37442	Irrigation	220	112	40.280501	-97.134875
Jefferson	FEIS Portion of the Preferred Alternative Route	856.14	0.65	190069	Irrigation	248	105	40.287932	-97.119063
Jefferson	FEIS Portion of the Preferred Alternative Route	856.25	-0.05	55203	Irrigation	218	114	40.280618	-97.128448
Jefferson	FEIS Portion of the Preferred Alternative Route	856.56	0.35	24607	Irrigation	273	100	40.28063	-97.119048
Jefferson	FEIS Portion of the Preferred Alternative Route	856.86	0.05	31897	Irrigation	240	102	40.274534	-97.119935
Jefferson	FEIS Portion of the Preferred Alternative Route	857.15	0.73	10404	Irrigation	215	96	40.278835	-97.107214
Jefferson	FEIS Portion of the Preferred Alternative Route	857.31	0.19	73420	Irrigation	250	118	40.271566	-97.111922
Jefferson	FEIS Portion of the Preferred Alternative Route	857.39	-0.07	36154	Irrigation	230	93	40.268015	-97.114337

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Jefferson	FEIS Portion of the Preferred Alternative Route	857.45	-0.87	162842	Irrigation	228	70	40.259023	-97.123966
Jefferson	FEIS Portion of the Preferred Alternative Route	857.55	-0.78	11062	Irrigation	159	50	40.258953	-97.121386
Jefferson	FEIS Portion of the Preferred Alternative Route	857.66	0.01	47927	Irrigation	247	79	40.266113	-97.109539
Jefferson	FEIS Portion of the Preferred Alternative Route	857.68	0.71	74246	Irrigation	257	88	40.273299	-97.100092
Jefferson	FEIS Portion of the Preferred Alternative Route	857.80	-0.52	112066	Irrigation	220	52	40.259232	-97.114584
Jefferson	FEIS Portion of the Preferred Alternative Route	858.04	0.88	67079	Irrigation	235	100	40.271446	-97.092995
Jefferson	FEIS Portion of the Preferred Alternative Route	858.25	-0.14	183177	Irrigation	220	62	40.258889	-97.105028
Jefferson	FEIS Portion of the Preferred Alternative Route	858.30	-0.03	32921	Irrigation	188	80	40.258929	-97.102671
Jefferson	FEIS Portion of the Preferred Alternative Route	858.60	0.42	77577	Irrigation	193	82	40.257087	-97.093011
Jefferson	FEIS Portion of the Preferred Alternative Route	858.62	-0.57	183176	Irrigation	295	60	40.251694	-97.110333
Jefferson	FEIS Portion of the Preferred Alternative Route	858.82	-0.07	21920	Irrigation	154	58	40.251611	-97.100124
Jefferson	FEIS Portion of the Preferred Alternative Route	859.08	0.62	145208	Irrigation	169	70	40.251636	-97.086152
Jefferson	FEIS Portion of the Preferred Alternative Route	859.25	-0.26	106572	Irrigation	120	50	40.244363	-97.10018
Jefferson	FEIS Portion of the Preferred Alternative Route	859.29	0.86	146783	Irrigation	145	62	40.251597	-97.08128

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Jefferson	FEIS Portion of the Preferred Alternative Route	859.83	-0.24	135705	Irrigation	350	108	40.237138	-97.095339
Jefferson	FEIS Portion of the Preferred Alternative Route	860.32	0.72	174404	Domestic	129	56	40.237829	-97.073138
Jefferson	FEIS Portion of the Preferred Alternative Route	861.74	-0.85	127755	Domestic	157	73	40.207323	-97.085261
Jefferson	FEIS Portion of the Preferred Alternative Route	862.27	0.33	101259	Irrigation	336	160	40.215255	-97.062456
Jefferson	FEIS Portion of the Preferred Alternative Route	862.63	0.60	156507	Irrigation	340	128	40.215222	-97.054861
Jefferson	FEIS Portion of the Preferred Alternative Route	862.93	0.28	183882	Irrigation	310	126	40.208167	-97.053222
Jefferson	FEIS Portion of the Preferred Alternative Route	863.04	-0.87	35653	Irrigation	157	116	40.196215	-97.069748
Jefferson	FEIS Portion of the Preferred Alternative Route	863.42	-0.37	35655	Irrigation	162	132	40.196122	-97.057734
Jefferson	FEIS Portion of the Preferred Alternative Route	863.48	-0.18	34815	Irrigation	168	136	40.197052	-97.054071
Jefferson	FEIS Portion of the Preferred Alternative Route	863.64	-0.87	105168	Domestic	220	140	40.189193	-97.062712
Jefferson	FEIS Portion of the Preferred Alternative Route	863.70	-0.53	35656	Irrigation	166	125	40.190036	-97.055016
Jefferson	FEIS Portion of the Preferred Alternative Route	863.79	0.25	45378	Irrigation	143	101	40.198165	-97.043532
Jefferson	FEIS Portion of the Preferred Alternative Route	863.79	0.93	137925	Irrigation	340	136	40.204301	-97.033618
Jefferson	FEIS Portion of the Preferred Alternative Route	863.99	0.39	37685	Irrigation	157	128	40.196642	-97.038934

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Jefferson	FEIS Portion of the Preferred Alternative Route	864.02	0.08	209729	Irrigation	155	120	40.193781	-97.043622
Jefferson	FEIS Portion of the Preferred Alternative Route	864.05	-0.37	138327	Domestic	157	128	40.189778	-97.050417
Jefferson	FEIS Portion of the Preferred Alternative Route	864.07	-0.20	178470	Domestic	153	123	40.190917	-97.047556
Jefferson	FEIS Portion of the Preferred Alternative Route	864.18	0.55	79754	Irrigation	153	102	40.195441	-97.03436
Jefferson	FEIS Portion of the Preferred Alternative Route	864.39	-0.69	33042	Irrigation	196	140	40.182997	-97.05407
Jefferson	FEIS Portion of the Preferred Alternative Route	864.39	-0.82	47800	Irrigation	205	146	40.182054	-97.056131
Jefferson	FEIS Portion of the Preferred Alternative Route	864.39	-0.49	55090	Irrigation	193	134	40.184426	-97.050822
Jefferson	FEIS Portion of the Preferred Alternative Route	864.44	-0.56	133089	Irrigation	231	130	40.18306	-97.051152
Jefferson	FEIS Portion of the Preferred Alternative Route	864.55	-0.16	52629	Irrigation	163	128	40.184996	-97.043768
Jefferson	FEIS Portion of the Preferred Alternative Route	864.77	0.39	36439	Irrigation	151	114	40.186797	-97.032835
Jefferson	FEIS Portion of the Preferred Alternative Route	864.89	-0.40	79755	Irrigation	222	110	40.178936	-97.043836
Jefferson	FEIS Portion of the Preferred Alternative Route	865.17	0.03	130219	Irrigation	202	102	40.179005	-97.034202
Jefferson	FEIS Portion of the Preferred Alternative Route	865.36	0.28	69131	Irrigation	256	88	40.177203	-97.027428
Jefferson	FEIS Portion of the Preferred Alternative Route	865.36	0.95	197990	Irrigation	240	91	40.181222	-97.015778

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Jefferson	FEIS Portion of the Preferred Alternative Route	865.62	-0.18	189085	Irrigation	204	124	40.171722	-97.034056
Jefferson	FEIS Portion of the Preferred Alternative Route	865.71	-0.89	174604	Irrigation	155	95	40.164299	-97.043813
Jefferson	FEIS Portion of the Preferred Alternative Route	865.88	0.17	106294	Irrigation	240	120	40.171711	-97.025042
Jefferson	FEIS Portion of the Preferred Alternative Route	866.07	-0.51	35684	Irrigation	176	124	40.164396	-97.034268
Jefferson	FEIS Portion of the Preferred Alternative Route	866.46	-0.79	38415	Irrigation	191	0	40.15709	-97.034289
Jefferson	FEIS Portion of the Preferred Alternative Route	866.48	-0.06	55702	Irrigation	164	106	40.162662	-97.022663
Jefferson	FEIS Portion of the Preferred Alternative Route	866.75	-0.34	123879	Irrigation	175	93	40.157217	-97.024845
Jefferson	FEIS Portion of the Preferred Alternative Route	866.83	0.77	46733	Irrigation	169	96	40.164542	-97.006136
Jefferson	FEIS Portion of the Preferred Alternative Route	867.01	0.08	208566	Irrigation	180	97	40.157194	-97.015556
Jefferson	FEIS Portion of the Preferred Alternative Route	867.25	0.53	19905	Irrigation	149	90	40.15757	-97.005937
Jefferson	FEIS Portion of the Preferred Alternative Route	867.35	-0.56	72507	Irrigation	182	110	40.148133	-97.022604
Jefferson	FEIS Portion of the Preferred Alternative Route	867.44	-0.17	80857	Irrigation	172	95	40.149903	-97.015475
Jefferson	FEIS Portion of the Preferred Alternative Route	867.53	-0.51	203691	Irrigation	177	102.5	40.14625	-97.020111
Jefferson	FEIS Portion of the Preferred Alternative Route	867.55	-0.69	23906	Irrigation	179	108	40.144564	-97.022595

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Jefferson	FEIS Portion of the Preferred Alternative Route	867.55	-0.91	35545	Irrigation	176	115	40.142677	-97.026124
Jefferson	FEIS Portion of the Preferred Alternative Route	867.84	0.64	45306	Irrigation	164	112	40.149938	-96.996507
Jefferson	FEIS Portion of the Preferred Alternative Route	867.87	-0.09	213134	Irrigation	241	99	40.146333	-97.009611
Jefferson	FEIS Portion of the Preferred Alternative Route	867.92	-0.81	193382	Irrigation	193	104	40.139	-97.020139
Jefferson	FEIS Portion of the Preferred Alternative Route	868.12	0.85	209099	Irrigation	140	60	40.150633	-96.99245
Jefferson	FEIS Portion of the Preferred Alternative Route	868.18	0.42	138505	Irrigation	175	92	40.146255	-96.998347
Jefferson	FEIS Portion of the Preferred Alternative Route	869.01	-0.10	165913	Domestic	85	31	40.131139	-97.003697
Jefferson	FEIS Portion of the Preferred Alternative Route	870.21	-0.72	67346	Irrigation	104	80	40.113659	-97.015385
Jefferson	FEIS Portion of the Preferred Alternative Route	870.34	-0.85	67541	Irrigation	95	65	40.111826	-97.017782
Jefferson	FEIS Portion of the Preferred Alternative Route	870.35	-0.97	147490	Irrigation	100	34	40.111722	-97.019972
Jefferson	FEIS Portion of the Preferred Alternative Route	870.71	-0.73	25152	Irrigation	113	63	40.106398	-97.015605
Jefferson	FEIS Portion of the Preferred Alternative Route	871.16	0.84	179903	Irrigation	187	125	40.099972	-96.985944
Jefferson	FEIS Portion of the Preferred Alternative Route	871.23	0.98	176302	Irrigation	187	107	40.098917	-96.983333
Jefferson	FEIS Portion of the Preferred Alternative Route	871.72	0.27	59869	Irrigation	115	115	40.091828	-96.996587

Response provided by: Jon Schmidt, exp

Appendix F - 4 Available Water Well Data within 1-mile of the Preferred Alternative Route									
County	Water Well Location in Reference to Project	Approx. Milepost[1]	Distance from C/L (miles)	Well ID	Use ID	Total Depth (ft)	Static Water Level	Latitude	Longitude
Jefferson	FEIS Portion of the Preferred Alternative Route	872.19	-0.25	37722	Irrigation	220	145	40.085028	-97.006483
Jefferson	FEIS Portion of the Preferred Alternative Route	872.40	0.15	176426	Irrigation	192	120	40.081972	-96.999056
Jefferson	FEIS Portion of the Preferred Alternative Route	872.58	0.40	63011	Irrigation	186	120	40.079327	-96.994424
Jefferson	FEIS Portion of the Preferred Alternative Route	872.61	0.77	179902	Irrigation	200	128	40.078667	-96.987444
Jefferson	FEIS Portion of the Preferred Alternative Route	872.62	0.63	156914	Irrigation	200	134	40.078583	-96.989944
Jefferson	FEIS Portion of the Preferred Alternative Route	872.65	0.50	158418	Irrigation	182	120	40.07825	-96.992417
Jefferson	FEIS Portion of the Preferred Alternative Route	872.72	-0.11	172943	Irrigation	222	141	40.077389	-97.004
Jefferson	FEIS Portion of the Preferred Alternative Route	872.72	0.07	191288	Irrigation	195	132	40.07725	-97.000583
Jefferson	FEIS Portion of the Preferred Alternative Route	873.01	-0.49	206215	Livestock	190	0	40.073278	-97.011306
Jefferson	FEIS Portion of the Preferred Alternative Route	873.16	0.26	161895	Irrigation	207	145	40.070806	-96.997194
Jefferson	FEIS Portion of the Preferred Alternative Route	873.21	-0.42	108525	Domestic	158	38	40.070191	-97.010048
Jefferson	FEIS Portion of the Preferred Alternative Route	875.38	0.90	182356	Livestock	110	50	40.03075	-96.986983

[1] Between MP 600.96 and 601.75, MP796.32 and 841.01, & MP 855.03 and 875.38 are features that were identified, reviewed, and assessed in the FEIS issued in August 2011
Source: http://dnrdata.dnr.ne.gov/wellscs

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality20.0

Reference: Nebraska Supplemental Environmental Report

ER Section: Appendix N, Crude Oil Fact Sheets

Comment:

A wide range of percentages is presented for xylene in Appendix N.

Requested Information:

Verify the range of values presented in Appendix N for percentage of xylene in light and heavy crude oils.

Response:

The range of xylene values presented in Appendix N as % by weight (not % by volume) is based upon information gathered for a wide variety of crude oil products.

Response provided by: Sandra Barnett, TransCanada

Nebraska Department of Environmental Quality 21.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Biological

Comment:

Section is incompletely referenced.

Requested Information:

Provide the source of the land cover data. Also include what year aerial was used for interpretation.

Response:

The land use data was developed from a combination of Bing imagery, USDA National Agriculture Imagery Program (NAIP) aerial imagery, and project-specific aerial imagery obtained over several years.

Bing imagery ranges from 2006 to 2012, NAIP from 2006, 2007, 2009, 2010, 2012, and project-specific imagery obtained from aerial over flights in 2009 and updated in 2010 and 2011.

Using these imagery sources, Keystone characterized the land use based upon the aerial signature. Field surveys in 2008-2012, in areas where access was available, confirmed land uses and that information was used to correct or update the land use data set. This methodology was used throughout the FEIS for the original Keystone Project as well as the Keystone XL FEIS.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 22.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Economics

Comment:

TransCanada is treating transmission lines for pump stations as a separate process. For substantial interconnections (such as the lengthy transmission lines that were needed to link Pump Station 22, 23, and 24 to the grid in the FEIS alternative). Discuss the baseline and impacts of these facilities.

Requested Information:

How many electrical substations are anticipated in Nebraska?

Response:

Comment:
Once a final pipeline route is known and pump station locations and load requirements are provided to NPPD, NPPD (and any affected wholesale partners) will then complete any required technical studies to evaluate what electrical facilities are required to serve the new load. If new transmission lines and/or substations are deemed necessary, NPPD will be responsible for obtaining all required approvals from local, state, and federal agencies, including approval by the Nebraska Power Review Board (PRB). As a State Agency, by statute, the PRB must consult with the Nebraska Game and Parks Commission (NGPC). This consultation is limited to impacts to Threatened and Endangered Species (T&E) or critical T&E species habitat. The NGPC must provide a determination, usually in the form of a letter, as to the potential for impact(s) of a project on T&E Species or their critical habitat for the PRB to then consider. The letter from the NGPC to the PRB may include activities the NGPC recommends or suggests to potentially avoid or minimize impacts of a project.

Response provided by: Steve Marr, TransCanada

Requested Information:

The total number of utility owed electric substations is expected to be eight. Each of the five pump stations will require a public power district substation owned to transformer the NPPD transmission line voltage from 115 kV to 6.9 kV. Keystone understands that NPPD may also be installing three additional switching substations under or adjacent to existing power lines. These switching substations will be the point of interconnection to the existing transmission system.

Response provided by: Steve Marr, TransCanada

Nebraska Department of Environmental Quality 23.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Economics

Comment:

Anticipated Volume (bpd)

Requested Information:

What is the updated, anticipated volume (bpd) - not capacity - for the Keystone XL during the initial years of operation?

Response:

Keystone believes that volumes will be near pipeline capacity in the first year after commencing service. Flows in the pipeline will depend on market conditions and have the potential to fluctuate during the course of a year.

Response provided by: Jim White, TransCanada

Nebraska Department of Environmental Quality 24.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Economics

Comment:

P. 30 "Local Workforce"

Requested Information:

What does “local” workforce mean? State residents or county residents? Is the 10 to 15 percent of the workforce from local communities, county, or state?

Response:

“Local” workforce refers to the workforce that is in the area of a spread.

Response provided by: Andrea Jalbert, TransCanada

Nebraska Department of Environmental Quality 25.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Economics

Comment:

p. 92 TABLES 3.10-5 AND NARRATIVE. Total County Project Costs

Requested Information:

Clarify what "Total County Project Costs" means. Construction costs? Asset value? Provide the detailed assumptions and calculations used to arrive at values in each column of the table. Describe in detail the method used to project the cost in each county "as if valued by the Nebraska Department of Revenue."

Include reference to Nebraska Department of Revenue statute and administrative code supporting the method.

Response:

Keystone will provide an answer to this data request by no later than Wednesday, September 19, 2012.

Response provided by: Andrea Jalbert, TransCanada

Nebraska Department of Environmental Quality 26.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Economics

Comment:

p 93 Table footnote: "Project costs for counties included due to reroutes have not been determined."

Requested Information:

What does this mean? "...for example Antelope County - a reroute county- is already included." If these need updating for reroute counties, provide.

Response:

That footnote should be deleted.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 27.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Economics

Comment:

p 108 "Provided qualified personnel are available, approximately 10 to 15 percent (50 to 100 people) could be hired from the local work force for each spread."

Requested Information:

Please clarify.

Response:

All workers need to be trained and certified for their specific field of work (e.g., welders would be qualified as required by 49 CFR 195.222 and the Project-specific PHMSA special condition 18). Keystone would attempt to hire construction staff from the local population through its construction contractors and subcontractors. Assuming that qualified personnel are available, based on the required resources / workforce for that spread, approximately 10 to 15 percent (50 to 100 people per spread) could be hired from the local work force for each spread.

Response provided by: Andrea Jalbert, TransCanada

Nebraska Department of Environmental Quality 28.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Economics

Comment:

p 109 "...In addition to the information noted above, Keystone will be providing NDEQ with an updated Nebraska-specific analysis on economic impacts based on the current preferred alternative route in Nebraska. The report will update both the construction and operation phase analyses."

Requested Information:

Please clarify. When will it be provided and what additional detail will be included?

Response:

Keystone will provide an answer to this data request by no later than Wednesday, September 19, 2012.

Response provided by: Andrea Jalbert, TransCanada

Nebraska Department of Environmental Quality 29.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Economics

Comment:

p. 109 Local Purchases

Requested Information:

What are the common goods and services for construction that TransCanada anticipates purchasing locally?

Response:

Keystone will provide an answer to this data request by no later than Wednesday, September 19, 2012.

Response provided by: Steve Marr, TransCanada

Nebraska Department of Environmental Quality 30.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Noise--no SER Sections

Comment:

Only the minimum number of types and quantities of equipment is provide for the different phases. This list appears to be abbreviated. This list needs to represent actual conditions so impacts can be accurately depicted. If actuals are not available, provide a similar list depicting maximum number and type of equipment.

Requested Information:

Expand the list to include equipment most likely to be used during each phase of construction of pipeline, pump stations, and worker camp. If this information is currently not available, include maximums.

Response:

In NDEQ SER Data Request response number 3, Keystone provides a break down and description of the equipment used in pipeline construction (table 3.12.1-8), Typical MLV Construction and Typical Pump Station Construction. The type/class, the number of each specific type of equipment and hours of usage are provided there.

Camp construction will be managed by a Camp Contractor that will be selected in 2013 from a group of experienced providers. Individual camp construction is expected to take between 60 and 90 calendar days, and may be executed on a 7day/week schedule. It is expected that the camp contractor will use local subcontractors for much of the camp infrastructure build. The camp site construction equipment will generally include: 2-225 class hoes, 1 small combination back hoe/end loader, 1 d7 class dozer, a platform hydraulic lift (50 hp diesel) and 2 10 cu yd dump trucks.

Response provided by: Bob Bradley, TransCanada

Nebraska Department of Environmental Quality 31.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 3.6.1

Comment:

"Vegetative types that occur along…"

Requested Information:

Describe desktop and field methodologies, and the data to go along with it.

Response:

Vegetation was determined through a review of aerial imagery (see response to 21 above) (Table 3.6-1) and verified by field surveys where access was granted. Mapping was accomplished in GIS through the creation of polygons around each change in vegetation type viewed on the imagery. Vegetation was classed based upon signatures seen in the imagery and the land use present (mainly agricultural) within the polygon.

Field methodology simply confirmed or verified vegetation type based on the dominant community type identified in the field. Additional information is found in section 3.6.2 for the mapping of grasslands. This methodology was used for the original Keystone mainline FEIS and the Keystone XL FEIS. This data was provided in the September 5, 2012 SER filing.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 32.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Biological

Comment:

DEQ needs to coordinate with the Nebraska Game and Parks Commission (NGPC) as part of their evaluation process. In order for the NGPC to evaluate the Reroute, NGPC has requested a copy of the Applicant Prepared Biological Assessment (BA) or similar document.

Requested Information:

Provide Applicant Prepared BA to DEQ.

Response:

To facilitate review and consultation under the Endangered Species Act (ESA), Keystone prepared an applicant-prepared Biological Assessment (BA). This document was provided in the Department of State (DOS) Environmental Report (ER) filed on September 7, 2012. This was strictly a voluntary effort by Keystone as the non-federal representative assisting the DOS in completion of their Section 7 ESA consultation obligations.

Under Section 7 of the Endangered Species Act (ESA), the lead federal agency has primacy under this federal statute. As lead federal agency, the US Department of State (DOS) will consult with the USFWS and Nebraska Game and Parks (and other state agencies), similar to what was done for the previous BA and Biological Opinion. DOS has assured Keystone they will consult with Nebraska Game and Parks accordingly. A copy of the BA can be requested by the NDEQ from the DOS.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 33.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 3.7.8

Comment:

SER analyzes fewer species than the FEIS.

Requested Information:

Provide clarity on how species were selected for evaluation.

Response:

The SER is focused on state listed species. The list studied was determined from review of state-listed species that occur, or may occur, in habitats and counties as documented by the Nebraska Game and Parks Commission using the University of Nebraska Lincoln information for Range Maps for Nebraska's Threatened and Endangered Species (2011) found through the website (http://digitalcommons.unl.edu/nebgamewhitepap/30/) and discussions with Nebraska Heritage Program staff regarding species locations within the state.

The DOS ER covers the federally listed species because the DOS is the lead federal agency for Section 7 ESA consultation. They will consult with the USFWS and other parties to complete their Section 7 consultation obligations. The USFWS confirmed the species list used for the previous BA was adequate to proceed with for this project (see also their species report website (http://ecos.fws.gov/tess_public/pub/stateListingAndOccurrenceIndividual.jsp?state=NE&s8fid=112761032792&s8fid=112762573902). DOS asked that the Sprague's pipit and Sage Grouse be added because of their pending status.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 34.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 2.1.1

Comment:

Provide an estimate of the number of additional access roads that will be needed along Reroute in addition to the 32 already identified. Break out into temporary vs permanent.

Requested Information:

Response:

The 3 new reroutes cover approximately 80 miles of the Nebraska pipeline route. Keystone estimates that as many as 20 new/additional access roads may need to be added.

Following construction, permanent access for pipeline operations is typically necessary at points along pipeline where above ground facilities are located. Primarily this would include access to MLV's and pump stations. Pump stations are located on property that the Company purchases and MLV access is obtained along with ROW.

Response provided by: Bob Bradley, TransCanada

Nebraska Department of Environmental Quality 35.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 2.1.10 SER (Air and Noise)

Comment:

Information on construction camps in the FEIS is general. Additional, detailed information is needed.

Requested Information:

Provide a more complete description of the construction camps, cradle to grave, from a noise emissions standpoint. What equipment will be used to build them, what equipment will be used during operations/occupancy, how many trucks, etc. will visit each day for resupply and support, what ancillary support facilities will be there (and making noise), how long will they be in use, and what equipment will be used to disassemble/remove and restore the site?

Response:

There has been no specific noise emission study performed for any proposed Keystone contractor camp location; however, noise emissions typical of construction equipment (ground scrapers, backhoes, tractors, trucks, cranes, etc.) at any commercial building construction site are anticipated during construction activities. Ninety percent of all camp structures are pre-fabricated off-site, trucked to the camp location, and off-loaded on support foundations.

Noise emissions during camp operations can generally be assumed to be typical of an apartment community or large hotel establishment and primarily associated with incoming and outgoing camp vehicular traffic. The camp is self-contained and will not require ancillary support facilities. The equipment used to disassemble and remove the camp facilities as well as restore the site is similar to those used to build the camp. Camps will be constructed and used through the period of construction.

Response provided by: Rick Perkins, TransCanada

Nebraska Department of Environmental Quality 36.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 2.1.11.1

Comment:

The only stream crossings that have been identified with crossing specifics are the 5 being HDD. Appendix F did not seem to indicate how streams would be crossed.

Requested Information:

Provide a table of the waterbodies along the Reroute that would likely be crossed and the methods used, such as using either the flume or dam and pump method. Or if not available, provide the decision process including methodology and criteria to be used to determine how streams are crossed.

Response:

Waterbodies crossed by the reroute portion of the preferred alternative route in Nebraska are provided in Appendix F of the SER. Keystone plans to cross the majority of streams in Nebraska using the open-cut wet method. The open-cut wet method is described in the CMRP (Details 11 and 12). The Project will utilize dry flume or dry dam-and-pump methods (Details 13 and 14) where technically feasible on environmentally sensitive waterbodies as warranted by resource-specific sensitivities (e.g., less than 30 feet wide and containing endangered/threatened species or high quality coldwater fisheries).

Stream crossing methodologies will be determined and finalized as part of the detailed engineering design work to be completed as soon as survey permissions are obtained and engineering and survey work is completed late in 2012 or early 2013.

Response provided by: Steve Craycroft, TransCanada

Nebraska Department of Environmental Quality 37.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 2.1.11.1 Non-Standard Construction Procedures, Waterbody Crossings - Perennial, page 26

Comment:

The SER states stream crossing TWAs "would be located at least 10 feet away from the water's edge, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land." It's been our experience that the 50 feet is common in most situations, and in those situations, the TWA matches the edge of the disturbed field. Best management practices establish TWA no closer than 10 feet from top of bank.

Requested Information:

Confirm whether stream crossing TWA's will be 10 feet or 50 feet from the water's edge. If 10 feet please explain why this is the case.

Response:

Keystone will follow the best management practice of a 10 foot setback from the water's edge. Keystone construction for the mainline, starting in 2008, through conclusion of construction in 2011 with the Cushing Extension used this setback. This setback was approved in all of the DOS review for the Keystone mainline FEIS and Keystone XL FEIS, as well as USACE permitting and state water quality certification in all the states crossed by Keystone mainline and Cushing Extension, including Nebraska. The 50-foot setback is a FERC guideline and not a requirement of permitting with agencies.

Response provided by: Steve Craycroft, TransCanada/Jon Schmidt, exp

Nebraska Department of Environmental Quality 38.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 3.1.2

Comment:

Section 2.1.10 of the SER indicates that each pump station will have three to five, approximate 6,500 horsepower electrically driven pumps; however, Section 2.2.1 of the FEIS indicates that each pump station would consist of up to six pumps driven by electric motors.

Requested Information:

Specify number of electrically driven pumps at each station. If this information is not available, the maximum number will be used for DEQ/DOS analysis.

Response:

The SER section 2.1.10 indication of 3 to 5 pumps/station is based on the most recent and up to date information regarding system capacity requirements. The earlier FEIS statements were based on previous system requirements, and were intended to cover a broader range of system options.

Response provided by: Bob Bradley, TransCanada

Nebraska Department of Environmental Quality 39.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 3.5.3

Comment:

No reference to Natural Resource District permits in the SER.

Requested Information:

Clarify what would and wouldn't be covered by permits and oversight.

Response:

Natural Resource Districts in Nebraska primarily permit new water wells, monitor water quality—especially with regard to Nitrate pollution, and monitor groundwater levels and use. At this time, Keystone does not contemplate installing groundwater wells for use during the project.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 40.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 3.8.1

Comment:

Report lacks discussion of types of land crossed or avoided in the Land Use section. Cross reference this type of information in appropriate sections.

Requested Information:

Provide discussion of federal, state, or other public land crossed or avoided by the reroute in the land use section. Reference this information in the wildlife and terrestrial vegetation discussion. For example a reference to these in section 3.6.2 would be beneficial. Provide GIS coverage of these lands.

Review Section 3.9 of the FEIS and provide updated data and tables to reflect information related to the Nebraska reroute.

Response:

The Nebraska SER includes information on the preferred alternative route in Nebraska. Where possible, that information was broken down into the reroute and FEIS portions of the preferred alternative route, but in most cases this could not be accomplished. A comparison between land use and vegetation are not possible with the information that Keystone has available. Land use classes are based upon the use of the land visible in aerial imagery and verified with field surveys. Vegetative cover is based upon the vegetative signatures seen in aerial imagery and is designed to identify major vegetative communities, independent of land use. Although some names of land use classes are similar to vegetative communities, they are not collected or examined in like fashion. For example, agricultural land use can cover rangeland, cropland, irrigated hayfields, and disturbed land around farming facilities/buildings. The same area may

be classified from a vegetative standpoint as grassland or row crops, inclusive of farming facilities/buildings.

As requested, Section 3.8.1 and Table 3.8-1 have been revised and are presented below:

3.8.1 Land Ownership and Use

The preferred alternative route in Nebraska results in crossing no federal government-owned land. The route crosses a total of 4.16 miles of public land, consisting of 4.11 miles of state owned land and 0.05 miles of land owned by local governments. Lands along the preferred alternative route are primarily privately owned (270.29 miles). See Table 3.8-1 for details of the linear mileage crossed by the preferred alternative route, categorized by surface ownership. No tribal reserve lands are crossed by the preferred alternative route.

Table 3.8-1 Surface Ownership Crossed by the Proposed Project

State	Percent of Total Length	Miles Crossed[1]	Ownership Type
Nebraska	98.2%	270.29	Private
	1.5%	4.11	State
	0.02%	0.05	Local Government

[1] Provides the linear mileage crossed by the preferred alternative route of the Project, categorized by surface ownership. Includes Highway ROW.
NOTE: This table reflects a compendium of data sources from plat books and deed records from NE counties, cadastral survey data, and from GAP analysis data from USGS (http://gapanalysis.usgs.gov/) , and Keystone Project field survey data. Any small discrepancies indicated in these summary numbers are due to rounding.

As requested, Keystone provides below a roadmap of how the SER has already provided updated information found in the FEIS:

The Nebraska portion of FEIS Table 3.9.1-1 has been updated in the Nebraska Supplemental Environmental Report (SER) Table 3.8-1 above. The Nebraska portion of FEIS Table 3.9.1-2 has been updated in the SER Table 3.8-3. FEIS Table 3.9.1-3 has been updated in the SER Table 3.8-3. The Nebraska portion of FEIS Table 3.9.1-4 has been updated in the SER Table 2.1-1. The Nebraska portion of FEIS Table 3.9.1-5 has been updated in the SER Table 2.1-1. FEIS Table 3.9.1-6 has been updated in the SER Table 3.8-3. FEIS Table 3.9.1-7 has been updated in the table below.

Response provided by: Jon Schmidt, exp

Total Nebraska Acreages of Largest Crops Grown, 2011			
Crop	State Harvested Acres		
Corn for Grain	9,600		
Soybeans	4,830		
Hay, All	2,480		
Wheat All	1450		
Total Principal Crops	18,360		
Source: USDA NASS Quick Stats, accessed September, 2012			

The Nebraska portion of FEIS Table 3.9.1-9 has been updated in SER Table 3.8-4. The Nebraska portion of FEIS Table 3.9.1-10 is updated in the attached forested lands table. The Nebraska portion of FEIS Table 3.9.1-11 is updated in the table below.

Number of Structures within 25 and 500 Feet of Construction ROW		
State	**Within 25 ft**	**Within 500 ft**
Nebraska		
Residence	0	27
Non-Residence	0	318

NOTE: Non-Residence = outbuildings, commercial structures, windmills

The Nebraska portion of FEIS Table 3.9.1-12 is updated in the table provided in response to SER DR Number 41. The Nebraska portion of FEIS Table 3.9.1-13 is updated in SER Table 2.1-1. The Nebraska portion of FEIS Table 3.9.1-14 is updated in SER Table 3.8-3. The Nebraska portion of FEIS Table 3.9.1-15 is updated in SER Table 3.3-2. The Nebraska portion of FEIS Table 3.9.2-1 is updated in SER Table 3.8-4. The Nebraska portion of FEIS Table 3.9.2-2 is updated in SER Appendix F-1. FEIS Table 3.9.3-1 does not have a Nebraska component. FEIS Section 3.9.4 Connected Actions deals with transmission line and substation impacts. Since the transmission line and substation locations are not yet known for the Nebraska preferred alternative route, no impacts information can be included at this time. The SER Section 6.0 provides an explanation of the electric power line siting and approval process for Nebraska.

Response provided by: Jon Schmidt, exp

Each FEIS Section 3.9 subsection has a corresponding subsection in either Section 2.0 or Section 3.0 of the SER. Those subsections also provide updates to Nebraska specific information presented in the FEIS.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 41.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 3.8.2

Comment:

DEQ requested location by MP for churches, residences, schools, daycare facilities, and other high consequence areas within 250 ft of the construction ROW - information is only provided for within 50 feet of the preferred route.

Requested Information:

Provide GIS coverage of surveys conducted for all structures and other features such as cemeteries.

Response:

Keystone did not survey a corridor wider than 500 feet centered over the proposed pipeline centerline for cultural resources and 300 feet for biological and listed species resources. None of the features identified above were found within the 500 foot cultural survey or 300 foot biological survey corridor where surveys access was available.

HCAs were provided to Keystone by the USDOT-PHMSA. Keystone understands that NDEQ has obtained the HCAs from USDOT-PHMSA. None of the features identified above are HCAs.

Using aerial interpretation and a GIS-based search of the US Census Bureau's Topologically Integrated Geographic Encoding and Referencing (TIGER) system, the following table was generated and includes all known structures within 250 feet of the Project construction ROW. Ninety-five structures, of which seven are residences and two are cemeteries, were located. The structures designation could be as diverse as: storage units, silos, windmills, commercial buildings, farm outbuildings, industrial buildings, and garages.

Response provided by: Jon Schmidt, exp

Residences and Other Structures within 250 Feet of the Project Construction ROW	
Category	**Approx. MP**
STRUCTURE	610.60
STRUCTURE	612.12
STRUCTURE	618.29
STRUCTURE	618.59
STRUCTURE	627.20
STRUCTURE	627.21
STRUCTURE	630.92
STRUCTURE	630.93
STRUCTURE	630.96
STRUCTURE	633.13
STRUCTURE	633.14
STRUCTURE	633.15
STRUCTURE	633.15
STRUCTURE	633.16
STRUCTURE	633.17
STRUCTURE	644.48
STRUCTURE	645.96
RESIDENCE	651.38
STRUCTURE	660.01
STRUCTURE	665.26
STRUCTURE	673.90
STRUCTURE	680.65
RESIDENCE	695.31
RESIDENCE	715.11
STRUCTURE	715.14
STRUCTURE	715.14
STRUCTURE	715.15
STRUCTURE	715.15
STRUCTURE	715.16
STRUCTURE	715.17
STRUCTURE	715.18

Response provided by: Jon Schmidt, exp

Residences and Other Structures within 250 Feet of the Project Construction ROW	
Category	**Approx. MP**
STRUCTURE	715.18
STRUCTURE	715.18
STRUCTURE	718.11
STRUCTURE	718.11
STRUCTURE	718.11
STRUCTURE	718.15
RESIDENCE	718.15
STRUCTURE	718.18
STRUCTURE	718.19
STRUCTURE	718.19
STRUCTURE	719.14
STRUCTURE	719.14
STRUCTURE	719.14
STRUCTURE	719.15
STRUCTURE	719.15
STRUCTURE	719.15
STRUCTURE	719.15
STRUCTURE	719.15
STRUCTURE	719.16
STRUCTURE	721.10
STRUCTURE	721.13
STRUCTURE	722.14
STRUCTURE	722.14
STRUCTURE	723.09
CEMETARY	726.10
STRUCTURE	727.08
RESIDENCE	727.10
STRUCTURE	727.14
STRUCTURE	727.68
RESIDENCE	744.42
STRUCTURE	744.45
STRUCTURE	744.49

Response provided by: Jon Schmidt, exp

Residences and Other Structures within 250 Feet of the Project Construction ROW	
Category	**Approx. MP**
STRUCTURE	745.92
STRUCTURE	747.49
STRUCTURE	747.49
STRUCTURE	752.31
STRUCTURE	752.33
RESIDENCE	752.35
STRUCTURE	752.37
STRUCTURE	752.37
STRUCTURE	752.38
STRUCTURE	767.15
STRUCTURE	767.59
STRUCTURE	767.78
STRUCTURE	770.49
STRUCTURE	770.50
STRUCTURE	770.65
STRUCTURE	770.65
STRUCTURE	770.66
STRUCTURE	770.67
STRUCTURE	770.68
STRUCTURE	771.18
STRUCTURE	782.90
STRUCTURE	784.38
STRUCTURE	790.87
STRUCTURE	790.87
STRUCTURE	795.58
STRUCTURE	800.18
STRUCTURE	811.90
STRUCTURE	825.53
STRUCTURE	829.92
STRUCTURE	829.93
STRUCTURE	832.38
CEMETARY	832.39

Response provided by: Jon Schmidt, exp

Residences and Other Structures within 250 Feet of the Project Construction ROW	
Category	**Approx. MP**
STRUCTURE	839.25
STRUCTURE	862.22

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 42.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 3.8.5

Comment:

Conservations Easements

Requested Information:

Does the proposed Reroute affect any lands subject to conservation easements (other than CRP)?

Response:

The only known conservation easements impacted by the project, are Conservation Reserve Program (CRP) easements as discussed in SER Section 3.8.5 and as depicted in SER Table 3.8-4. These CRP tracts were identified through landowner consultation. As explained in Section 3.8, Keystone does not have access to other conservation databases, such as conservation easements, Nebraska Land Trust easements, or other conveyances on property to provide a conservation benefit.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 43.0

Reference: Nebraska Supplemental Environmental Report

ER Section: Appendix L, CMRP, 2.7 Access, page 4; 4.7 Trenching, page 24; 4. Welding, Field Joint Coating, and Lowering In, page 26

Comment:

What is the maximum distance Keystone will allow between wildlife crossings, which provide in each location: a gap in the spoil pile(s), a reasonably wide plug in the trench, and one-joint-long gap in the welded pipe?

Requested Information:

Provide maximum distance between wildlife crossings.

Response:

There is no maximum distance between gaps in the topsoil and spoil piles to permit landowners access and to facilitate the passage of livestock and wildlife across the ROW. Sufficiently sized gaps will be maintained in the topsoil and spoil piles at all identified trapper's trails, access and farm roads, and obvious livestock or wildlife trails. The sizing of the gaps will be based on surface contours and the potential volume of cross-ROW traffic. The sizing and also the location of the gaps will be determined with input from affected Landowners unless the Landowner requests or agrees prior to construction that these access points be blocked during construction.

Pipe will be strung in such a manner so as to leave a minimum ten (10) foot gap at intervals not to exceed 1,200 feet. If welding operations create a continuous line of pipe that may be left in the right-of-way for an extended period of time due to construction or weather constraints, a gap in the welded pipe will be provided to allow for access at farm road crossings and for the passage of livestock and wildlife. These gaps will generally coincide with gaps in the topsoil and spoil piles.

Where the ditch is excavated through lands where livestock and/or wildlife is confined or through agricultural fields where the Landowner needs to cross the ditch, a hard or soft plug will be left in the ditch or a temporary bridge will be installed generally coinciding with a gap in the topsoil and spoil piles.

Response provided by: Stephen Marr, TransCanada

Nebraska Department of Environmental Quality 44.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Cultural Resources

Comment:

Once Phase I surveys are complete, need to complete Phase II/III excavations and determine eligibility recommendations.

Requested Information:

Provide timing of Phase II/III surveys.

Response:

Section 3.9 of the SER provides an update to all cultural resource investigations conducted to date for the Nebraska preferred alternative route, including the name of the single report submitted to the DOS since the issuance of the FEIS. As stated in the opening paragraph of Section 3.9, the DOS will determine the National Register of Historic Places (NRHP) eligibility of all recorded sites, make any adverse effects determinations, and determine if any further surveys or mitigation measures are necessary. The SER Confidential Appendix K (supplied to NDEQ under separate cover) presents all sensitive cultural resource data including a full version of the report submitted to DOS since the issuance of the FEIS.

Until the DOS has determined site eligibility, there are no plans for conducting Phase II investigations. Phase III data recovery efforts would not be undertaken unless an NRHP-eligible site cannot be avoided.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 45.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Cultural Resources

Comment:

If historic properties (eligible) are identified, need to determine effects and mitigation measures.

Requested Information:

For surveys that have been completed to date, provide effects and mitigation measures for eligible historic properties.

Response:

As noted in the SER Section 3.9, the DOS, as lead federal agency for the Project, will be responsible for conducting all Section 106 consultations and will coordinate with the Nebraska State Historic Preservation Office to determine site eligibility. When DOS has finished reviewing the reports and determines their concurrence to the recommended measures outlined in Keystone's report, it will consult with the NE SHPO. Once the NE SHPO has concurred with DOS' findings, Keystone will develop mitigation measures to comply with the recommendations of the DOS/NE SHPO. The DOS has received all reports for Nebraska cultural resources investigations carried out to date, however, not all of these reports have been reviewed and forwarded on to the NE SHPO.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 46.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Cultural Resources

Comment:

Need to identify any trail crossings of new route.

Requested Information:

Identify potentially eligible trail crossings.

Response:

No trails, eligible or not eligible were identified in the Project vicinity during the cultural resources background research or during field surveys conducted to date. All resources identified during background research and during surveys are presented in the SER Appendix K.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 47.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Cultural Resources

Comment:

Need to complete surveys. What locations were surveyed? What is the timing for completing remaining survey? Provide interim survey information for surveys completed to date.

Requested Information:

The interim survey information should include, but not be limited to, figures depicting sites and structures, areas surveyed, and not surveyed. Provide information on the locations surveyed and the timing for remaining surveys.

Response:

All requested information is provided in SER Section 3.9 as well as within Confidential Cultural Resources Appendix K provided to the NDEQ under separate cover. The remaining surveys will be completed when landowner access is obtained and weather permitting. See response to DR 48 for information regarding site mapping.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 48.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Cultural Resources

Comment:

The report lacks a holistic discussion of the entire proposed alternative route through Nebraska.

Requested Information:

Provide a holistic discussion of the entire proposed alternative route through Nebraska. This discussion/figures would include sites and structures, areas surveyed, and not surveyed for the portions of the preferred alternative route and original FEIS route (that is still being proposed).

Response:

A complete discussion of the cultural resources setting for the Project in Nebraska is included in the report *A Phase I Cultural Resources Survey of the Steele City Segment in Nebraska of the Proposed Keystone XL Pipeline Project in Keya Paha, Rock, Holt, Garfield, Wheeler, Greeley, Boone, Nance, Merrick, Hamilton, York, Fillmore, Saline, and Jefferson Counties, Nebraska.* The report is included in Confidential Cultural Resources Appendix K provided to the NDEQ under separate cover. Digital files containing a map set showing surveyed areas, non-surveyed areas, and locations of cultural resource sites for all parts of the preferred alternative route will be filed on Monday, September 17, 2012.

Keystone filed addenda cultural resource reports for the FEIS routing through Nebraska with the DOS and NE SHPO from 2009 through 2011; these reports are part of the administrative record for the FEIS, issued in August 2011.

Response provided by: To discuss with NDEQ

Nebraska Department of Environmental Quality 49.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Wetlands

Comment:

Discussion of wetlands is far too general.

Requested Information:

Include more information collected during surveys. Identify all wetlands that are crossed (there appear to be more than the 27 indicated). Also add discussion of how wetlands would be impacted, or not, during and after construction. Provide wetland delineation report. If not, assumption will be made: that the effects of heat from the pipeline to wetlands is unknown, but there are potential impacts to wetland soils, hydrology, and vegetation.

Response:

All wetland and waterbody crossings in Nebraska are provided in Appendix F of the NDEQ SER, with wetlands along the project route listed in Appendix F-5. In the NDEQ SER submittal dated September 5, 2012, there are a total of 47 wetlands identified as being crossed by the preferred alternative route in Nebraska (Section 3.8.4 page 83).

See responses to DR Nos. 9 and 15 for information on when the wetland delineation report will be available.

Additional information on the impacts to wetlands during construction and operations is provided below. Most of this is found in the FEIS.

Construction

Response provided by: Jon Schmidt, exp

Impacts associated with pipeline and pump station construction, use of pipe/contractor yards, access roads, and other auxiliary facilities will be enumerated before construction and will be provided in the USACE Pre-Construction Notification package. Preliminary estimates of impacts to wetlands (some of which are based on desktop analysis) for the preferred alternative route in Nebraska is provided in Section 3.5.6 of the SER.

Construction of the pipeline would affect wetlands and their functions primarily during and immediately following construction activities, but permanent changes also are possible (FERC 2004). Wetlands function as natural sponges that trap and slowly release surface water, rain, snow melt, groundwater, and flood waters. Trees, root mats, and other wetland vegetation slow flood waters and distribute them over the floodplain. Wetlands at the margins of lakes, rivers, and streams protect shorelines and stream banks against erosion. Wetland plants hold the soil in place with their roots, absorb the energy of waves, and break up the flow of stream or river currents. This combined water storage and braking can lower flood heights and reduce erosion. The water-holding capacity of wetlands reduces flooding and prevents water logging of crops. Preserving and restoring wetlands, together with other water retention, can help or supplant flood control otherwise provided by expensive dredge operations and levees (EPA 2001).

Potential construction- and operations-related effects include:

- Loss of wetlands due to backfilling or draining;
- Modification of wetland productivity due to modification of surface and subsurface flow patterns;
- Temporary and permanent modification of wetland vegetation community composition and structure from clearing and operational maintenance (clearing temporarily affects the wetland's capacity to buffer flood flows and/or control erosion);
- Wetland soil disturbance (mixing of topsoil with subsoil with altered biological activities and chemical conditions that could affect reestablishment and natural recruitment of native wetland vegetation after restoration);
- Compaction and rutting of wetland soils from movement of heavy machinery and transport of pipe sections, altering natural hydrologic patterns, inhibiting seed germination, or increasing siltation;
- Temporary increase in turbidity and changes in wetland hydrology and water quality;
- Permanent alteration in water-holding capacity due to alteration or breaching of water-retaining substrates in the Rainwater Basin regions;
- Alteration in vegetation productivity and life stage timing due to increased soil temperatures associated with heat input from the pipeline; and
- Alteration in freeze-thaw timing due to increased water temperatures associated with heat input from the pipeline.

Response provided by: Jon Schmidt, exp

Operation Phase

Generally, the wetland vegetation community eventually would transition back into a community functionally similar to that of the wetland prior to construction, if pre-construction conditions such as elevation, grade, and soil structure are successfully restored (FERC 2004). In emergent wetlands, the herbaceous vegetation would regenerate quickly (typically within 3 to 5 years) (FERC 2004). Following restoration and re-vegetation, there would be few permanent effects on emergent wetland vegetation because these areas naturally consist of, and would be restored as an herbaceous community (FERC 2004). Herbaceous wetland vegetation in the pipeline right-of-way generally would not be mowed or otherwise maintained, although the CMRP Plan (Appendix L of the NDEQ SER) allows for annual maintenance of a 30-foot-wide strip centered over the pipeline. In forested and scrub-shrub wetlands, the effects of construction would be extended due to the longer period needed to regenerate a mature forest or shrub community.
Trees and shrubs would not be allowed to regenerate within the maintained right-of-way except within areas with HDD crossings; therefore, removal of forested and scrub-shrub wetland habitats due to pipeline construction would be long term, and the maintained right-of-way would represent a permanent conversion of forested and scrub-shrub wetlands to herbaceous wetlands. Restoration of some forested and scrub-shrub wetlands may be possible; however, long-term effects would remain.

Based on temperature modeling of the area surrounding the pipeline for the formally proposed 900,000 barrel per day flow rate (e.g., greater than the current proposed flow rate), operation of the proposed Project would cause slight increases in soil temperatures at the soil surface of 4 to 8˚ F primarily during January to May and November to December along the pipeline route in Nebraska (see Appendix L of the FEIS). Operation of the proposed Project would cause increases in soil temperature 6 inches below the surface of 10 to 15 ˚F with the largest increases occurring during March and April for the Project (see Appendix L of the FEIS).

While many plants, especially herbaceous annuals, would not produce root systems that would penetrate not much below 6 inches, some plants, notably native prairie grasses, trees, and shrubs, have root systems penetrating well below 6 inches. Soil temperatures closer to the pipeline burial depth may be as much as 40˚ F warmer than the ambient surrounding soil temperatures. In general, increased soil temperatures during early spring would cause early germination and emergence and increased productivity in wetland plant species. Increased soil temperatures also may stimulate root development (see Appendix L of the FEIS). Operation of the proposed Project also would cause slight increases in water temperatures where the pipeline crosses through wetlands because the pipeline will be buried 4-5 feet below the bottom of the waterbody. Effects would be most pronounced in small ponds and wetlands, as any excess heat would be quickly dissipated in large waterbodies and flowing waters. Small ponded wetlands may remain unfrozen later than surrounding wetlands and may thaw sooner than surrounding wetlands. Early and late migrant waterfowl may be attracted to and concentrated within these areas during spring and fall migrations.

Response provided by: Jon Schmidt, exp

Impact Reduction Procedures

Procedures outlined in the proposed Project CMRP Plan (Appendix L of the NDEQ SER) for wetland crossings would be implemented to minimize potential construction- and operations-related effects and wetlands affected by construction activities to ensure that potential effects would be primarily minor and short term. Wetlands would be restored to the extent practicable. Wetland impacts will further be avoided or minimized by horizontal directional drilling certain rivers and the associated riparian corridor to avoid impacts, locating the route next to existing utilities to minimize impacts, perpendicular crossing of riparian wetland features to minimize impacts where possible, and route variations to reduce the total length of the wetland crossing to minimize impacts (Appendix L – CMRP).

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 50.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 2.1.1

Comment:

This section indicates construction and operation emissions are quantified in the August 2011 FEIS; however, the construction and operational emissions presented in the FEIS (Table 3.12.1-9 and 3.12.1-10) does not reflect the Reroute in Nebraska. Original air quality comment on SER has not been not addressed.

Requested Information:

Provide Nebraska-specific construction and operations emissions.

Response:

The emissions anticipated for the Keystone project in Nebraska are not expected to be materially different than those presented in the Keystone XL FEIS as indicated in the SER filed with the NDEQ. The reference to the FEIS table and section is applicable regardless of the route taken in Nebraska. Equipment used for construction will have the same emissions as estimated in the FEIS for any route found in Nebraska. Operational emissions will be the same regardless of the route.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 51.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 2.1.1

Comment:

Since the general description and configuration of all pump stations presented in the FEIS remain accurate for the newly configured Project (according to SER Section 2.1.10), explain why the acreage disturbed during the construction of the Nebraska pump stations vary from 7.12 acres (PS-26) to 15 acres (PS-22 to PS-25) (see Table 2.1-1 in SER, Note 5)?

Requested Information:

Explain why there is only one pump station that requires 7.12 acres and the remainder of the stations require 15 acres? What's the difference?

Response:

As stated in the footnote of ER Table 2.1-1 pump station acreages are a nominal 15 acres each for the four pump stations that are tentatively sited. For PS-26 (sited on the FEIS portion of the preferred alternative route) the actual acreage is 7.12 acres. The acreage for PS-26 is based on a completed facility design and therefore the total acreage is known. For PS-22 to PS25, 15 acres represents the maximum acreage required. The actual size of the sites will be dependent upon the number of pump units required for the particular station, topographic profile, shape of the site, and electric power substation space requirements. Final acreages and footprints will be determined after the lands are selected and negotiations with the respective landowners for the purchase of the sites are completed.

Response provided by: Stephen Marr, TransCanada

Nebraska Department of Environmental Quality 52.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 2.1.10

Comment:

From FEIS, backup generators are not needed for the pump stations.

Requested Information:

Clarify what happens in the event of a power failure.

Response:

Back-up generators are required by PHMSA Special Condition 32 and will only be used to operate control equipment and motor operated MLVs in the event electric power becomes unavailable. Back-up generators are not used to power the pumps at the pump stations.

Pursuant to PHMSA Special Condition 32, mainline block valves, including those at pump stations, must be remotely controlled and actuated, and the SCADA system must be capable of closing the valve and monitoring the valve position, upstream pressure and downstream pressure so as to minimize the response time in the case of a failure. Remote power backup will ensure communications are maintained during inclement weather and power failures and will ensure mainline valves are capable of closure at all times.

Response provided by: Stephen Marr, TransCanada

Nebraska Department of Environmental Quality 53.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 2.1.3 Ancillary facilities summary

Comment:

"Check valves will be located downstream of major rivers…"

Requested Information:

Provide clarification on the meaning of "downstream" in the sentence.

Response:

Check valves are designed to be held open by flowing oil and to close automatically when oil flow stops or is reversed. Check valves will be located downstream of major rivers within the pipeline ROW. The word “downstream” in this instance refers to the direction of crude oil flow in the pipeline. The normal direction of flow in the pipeline is upstream to downstream (in the case of the Keystone XL pipeline in Nebraska, generally north to south).

Response provided by: Stephen Marr, TransCanada

Nebraska Department of Environmental Quality 54.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 2.1.8

Comment:

There is no noise analysis.

Requested Information:

Provide Reroute specific noise analysis.

Response:

There is no requirement to perform a noise analysis for the Project. The only noise impacts will be at the pump stations during the operational phase. It is not feasible to perform a noise analysis until the system is in operation.

Response provided by: Jim White, TransCanada

Nebraska Department of Environmental Quality 55.0

Reference: Nebraska Supplemental Environmental Report

ER Section: Appendix C, Attachment A, un-numbered pages at end of appendix

Comment:

Will the 2 spill scenarios in SER Appendix C, Attachment A be included in the PSRP and/or ERP? Besides describing the scenarios, include the situations and lessons learned.

Requested Information:

Two spill scenarios are included in SER Appendix C, Attachment A. Will Keystone include these 2 spill scenario write-ups in the PSRP and/or ERP?

Response:

Keystone will provide an answer to this data request by no later than Wednesday, September 19, 2012.

Response provided by: Andrea Jalbert/Sandra Barnett, TransCanada

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Nebraska Department of Environmental Quality 56.0

Reference: Nebraska Supplemental Environmental Report

ER Section: Appendix G - Noxious Weeds

Comment:

Is there a Noxious Weed Management Plan? If so it should be referenced in Appendix G and in the main document's text for 3.6 Terrestrial Vegetation. Sourcing should be accurate to depict where the mitigations for the management plan came from or how they were created.

Requested Information:

Noxious Weed Resource Report, include approach to managing weeds in wetlands and surface water areas.

Response:

Keystone will provide an answer to this data request by no later than Wednesday, September 19, 2012.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 57.0

Reference: Nebraska Supplemental Environmental Report

ER Section: Appendix N, Crude Oil Fact Sheets

Comment:

DEQ recognizes that each batch of crude oil has a unique set of physical and chemical properties. DEQ needs specific MSDS data for emergency responders in the case of a spill.

Requested Information:

Describe the mechanism by which DEQ will be provided MSDS data for the product being transported through the pipeline in the event of a spill. The process should outline the timeframe DEQ can expect to receive MSDS.

Response:

Keystone will provide an answer to this data request by no later than Wednesday, September 19, 2012.

Response provided by: Andrea Jalbert, TransCanada

Nebraska Department of Environmental Quality 58.0

Reference: Nebraska Supplemental Environmental Report

ER Section: Appendix N, Crude Oil Fact Sheets Page 3, Section 7 (Toxicological Information for Typical Heavy Oil)

Comment:

The fact sheet for "Typical Heavy Oil" states that "This product may contain benzene."

Requested Information:

Does Keystone anticipate that there would be instances where the product carried by the pipeline does not contain benzene? Please explain

Response:

Keystone will provide an answer to this data request by no later than Wednesday, September 19, 2012.

Response provided by: Andrea Jalbert, TransCanada

Nebraska Department of Environmental Quality 59.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Economics

Comment:

The FEIS stated that there would be 8 pipe stockpile sites, 3 railroad sidings, and 7 contractor yards in Nebraska.

Requested Information:

How do these estimates change with the Nebraska reroute? Based on footnote 6 to Table 2.1-1, the SER suggests the counts are now 9, 3, and 3, respectively. Is this correct?

Response:

As a result of the reroute in Nebraska, there will be approximately 9 contractor yards, 6 rail sidings, and 10 pipe stockpile sites.

Response provided by: Stephen Marr, TransCanada

Nebraska Department of Environmental Quality 60.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Economics

Comment:

p. 13 - 3. The FEIS states that construction camps will accommodate approximately 600 workers (p. 2-20). The SER states that the camp in Nebraska will accommodate up to 900 workers (p. 13).

Requested Information:

Please reconcile.

Response:

Each camp will contain 600 beds and 300 RV spots for a total of 900 people. Keystone intends conservatively intends to permit each camp for 1,000 residents to allow for those instances where there may be more than 1 person in an RV.

Response provided by: Rick Perkins, TransCanada

Nebraska Department of Environmental Quality 61.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Economics

Comment:

p. 13 - 3. 4. Work camp

Requested Information:

Would the development of a construction camp in northern Nebraska replace the one near Winner, SD? Which spreads would each camp support?

Response:

At the current time, the camp to be located in northern Nebraska is an additional camp requirement intended to support Spread 8. The Colome, South Dakota (Winner) camp will support Spread 7.

Response provided by: Rick Perkins, TransCanada

Nebraska Department of Environmental Quality 62.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Economics

Comment:

Based on Table 2.1-7 in the SER and section 2.3.5.1 in the FEIS, days to complete each spread are now as follows: Spread 8 – 154 days, Spread 9 – 150 days, Spread 10 – 164 days.

Requested Information:

Please verify.

Response:

Verified

Response provided by: Stephen Marr, TransCanada

Nebraska Department of Environmental Quality 63.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Economics

Comment:

p. 91 Temporary Housing

Requested Information:

What are the specific data sources for the temporary housing figures?

Response:

Data sources for temporary housing figures presented in Table 3.10-3 include US Census Bureau Fact Finder, Selected Housing Characteristics for determining total housing units, total rental units, rental rate vacancy and building permits. Internet searches, Delorme mapping, and phone conversations with individual hotel/motel establishments were used to determine hotel/motel rooms and RV sites.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 64.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Economics

Comment:

Effects of the first Keystone Pipeline may have had on property values along the pipeline route were previously requested by DEQ.

Requested Information:

Provide property value information available from the first Keystone Pipeline in Nebraska.

Response:

Information concerning the effects of the first Keystone pipeline in Nebraska on property values is not available.

Response provided by: Andrea Jalbert/Sandra Barnett, TransCanada

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Nebraska Department of Environmental Quality 65.0

Reference: Nebraska Supplemental Environmental Report

ER Section: Table 3.8-1 Surface Ownership

Comment:

Surface waters in Nebraska are waters of the State. The bed and the banks are owned by the adjacent property owners. Table lists 0.75 miles of "waterbody" ownership. The crossing at the Platte River by itself is at least 3200 feet long (5200 feet long including all side channels).

Requested Information:

Provide information on how ownership was determined. Provide a detailed explanation on how waterbody crossings are measured.

Response:

Ownership was determined using land parcel data from the Project's land parcel database which is compiled using the sources provided in the "**NOTE"** in the table below and which generally defines parcels that adjoin streams as owned to the stream bank and does not define ownership of the banks and bed of the stream. Therefore, the banks and bed were assigned to a 'waterbody' category rather than an actual ownership entity category. Using the NDEQ definition of ownership provided in its comment, Table 3.8-1 has been revised to remove the 'waterbody' category and include that mileage in the private ownership category. Unrelated to ownership, the width of waterbody crossings are defined by the ordinary high water mark determined at time of survey or estimated from desktop analysis where survey has not been conducted.

Response provided by: Jon Schmidt, exp

Table 3.8-1 Surface Ownership Crossed by the Proposed Project			
State	**Percent of Total Length**	**Miles Crossed[1]**	**Ownership Type**
Nebraska	98.2%	270.29	Private
	1.5%	4.11	State
	0.02%	0.05	Local Government

[1] Provides the linear mileage crossed by the preferred alternative route of the Project, categorized by surface ownership. Includes Highway ROW.

NOTE: This table reflects a compendium of data sources from plat books and deed records from NE counties, cadastral survey data, and from GAP analysis data from USGS (http://gapanalysis.usgs.gov/), and Keystone Project field survey data. Any small discrepancies indicated in these summary numbers are due to rounding.

Response provided by: Jon Schmidt, exp

Appendix H.2

Data Request Response 9/19/2012

Nebraska Department of Environmental Quality7.0

Reference: Nebraska Supplement Environmental Report

ER Section 2.1.3

Comment:

The locations of the mainline valves (MLVs/IMLVs) are needed for the Reroute analysis. Table 2.1-3 identifies the location of 4 valves in Nebraska.

Requested Information:

Provide shape files and a table listing, by milepost, the type and preliminary location of the remaining MLVs/IMLVs along the Reroute. Please provide a brief explanation of the factors that would determine final locations for the valves.

Response:

Factors that determine final locations for the valves are provided in the following excerpt from PMHSA Special Condition 32: "Keystone must design and install mainline block valves and check valves on the Keystone XL system based on the worst case discharge as calculated by 49 CFR § 194.105. Keystone shall locate valves in accordance with 49 CFR § 195.260 and by taking into consideration elevation, population, and environmentally sensitive locations, to minimize the consequences of a release from the pipeline. Mainline valves must be placed based on the analysis above or no more than twenty (20) miles apart, whichever is smaller."

Determining the final placement and number of valves is an iterative engineering design process. As indicated in the previously submitted response to Information Request No. 51 Keystone is currently in the process of siting pump stations PS-22 to PS-24 (and their associated MLVs). Also currently being sited are those valves located on each side of a water crossings more than 100 feet wide pursuant to 49 CFR § 195.260. Once the pump station and water crossing valves are selected and field verified (factors include landowner willingness, primary power supply infrastructure, construction and operations access, land use and terrain conditions, local permitting requirements, site constructability) Keystone will check to ensure valves are spaced at

no more that twenty miles apart pursuant to PMHSA Special Condition 32. Any additional valves, if required, would then need to be field verified. The next step would be to complete the worst case discharge analysis pursuant to 49 CFR § 194.105, and again, any additional valves, if required, would need to be field verified. Keystone anticipates that this MLV siting exercise would be completed and a full response to this request will be provided during the month of October 2012.

Response provided by: Stephen Marr, TransCanada

Nebraska Department of Environmental Quality 12.0

Reference: Nebraska Supplement Environmental Report

ER Section 3.8.7

Comment:

Requested Information:

Provide a description of the visual appearance of the above-ground facilities such as pump stations and the work camp for visual resources.

Response:

Pump Stations

Pump station acreages are a nominal 15 acres each for the four pump stations that are tentatively sited. Each new pump station typically would consist of series of three to five pumps each driven by a 6,500 HP electric motor, an electrical equipment shelter, a variable frequency drive equipment shelter, an electrical substation, 1 sump tank, 2 MLVs, a communication tower, a small maintenance and office building, and a parking area for station maintenance personnel. The electrical shelter would house the electrical systems and the communication and control equipment. Each site would also have storm water containment pond.

The pipe entering and exiting the pump station sites would be below grade. There would be an MLV installed on the entry pipe and on the exit pipe as required by 49 CFR 195.260 to allow isolation of the pump station equipment in the event of an emergency. The manifold connecting the pipeline to the equipment at each pump station would be aboveground and entirely within the pump station boundaries. Down-lighting would be used at the pump stations wherever possible to minimize impacts to wildlife. A security fence would be installed around the entire pump station site, and inspection and maintenance personnel would access the pump stations through a gate that would be locked when no one is at the pump station. Communication towers at pump stations generally would be approximately 33 feet high, but the antenna height at some pump stations may be greater based on final detailed engineering studies. In no event would antennae

exceed a maximum height of 190 feet. Keystone would use high-resolution internal line inspection, maintenance, and cleaning tools known as "pigs" during operation of the proposed Project. Pig launchers and receivers would be constructed and operated completely within the boundaries at some of the pump stations.

Each pump station would have a substation integrated into the general pump station layout. In some cases Keystone would share pump station land with the local utility for the installation of their substation. Sharing of substation land at the pump station would allow the utility to provide a second transformer to provide service to the rural customers in the area.

Figures 2.2.3-1 and 2.2.3-2 of the FEIS provide typical layouts for substations and pump stations. The attached photograph is of a Keystone pump station installed in 2010 in Cowley County, Kansas, and is representative of pump stations to be installed on the Keystone XL project in Nebraska.

Camp

The potential camp site in Nebraska would be about 50 - 100 acres in size to accommodate the camp and a contractor yard. The camp size includes space for about 600 beds and 300 recreational vehicles. The camp perimeter would be fenced.

The camp would be constructed using modular, single story units and would provide the required infrastructure and systems necessary for complete food service, housing, and personal needs, including a convenience store, recreational and fitness facilities, entertainment rooms and facilities, telecommunications/media rooms, kitchen/dining facilities, laundry facilities, security units, and a medical infirmary. The camp would be set up with the housing areas clustered together, with both shared and private wash rooms. The dormitories would not include facilities for families. However, workers using the recreational vehicle areas may include family members.

Potable water would be provided by drilling a well where feasible. If an adequate supply cannot be obtained from a well, water would be obtained from municipal sources or trucked to the camp. A self-contained wastewater treatment facility would be included in the camp except where it is practicable to use a licensed and permitted publically owned treatment works (POTW). Electricity for the camp would either be generated on site through diesel-fired generators, or would be provided by local utilities from an interconnection to their distribution system.

The second photograph, attached, is of Dunn County Lodge constructed in Dunn County, North Dakota in 2011 by Target Logistics for their client Occidental Petroleum. Although it lacks RV spots, it is made up of modular dormitory units, and with a capacity of 600 beds is representative of camps to be employed on the Keystone XL project.

Response provided by: Stephen Marr, TransCanada

Response provided by: Stephen Marr, TransCanada

Response provided by: Stephen Marr, TransCanada

Nebraska Department of Environmental Quality 28.0

Reference: Nebraska Supplement Environmental Report

ER Section: General: Economics

Comment:

p 109 "...In addition to the information noted above, Keystone will be providing NDEQ with an updated Nebraska-specific analysis on economic impacts based on the current preferred alternative route in Nebraska. The report will update both the construction and operation phase analyses."

Requested Information:

Please clarify. When will it be provided and what additional detail will be included?

Response:

Consumer Energy Alliance has commissioned a report from Ernie Goss of Creighton University, which will provide policymakers with details regarding the costs and benefits to the State of Nebraska of the Keystone XL Project. The study will estimate the direct impacts of the construction and operation of the Project. Additionally, the study will estimate the indirect impacts of the Project, including lower energy prices, particularly with respect to the impact of energy costs on agriculture production in the state. This study is expected to be completed by early October.

In addition, the study will determine the effect of pipeline construction and operations on jobs and income for residents of the state. It will also examine spending for locally supplied goods and services affecting sales, employment levels, and subsequent tax payments to the city, county and state government entities. The study will also estimate the impact on local business firms, industries, establishments, organizations and facilities, accommodations, construction, wholesale trade and other operations. The study will

determine impacts on basic sector firms, including manufacturing, customer service centers, agriculture, and wholesalers due to construction and operation of the Project.

Keystone expects to provide this report in early October, 2012.

Response provided by: Andrea Jalbert, TransCanada

Nebraska Department of Environmental Quality 29.0

Reference: Nebraska Supplement Environmental Report

ER Section: General: Economics

Comment:

p. 109 Local Purchases

Requested Information:

What are the common goods and services for construction that TransCanada anticipates purchasing locally?

Response:

The contractors involved in the construction of the pipeline, pump stations and ancillary facilities will rely on local services providers and vendors to support their efforts. The common goods and services for construction that TransCanada anticipates the contractors will purchase locally would include the following:

- Goods: automotive and truck parts and glass, bottled gases (acetylene, propane, oxygen), electrical supplies, farm fencing and gates, gasoline and diesel fuel, geotextiles, hay bales, heavy equipment parts, hydraulic fluids, lubricants, lumber, medical supplies, miscellaneous hardware and hand tools, office supplies and consumables, paints, ready mix concrete, safety fencing, safety supplies, sand and gravel, seed, silt fence, traffic control signs and devices, vehicle and equipment tires, welding supplies.
- Services: automotive and equipment servicing and repair, catering, computer and IT support, electric power, financial and banking services, food and lodging, helicopter services, medical services, office furniture rental, portable office building supply, portable toilet services, security services, specialty construction services (e.g. road repair, reclamation), telecommunications and internet services, temporary office trailers, trucking and delivery services, warehousing and storage, waste disposal.

Response provided by: Stephen Marr, TransCanada

Nebraska Department of Environmental Quality 46.0--AMENDED

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Cultural Resources

Comment:

Need to identify any trail crossings of new route.

Requested Information:

Identify potentially eligible trail crossings.

Response: Keystone's amended response is included below.

The FEIS Section 3.11.3.1 notes that the Nebraska portion of the project route (as proposed at that time) crossed the Oregon, California, and Mormon Pioneer National Historic Trails (NHT) in the vicinity of the Platte River and the Pony Express NHT in southern Nebraska. The Platte River area where the Oregon, California, and Mormon NHTs could potentially have been impacted was surveyed prior to the issuance of the FEIS and no segments of the trails were identified. The area of potential impact to the Pony Express NHT is on the FEIS portion of the preferred alternative route. Survey of the area identified no segments of the trail.

The Oregon, California, and Mormon NHTs could be impacted by the now more easterly crossing of the Platte River in the reroute portion of the preferred alternative route for Nebraska which has not yet been surveyed.

No route changes in Montana and South Dakota impact NHTs not already known.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 55.0

Reference: Nebraska Supplement Environmental Report

ER Section: Appendix C, Attachment A, un-numbered pages at end of appendix

Comment:

Will the 2 spill scenarios in SER Appendix C, Attachment A be included in the PSRP and/or ERP? Besides describing the scenarios, include the situations and lessons learned.

Requested Information:

Two spill scenarios are included in SER Appendix C, Attachment A. Will Keystone include these 2 spill scenario write-ups in the PSRP and/or ERP?

Response:

The two hypothetical spill scenarios were provided to Keystone by DOS and will be used as planning tools but will not be repeated in the ERP. The ERP will however, include worst case discharge (WCD) calculations, identify where those may take place and response procedures to specifically address a WCD.

Response provided by: Andrea Jalbert/Sandra Barnett, TransCanada

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Nebraska Department of Environmental Quality 56.0

Reference: Nebraska Supplement Environmental Report

ER Section: Appendix G - Noxious Weeds

Comment:

Is there a Noxious Weed Management Plan? If so it should be referenced in Appendix G and in the main document's text for 3.6 Terrestrial Vegetation. Sourcing should be accurate to depict where the mitigations for the management plan came from or how they were created.

Requested Information:

Noxious Weed Resource Report, include approach to managing weeds in wetlands and surface water areas.

Response:

Keystone will create a Noxious weed plan after consulting with the County Weed boards in Nebraska. This plan will have the recommended measures for addressing known weed locations in the construction ROW prior to construction and during reclamation monitoring after construction is complete.

Response provided by: Jon Schmidt, exp

Nebraska Department of Environmental Quality 57.0

Reference: Nebraska Supplement Environmental Report

ER Section: Appendix N, Crude Oil Fact Sheets

Comment:

DEQ recognizes that each batch of crude oil has a unique set of physical and chemical properties. DEQ needs specific MSDS data for emergency responders in the case of a spill.

Requested Information:

Describe the mechanism by which DEQ will be provided MSDS data for the product being transported through the pipeline in the event of a spill. The process should outline the timeframe DEQ can expect to receive MSDS.

Response:

In the event of a spill, TransCanada will provide the applicable MSDS to the DEQ at the same time that the spill is reported to the DEQ by the quickest means possible including fax and/or e-mail. TransCanada will make regulatory notifications within 2 hours of recognition of the spill as required by Federal and State regulation.

Response provided by: Andrea Jalbert, TransCanada

Nebraska Department of Environmental Quality 58.0

Reference: Nebraska Supplement Environmental Report

ER Section: Appendix N, Crude Oil Fact Sheets Page 3, Section 7 (Toxicological Information for Typical Heavy Oil)

Comment:

The fact sheet for "Typical Heavy Oil" states that "This product may contain benzene."

Requested Information:

Does Keystone anticipate that there would be instances where the product carried by the pipeline does not contain benzene? Please explain

Response:

As shown in Table 3.11-1 conventional and unconventional crude oils contain benzene in small quantity. Crude oil pipelines will therefore likely transport product that contains benzene.

Response provided by: Andrea Jalbert, TransCanada

Appendix H.2

Data Request Response 9/20/2012

Nebraska Department of Environmental Quality 25.0

Reference: Nebraska Supplemental Environmental Report

ER Section: General: Economics

Comment:

p. 92 TABLE 3.10-5 AND NARRATIVE. Total County Project Costs

Requested Information:

Clarify what "Total County Project Costs" means. Construction costs? Asset value? Provide the detailed assumptions and calculations used to arrive at values in each column of the table. Describe in detail the method used to project the cost in each county "as if valued by the Nebraska Department of Revenue."

Include reference to Nebraska Department of Revenue statute and administrative code supporting the method.

Response:

Total County Project Costs represents the estimated total installed cost at completion of all project work.

For each of the categories outlined, the following methodology is used to allocate costs to individual counties:

- Pipeline: Direct costs for pipeline are allocated based on miles of pipe through each county.
- Facilities: Direct costs for Facilities are allocated based on number of pump stations in each county.
- Other: Indirect and other costs not directly attributable to work on pipeline and facilities

Response provided by: Andrea Jalbert, TransCanada

specific tasks (Home Office, Regulatory, Environmental, Safety, etc.) are then allocated based on the direct costs in each county from the above categories.

For each county the allocated portion of each of the pipeline, facilities, and other costs are then summed to arrive at an estimate for the total spend associated with the county.

A breakdown of the project costs based on the most recent forecast and project scope is as follows:

State	County	Total Pipeline Cost	Total Facility Costs	Total Other Costs	Total Project Cost
Nebraska	Keya Paha	$46,256,775	$ -	$9,356,867	$55,613,642
Nebraska	Boyd	$23,402,286	$ -	$4,733,838	$28,136,124
Nebraska	Holt	$151,581,354	$43,487,201	$40,411,325	$235,479,879
Nebraska	Antelope	$120,097,725	$43,487,201	$34,042,783	$197,627,709
Nebraska	Boone	$78,370,333	$ -	$15,852,830	$94,223,163
Nebraska	Nance	$40,850,360	$43,487,201	$18,012,547	$102,350,108
Nebraska	Merrick	$21,951,624	$ -	$4,440,397	$26,392,020
Nebraska	Polk	$38,407,522	$ -	$7,769,112	$46,176,634
Nebraska	York	$79,787,610	$ -	$16,139,518	$95,927,129
Nebraska	Fillmore	$40,593,990	$43,487,201	$17,960,688	$102,041,879
Nebraska	Saline	$41,150,221	$ -	$8,323,908	$49,474,129
Nebraska	Jefferson	$77,958,743	$43,487,201	$25,518,868	$146,964,812
Nebraska	**Total**	**$760,408,544**	**$217,436,005**	**$202,562,679**	**$1,180,407,228**

Keystone discussed pipeline property taxes with the Nebraska Department of Revenue (NDOR), Property Tax Division. The NDOR confirmed that there are no statutes or administrative rules that prescribe allocation methodologies for allocating original gross cost to the counties when a pipeline is first built. When a pipeline is first built, the NDOR, the county assessors and the pipeline company work together to arrive at a reasonable allocation of those costs that cannot easily be attributed to a particular location. Miles of pipe was used in Nebraska for allocating such linear costs for this purpose when the original Keystone Pipeline went into service.

The resulting initial allocated original gross cost is the basis for future allocations of taxable value to the various jurisdictions (see Nebraska Revised Statute 77-802) for NE property tax purposes:

77-802 Property Tax Administrator; valuation; apportionment of tax:

— The Property Tax Administrator shall apportion the total taxable value including the franchise value to all taxing subdivisions in proportion to the ratio of the original cost of all operating real and tangible personal property of that public service entity having a situs in that taxing subdivision to the original cost of all operating real and tangible personal property

of that public service entity having a situs in the state.

— If the apportionment in accordance with this section does not fairly represent the proportion of the taxable value, including franchise value properly allocable to the county, the taxpayer may petition for or the Property Tax Administrator may require the inclusion of any other method to effectuate an equitable allocation of the value of the public service entity for purposes of taxation.

— On or before July 25, the Property Tax Administrator shall mail a draft appraisal to each public service entity as defined in section 77-801.01. On or before August 10, the Property Tax Administrator shall, by mail, notify each public service entity of its taxable value and the distribution of that value to the taxing subdivisions in which the entity has situs. On or before August 10, the Property Tax Administrator shall also certify to the county assessors the taxable value so determined.

(As amended by L.B. 353, Laws 1983; L.B. 835, Laws 1984; L.B. 269, Laws 1985; L.B. 508, Laws 1987; L.B. 490, Laws 1995; L.B. 270, Laws 1997; L.B. 306, Laws 1998; L.B. 973, Laws 2004, operative April 2, 2004; L.B. 727, Laws 2012, effective April 11, 2012.)

This statute is further supported by Administrative Rule 30-005.

Response provided by: Andrea Jalbert, TransCanada

Appendix H.2

Data Request Response 9/21/2012

Nebraska Department of Environmental Quality 16.0

Reference: Nebraska Supplement Environmental Report

ER Section 4.3.9 - Socioeconomics / Construction Phase

Comment:

No section in the SER; SER indicates economic analysis to be provided at a later date.

Requested Information:

Provide an expected percent of workers to be hired from within the state. Use attached Data Request for Economic Impact Analysis sheet.

Response:

Please see attached Economic Impact Analysis worksheet.

The key assumptions noted in the worksheet conservatively state that 10% of the workforce would be hired within the state, however we anticipate the range is 10 to 15% local hire.

Assumptions/Comments for the attached Economic Impact Analysis worksheet:

- Since issuance of the FEIS, the spread configuration for the Project has changed. The current configuration and associated mileages are reported. As stated in the DOS ER, the construction schedule may affect the final spread configurations, which may result in the need for additional but shorter spreads or different spread configurations.
- A column was added to report the estimated construction costs for both Pipeline & Facilities, by spread
- Providing detailed cost information for individual types of major materials would violate confidentiality agreements Keystone has with suppliers. Keystone has rolled up the materials cost data into a single category entitled “Major Company-Provided Materials”.

Response provided by: Andrea Jalbert, TransCanada

- The number of valves and access roads for Nebraska are not yet known. It is reasonable to expect the number of these items for the newly identified route to approximate the number used on the FEIS route. For informational purposes, there were 15 MLVs and a total of approximately 21 miles of new access roads in Nebraska on the FEIS route (Spread 8: 11 miles, Spread 9: 6 miles, & Spread 10: 4 miles).
- Keystone plans to use 8 camps. The county and state for each are identified accordingly.
- Reporting land acquisition cost data per spread would provide visibility into Keystone's competitive cost structure for the project. Land cost has been rolled into a new category entitled "Other Indirect Costs".
- In the category entitled "New Sidings" – the data entered represent sidings KXL will use for the project. All of these sidings are existing. No new track or switches will be installed as part of the Project.

Response provided by: Andrea Jalbert, TransCanada

Keystone XL Pipeline

18-Sep-12

Data Request to TransCanada
For economic and fiscal impact analyses

Instructions

This workbook provides the specifications and depository for financial and employment data required to estimate the economic and fiscal impacts resulting from the construction and operations of the Keystone XL pipeline, including connected actions. The focus of this request is to identify spending by TransCanada at specific locations along the pipeline corridor. Construction and annual operation costs are based on the cost of each construction spread identified by TransCanada. The workbook is divided into 2 worksheets - one for development/construction & one for operations

Should discrepancies exist between data entered in this worksheet and those found in other documents, data entered here will be deemed correct.

Critical Importance of Employment and Payroll

By far, the largest impacts within the pipeline corridor states will be tied to employment and payroll. This is true for both construction and operations. For this reason, data requested for employment and/or payroll should be given close attention. **[We do not believe this is an accurate statement due to the significant property tax that will be realized over the operating life of the project. A. Jalbert]**

Questions/Clarifications

It would be helpful if the individual(s) tasked with providing or overseeing the financial aspects of project design could be available to discuss this data
Should any part of the data request not make sense or be clear, call or email:

Clive Graham Clive.Graham@erm.com 410-266-0006

Keystone XL Pipeline
Data Request to TransCanada
For economic and fiscal impact analyses

18-Sep-12

Component	State	Miles^	Pump Stations	Valves	New or upgraded access road (miles)	New stockpile sites	New sidings	New contractor yards	Weeks to construct#	Construction Award (Pipeline) $1,000	Construction Award (Facilities) $1,000	Major Company Provided Materials $1,000	% purchased in US	Other Indirect Costs (Environmental, Construction Management, Regulatory, Owner's Costs, Land, etc.) $1,000		Number of Construction Workers per Unit#	Total Valuation for Property Tax Estimates* (sum of col L, M, O, Q, S, & V) $1,000	Notes
		Number of Units by Spread								Cost								
Construction Spread																		
1	MT	90.00	2	8	53	3	1	2	17	$129,136	$26,729	$103,645	74%	$111,176		1100	$370,686	
2	MT	61.48	1	4	22	2	1	1	19	$88,214	$13,365	$65,617	74%	$70,519		900	$237,715	
3	MT	46.20	1	3	5	2	2	1	18	$66,290	$13,365	$52,827	74%	$57,139		900	$189,620	
4	MT/SD	90.95	2	4	14	2	1	1	21	$130,499	$26,729	$104,441	74%	$113,008		1100	$374,677	
5	SD	122.12	3	5	46	4	1	2	21	$175,223	$40,094	$144,687	74%	$170,986		1200	$530,989	
6	SD	89.69	1	4	8	3	3	2	19	$128,691	$13,365	$89,231	74%	$100,222		1000	$331,508	
7	SD	98.43	3	4	7	4	1	3	20	$141,231	$40,094	$124,857	74%	$150,241		1300	$456,423	
8	SD/NE	92.92	1			3	2	3	20	$133,440	$13,365	$92,001	74%	$113,121		900	$351,927	The pipeline route in Nebraska has only recently been identified. Accordingly, the number of access roads and valves is not currently known.
9	NE	83.89	2			3	2	3	19	$120,527	$26,729	$98,623	74%	$127,922		900	$373,801	
10	NE	99.72	2			4	2	3	20	$143,484	$26,729	$112,016	74%	$140,933		900	$423,162	
										$0		$0		$0			$0	
										$0		$0		$0			$0	
--	KS		2							$0	$34,671	$30,825	89%	$45,536			$111,032	
Total		875.4	20	32	155	30	16	21		$1,256,734	$275,232	$1,018,770		$1,202,805			$3,751,540	

		Weeks to construct	Contract Award $1,000						
Construction Camp									
Valley County	MT	12	$30,335						$30,335
Valley County	MT	12	$20,722						$20,722
McCone County	MT	12	$15,572						$15,572
Fallon County	MT	12	$30,655						$30,655
Harding County	SD	12	$41,161						$41,161
Meade County	SD	12	$30,230						$30,230
Tripp County	SD	12	$33,176						$33,176
Holt County	NE	12	$31,346						$31,346
									$3,984,737
Connected actions									
Bakken Marketlink									
All facilities near Plevna-B	MT		$3,262	$30,001	$24,724	89%	$34,824		$92,810
All facilities in Cushing Tar	OK		$0	$22,890	$11,947	89%	$20,120		$54,957
									$4,132,504

Footnotes: # Range across all spreads provided in FEIS, estimate for each spread requested here
*Total property valuation should match table 3.9-7 in ER for MT and SD, Table 3.10-5 in SER for NE. Should discrepancies exist between data entered in this worksheet and those found in other documents, data entered here will be deemed correct.
^ Correct number of pipeline miles, as needed.

State Totals		
	MT	$1,362,792
	SD	$1,423,487
	NE	$1,180,236
	KS	$111,032
	OK	$54,957
	Total	$4,132,504

Keystone XL Pipeline
Data Request to TransCanada
For economic and fiscal impact analyses

18-Sep-12

Component	State	Miles^	Pump Stations	Valves	New or upgraded access road (miles)	New stockpile sites	New sidings	New contractor yards	Weeks to construct#	Construction Award (Pipeline) $1,000	Construction Award (Facilities) $1,000	Major Company Provided Materials $1,000	Major Company Provided Materials % purchased in US	Other Indirect Costs (Environmental, Construction Management, Regulatory, Owner's Costs, Land, etc.) $1,000		Number of Construction Workers per Unit#	Total Valuation for Property Tax Estimates* (sum of col L, M, O, Q, S, & V) $1,000	Notes
		Number of Units by Spread								Cost								
Construction Spread																		
1	MT	90.00	2	8	53	3	1	2	17	$129,000	$27,000	$104,000	0%	$111,000		1100	$371,000	
2	MT	61.48	1	4	22	2	1	1	19	$88,000	$13,000	$66,000	0%	$71,000		900	$238,000	
3	MT	46.20	1	3	5	2	2	1	18	$66,000	$13,000	$53,000	0%	$57,000		900	$189,000	
4	MT/SD	90.95	2	4	14	2	1	1	21	$130,000	$27,000	$104,000	0%	$113,000		1100	$374,000	
5	SD	122.12	3	5	46	4	1	2	21	$175,000	$40,000	$145,000	0%	$171,000		1200	$531,000	
6	SD	89.69	1	4	8	3	3	2	19	$129,000	$13,000	$89,000	0%	$100,000		1000	$331,000	
7	SD	98.43	3	4	7	4	1	3	20	$141,000	$40,000	$125,000	0%	$150,000		1300	$456,000	
8	SD/NE	92.92	1			3	2	3	20	$133,000	$13,000	$92,000	0%	$113,000		900	$351,000	The pipeline route in Nebraska has only recently been identified. Accordingly, the number of access roads and valves is not currently known.
9	NE	83.89	2			3	2	3	19	$121,000	$27,000	$99,000	0%	$128,000		900	$375,000	
10	NE	99.72	2			4	2	3	20	$143,000	$27,000	$112,000	0%	$141,000		900	$423,000	
										$0	$0	$0		$0			$0	
										$0	$0	$0		$0			$0	
--	KS		2							$0	$35,000	$31,000	89%	$46,000			$112,000	Please note the inclusion of Kansas in this table as per DOS request.
Total		875.4	20	32	155	30	16	21		$1,257,000	$275,000	$1,019,000		$1,203,000			$3,751,000	

		Weeks to construct	Contract Award $1,000			
Construction Camp						
Valley County	MT	12	$30,000			$30,000
Valley County	MT	12	$21,000			$21,000
McCone County	MT	12	$16,000			$16,000
Fallon County	MT	12	$31,000			$31,000
Harding County	SD	12	$41,000			$41,000
Meade County	SD	12	$30,000			$30,000
Tripp County	SD	12	$33,000			$33,000
Holt County	NE	12	$31,000			$31,000
						$3,984,000
Connected actions						
Bakken Marketlink						
All facilities near Plevna-B	MT		$3,000	$30,000	$25,000	89%	$35,000	$93,000
All facilities in Cushing Tai	OK		$0	$23,000	$12,000	89%	$20,000	$55,000
								$4,132,000

Footnotes: # Range across all spreads provided in FEIS, estimate for each spread requested here
*Total property valuation should match table 3.9-7 in ER for MT and SD, Table 3.10-5 in SER for NE. Should discrepancies exist between data entered in this worksheet and those found in other documents, data entered here will be deemed correct.
^ Correct number of pipeline miles, as needed.
Values rounded to nearest $1,000,000

State Totals

State	Total Project Cost
MT	$1,363,000
SD	$1,422,000
NE	$1,180,000
KS	$112,000
OK	$55,000
Total	$4,132,000

Keystone XL Pipeline	ANNUAL OPERATIONS						18-Sep-12
Data Request to TransCanada							
For economic and fiscal impact analyses							
Anticipated annual volume (bpd) in Keystone XL during first 5 years of operations							**See note below**
	Note: The capacity of the Keystone XL Project will be 830,000 bpd. Keystone believes that volumes will be near pipeline capacity beginning in the first year after commencing service. Flows in the pipeline will depend on market conditions and have the potential to fluctuate during the course of the year						
			Number of Units by State				
Component	**Unit**	**MT**	**ND**	**SD**	**NE**	**KS***	**OK**
Pipeline							
US employees	Number						
US payroll	$1,000						
Connected Actions							
Bakken Marketlink							
US employees	Number						
US payroll	$1,000						
	There will be an estimated 35 permanent employees during the Operational phase of the Project which includes approximately 10 permanent employees in the Omaha, NE office. These employees (excluding the 10 in Omaha, NE) will be basically equally distributed along the Keystone XL pipeline through Montana, South Dakota and Nebraska. Moreover, Contractors will be providing specialized support for Operations. We estimate that Contractor employment for Operations will be equivalent to 15 full time positions. As Keystone explained during the discussion on September 18, 2012, as of this point in time the precise number, location, and payroll for these employees has not yet been determined.						

Nebraska Department of Environmental Quality 17.0

Reference: Nebraska Supplement Environmental Report

ER Section 4.3.9 - Socioeconomics / Operations phase

Comment:

No section in the SER; SER indicates economic analysis to be provided at a later date.

Requested Information:

How many workers will be present for operations? Use attached Data Request for Economic Impact Analysis sheet.

Response:

Please see attached Economic Impact Analysis worksheet.

With respect to the anticipated annual volumes for KXL, please see the following response:

> The capacity of the Keystone XL Project will be 830,000 bpd. Keystone believes that volumes will be near pipeline capacity beginning in the first year after commencing service. Flows in the pipeline will depend on market conditions and have the potential to fluctuate during the course of the year.

With respect to the question regarding number of employees and payroll, the response is as follows:

> There will be an estimated 35 permanent employees during the Operational phase of the Project which includes approximately 10 permanent employees in the Omaha, NE office. These employees (excluding the 10 in Omaha, NE) will be basically equally distributed along the Keystone XL pipeline through Montana, South Dakota and Nebraska. Moreover, Contractors will be providing specialized support for Operations. We estimate

Response provided by: Andrea Jalbert, TransCanada

that Contractor employment for Operations will be equivalent to 15 full time positions. As Keystone explained during the discussion on September 18, 2012, as of this point in time the precise number, location, and payroll for these employees has not yet been determined.

Response provided by: Andrea Jalbert, TransCanada

Keystone XL Pipeline

18-Sep-12

Data Request to TransCanada
For economic and fiscal impact analyses

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This workbook provides the specifications and depository for financial and employment data required to estimate the economic and fiscal impacts resulting from the construction and operations of the Keystone XL pipeline, including connected actions. The focus of this request is to identify spending by TransCanada at specific locations along the pipeline corridor. Construction and annual operation costs are based on the cost of each construction spread identified by TransCanada. The workbook is divided into 2 worksheets - one for development/construction & one for operations

Should discrepancies exist between data entered in this worksheet and those found in other documents, data entered here will be deemed correct.

Critical Importance of Employment and Payroll

By far, the largest impacts within the pipeline corridor states will be tied to employment and payroll. This is true for both construction and operations. For this reason, data requested for employment and/or payroll should be given close attention. **[We do not believe this is an accurate statement due to the significant property tax that will be realized over the operating life of the project. A. Jalbert]**

Questions/Clarifications

It would be helpful if the individual(s) tasked with providing or overseeing the financial aspects of project design could be available to discuss this data
Should any part of the data request not make sense or be clear, call or email:

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Keystone XL Pipeline
Data Request to TransCanada
For economic and fiscal impact analyses

18-Sep-12

Component	State	Miles^	Pump Stations	Valves	New or upgraded access road (miles)	New stockpile sites	New sidings	New contractor yards	Weeks to construct#	Construction Award (Pipeline) $1,000	Construction Award (Facilities) $1,000	Major Company Provided Materials $1,000	% purchased in US	Other Indirect Costs (Environmental, Construction Management, Regulatory, Owner's Costs, Land, etc.) $1,000		Number of Construction Workers per Unit#	Total Valuation for Property Tax Estimates* (sum of col L, M, O, Q, S, & V) $1,000	Notes
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6	SD	89.69	1	4	8	3	3	2	19	$128,691	$13,365	$89,231	74%	$100,222		1000	$331,508	
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										$0		$0		$0			$0	
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									$3,984,737
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^ Correct number of pipeline miles, as needed.

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	MT	$1,362,792
	SD	$1,423,487
	NE	$1,180,236
	KS	$111,032
	OK	$54,957
	Total	$4,132,504

Keystone XL Pipeline
Data Request to TransCanada
For economic and fiscal impact analyses

18-Sep-12

Component	State	Miles^	Pump Stations	Valves	New or upgraded access road (miles)	New stockpile sites	New sidings	New contractor yards	Weeks to construct#	Construction Award (Pipeline) $1,000	Construction Award (Facilities) $1,000	Major Company Provided Materials $1,000	Major Company Provided Materials % purchased in US	Other Indirect Costs (Environmental, Construction Management, Regulatory, Owner's Costs, Land, etc.) $1,000		Number of Construction Workers per Unit#	Total Valuation for Property Tax Estimates* (sum of col L, M, O, Q, S, & V) $1,000	Notes
		Number of Units by Spread								Cost								
Construction Spread																		
1	MT	90.00	2	8	53	3	1	2	17	$129,000	$27,000	$104,000	0%	$111,000		1100	$371,000	
2	MT	61.48	1	4	22	2	1	1	19	$88,000	$13,000	$66,000	0%	$71,000		900	$238,000	
3	MT	46.20	1	3	5	2	2	1	18	$66,000	$13,000	$53,000	0%	$57,000		900	$189,000	
4	MT/SD	90.95	2	4	14	2	1	1	21	$130,000	$27,000	$104,000	0%	$113,000		1100	$374,000	
5	SD	122.12	3	5	46	4	1	2	21	$175,000	$40,000	$145,000	0%	$171,000		1200	$531,000	
6	SD	89.69	1	4	8	3	3	2	19	$129,000	$13,000	$89,000	0%	$100,000		1000	$331,000	
7	SD	98.43	3	4	7	4	1	3	20	$141,000	$40,000	$125,000	0%	$150,000		1300	$456,000	
8	SD/NE	92.92	1			3	2	3	20	$133,000	$13,000	$92,000	0%	$113,000		900	$351,000	The pipeline route in Nebraska has only recently been identified. Accordingly, the number of access roads and valves is not currently known.
9	NE	83.89	2			3	2	3	19	$121,000	$27,000	$99,000	0%	$128,000		900	$375,000	
10	NE	99.72	2			4	2	3	20	$143,000	$27,000	$112,000	0%	$141,000		900	$423,000	
										$0	$0	$0		$0			$0	
										$0	$0	$0		$0			$0	
--	KS		2							$0	$35,000	$31,000	89%	$46,000			$112,000	Please note the inclusion of Kansas in this table as per DOS request.
Total		875.4	20	32	155	30	16	21		$1,257,000	$275,000	$1,019,000		$1,203,000			$3,751,000	

		Weeks to construct	Contract Award $1,000			
Construction Camp						
Valley County	MT	12	$30,000			$30,000
Valley County	MT	12	$21,000			$21,000
McCone County	MT	12	$16,000			$16,000
Fallon County	MT	12	$31,000			$31,000
Harding County	SD	12	$41,000			$41,000
Meade County	SD	12	$30,000			$30,000
Tripp County	SD	12	$33,000			$33,000
Holt County	NE	12	$31,000			$31,000
						$3,984,000
Connected actions						
Bakken Marketlink						
All facilities near Plevna-B	MT		$3,000	$30,000	$25,000	89%	$35,000	$93,000
All facilities in Cushing Tai	OK		$0	$23,000	$12,000	89%	$20,000	$55,000
								$4,132,000

Footnotes: # Range across all spreads provided in FEIS, estimate for each spread requested here
*Total property valuation should match table 3.9-7 in ER for MT and SD, Table 3.10-5 in SER for NE. Should discrepancies exist between data entered in this worksheet and those found in other documents, data entered here will be deemed correct.
^ Correct number of pipeline miles, as needed.
Values rounded to nearest $1,000,000

State Totals

State	Total Project Cost
MT	$1,363,000
SD	$1,422,000
NE	$1,180,000
KS	$112,000
OK	$55,000
Total	$4,132,000

Keystone XL Pipeline	ANNUAL OPERATIONS						18-Sep-12
Data Request to TransCanada							
For economic and fiscal impact analyses							
Anticipated annual volume (bpd) in Keystone XL during first 5 years of operations							**See note below**
	Note: The capacity of the Keystone XL Project will be 830,000 bpd. Keystone believes that volumes will be near pipeline capacity beginning in the first year after commencing service. Flows in the pipeline will depend on market conditions and have the potential to fluctuate during the course of the year						
			Number of Units by State				
Component	**Unit**	**MT**	**ND**	**SD**	**NE**	**KS***	**OK**
Pipeline							
US employees	Number						
US payroll	$1,000						
Connected Actions							
Bakken Marketlink							
US employees	Number						
US payroll	$1,000						
	There will be an estimated 35 permanent employees during the Operational phase of the Project which includes approximately 10 permanent employees in the Omaha, NE office. These employees (excluding the 10 in Omaha, NE) will be basically equally distributed along the Keystone XL pipeline through Montana, South Dakota and Nebraska. Moreover, Contractors will be providing specialized support for Operations. We estimate that Contractor employment for Operations will be equivalent to 15 full time positions. As Keystone explained during the discussion on September 18, 2012, as of this point in time the precise number, location, and payroll for these employees has not yet been determined.						

Appendix H.2

Data Request Response 10/1/2012

Nebraska Department of Environmental Quality 20.0---AMENDED

Reference: Nebraska Supplement Environmental Report

ER Section: Appendix N, Crude Oil Fact Sheets

Comment:

A wide range of percentages is presented for xylene in Appendix N.

Requested Information:

Verify the range of values presented in Appendix N for percentage of xylene in light and heavy crude oils.

Response: AMENDED RESPONSE:

The Fact Sheet data has been reviewed and subsequently revised to show a xylene range of 0.1% to a maximum of 1.5% for both light and heavy crude oils. A copy of the revised Fact Sheets is attached.

Response provided by: Sandra Barnett, TransCanada

TransCanada Keystone Pipeline LP

Light Oil MSDS

TransCanada
In business to deliver

1. Product and Company Identification

Product Name: Typical Light Oil

Synonyms: Not Available

Intended Use: Chemical feedstock

Chemical Family: Blend of Medium Crude and Synthetic Crude

Supplier: TransCanada Keystone Pipeline LP
450 – First Street S.W.,
P.O. Box 1000, Station M Calgary, Alberta, CANADA, T2P 4K6

Emergency Phone: **1-800-982-7222 (24 Hour)**

2. Composition/Information on Ingredients

Hazardous Ingredients:

Name	CAS#	TWA (ppm)	TWA (Mg/M³)	Exposure Limits STEL (ppm)	STEL (Mg/M³)	CEIL (ppm)	CEIL (Mg/M³)	% by Weight
Crude Oil (Hydrocarbon C5 and C6 Rich)	8002-05-09	100	n/av	n/av	n/av	n/av	n/av	100
Hydrogen Sulfide	7783-06-04	10	14	15	21	20	28	<0.5
Benzene	71-43-2		3.2		16			0.1-1.0
Toluene	108-88-3	50	188					1-5
Xylene	1330-20-7							0.1-1.5

Toxicity values of the hazardous ingredients

Crude oil (Hydrocarbons C5 and C6 Rich) LD50:4,300 mg/Kg (Rat). LC50: Not available.

Hydrogen Sulphide (H_2S) LC50 Inhalation Mouse = 673 ppm 1 hour. LC50 Inhalation Rat = 444 ppm for 4 hours

Benzene. LD50 Oral rat = 930-5600 mg/Kg. LC50 Inhalation rat = 13,700 ppm for 4 hrs.

Xylene. LD50 Oral rat = 4300 mg/Kg. LC50 Inhalation rat = 6700 ppm for 4 hrs. LD50 Dermal rabbit >2000 mg/Kg.

Toluene. LD50 Oral rat = 5000 mg/Kg. LC50 Inhalation rat = 8000 ppm for n4 hrs. LD50 Dermal rabbit = 14000 mg/Kg.

3. First Aid Measures

Eye: Flush eyes for at least 15 minutes with clean water. Patch lightly, allowing drainage. Seek medical attention.

Skin: Remove contaminated clothing. Wash skin thoroughly with soap and water. Seek medical attention ifirritation develops.

Inhalation (Breathing): Protect rescuer. Move exposed person to fresh air. If breathing has stopped apply artificial respiration. Seek medical attention.

Ingestion (Swallowing): If swallowed, do not induce vomiting or give liquids. Seek immediate medical attention.

4. Protective Clothing

Respiratory: Respiratory protection may be required in poorly ventilated areas. Properly fitted air purifying masks equipped with organic vapour filters will provide protection at low concentrations. Air supplied respirators or positive pressure self contained breathing apparatus is required when atmospheric concentrations of hydrocarbon vapours are likely to exceed 10X the occupational exposure limit or when high concentrations of H2S may be present.

Skin: Impervious gloves and clothing should be worn as appropriate to protect against skin contact. Neoprene or nitrile material is suggested.

Eye: Non-vented chemical goggles to prevent eye irritation from the solvent vapours.

Other: As required by the situation according to your companies policies and procedures. Contact your supervisor for direction.

5. Physical Data

Appearance:	Amber to Black
Physical State:	Liquid
Odour:	Petroleum Odor
Vapor Pressure (mm Hg):	155 - 620
Vapor Density:	>1
Boiling Point/Range:	-90°C - 1100°C
Freezing/Melting Point:	Not Available
Solubility in Water:	Not Available
Specific Gravity:	0.82-0.90 (Water =1)
Percent Volatile:	100 vol.%
pH (1% soln/water)	Not Applicable
Odor Threshold	0.13 ppm H2S
Freezing Point	Not Available
Molecular Weight	Not Applicable
Melting Point	Not available
Density (kg/m^3)	820-900
Evaporation Rate (nButAc=1):	Not Available

6. Stability and Reactivity

Stability: This product is stable

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide and irritant fumes and gases including sulphur oxides, nitrogen oxides and aldehydes.

Hazardous Polymerization: Will not occur

Materials to Avoid (Incompatible Materials): Strong acids, strong oxidizers, chlorine.

7. Toxicological Information

Routes of entry: Ingestion, inhalation, eye contact, skin contact.

TLV: TLV-TWA 100 PPM (525 mg/m3) for stoddard solvent from ACGIH.
Hydrogen Sulfide:
TWA: 10ppm, 14 mg/m3 ACGIH
STEL: 2.5 ppm STEL ACGIH
CEILING: 20 ppm, 28 mg/m3 Alberta OEL
Consult local authorities for acceptable exposure limits. Consult local authorities for acceptable exposure limits.
Benzene. TWA: (1ppm 3.2 mg/m3) STEL: 5.0 ppm (16 mg/m)^3) from Alberta OEL's SKIN
ACGIH (TLV) (United States) TWA 0.5 ppm. STEL 2.5 ppm (SKIN)

Toxicity to animals: Hydrocarbons C5 and C6 Rich
LD50: Not available
LC50: Not available
Hydrogen Sulphide (H2S)
LC50 Inhalation Mouse = 673 ppm 1 hour
LC50 Inhalation RAT = 444ppm for 4 hours
Remark: No additional remark

Chronic effects: This product may contain benzene. Benzene has been classified by the international agency for research on cancer as a group 1 product indicating sufficient evidence of carcinogenicity. Studies exist which report a link to crude oil and reproductive effects including fetal tumors and menstrual disorders. This product contains small quantities of xylene. High exposure to xylene has fetotoxic effects in animal studies. This product contains small quantities of polycylic aromatic hydrocarbons. Prolonged contact with these compounds has been associated with the induction of skin and lung tumours.
Remark: No additional remark

Acute effects: Sensitizing Capability: No effects known. Irritancy: Skin, eye and upper respiratory tract irritant.

Ingestion: Pulmonary aspiration hazard if swallowed and vomiting occurs.

Skin: Prolonged skin contact can cause defatting of the skin resulting in dry cracked skin and dermatitis.

Eyes: Eye contact with product or product vapours may result in eye irritation.

Inhalation: May cause headache, dizziness, loss of appetite and loss of consciousness. Product vapours are irritating to the respiratory tract.
Remark: This product contains small quantities of hydrogen sulphide (H2S) gas which may collect in confined spaces. Acute effects vary with concentration of H2S released from mild eye, nose and throat irritation at approximately 100 ppm to sudden unconsciousness or death at 500 ppm.

Synergistic: Not available

8. Fire and Explosion

Auto-ignition temperature: Not available

Flash points: CLOSED CUP: -40°C (-40°F)

Flammable Limits: Not available

Extinguishing Media: Use DRY chemicals, CO2, or foam to extinguish fire. Water may not be an effective medium to extinguish fire. Cool contained vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special fire fighting procedures: Use supplied air or self contained breathing apparatus (SCBA) for large fires or for fires in enclosed areas.

Flammability: Highly flammable liquid. Released vapours may form flammable/explosive mixtures at or above the flash point. Vapours may travel considerable distances to ignition sources and cause a flash fire. All storage containers and pumping equipment must be grounded.

Risks of explosion: This material is sensitive to static discharge. This product is not sensitive to mechanical impact.

9. Preventative Measures

Waste Disposal: Dispose of in accordance with all federal, provincial and local regulations.

Storage: Keep away from all ignition sources. Maintain temperature below the flash point. Head spaces in storage containers may contain hydrocarbon vapours and toxic hydrogen sulphide gas.

Ventilation: Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

Spill and Leak: Evacuate unecessary personnel. Eliminate all ignition sources. Be alert to the potential for the presence of hydrogen sulphide gas and don appropriate protective equipment. Stop leak if safe to do so. Contain spill and absorb with inert absorbent. Large spills should be removed with explosion proof vacuum equipment. Large pools may be covered with foam to prevent vapour evolution. Comply with federal, provincial, and local requirements for spill notification.

10. Classification/Regulatory Information

TDG road/rail: TDG CLASS 3: Flammable liquid with a flash point less than or equal to 60.5°C (140.9°F). Closed cup tes method.

PIN: 1267 - PETROLEUM CRUDE OIL

WHMIS: WHMIS CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).
WHMIS CLASS D-2A: Material causing other toxic effects (VERY TOXIC).
WHMIS CLASS D-2B: Material causing other toxic effects (TOXIC).

Other: This product is on the Domestic Substances List (DSL). TSCA (Toxic Substance Control Act): This product is listed on the TSCA Inventory.

Refer to federal, state, and local legislation for further requirements.

TransCanada Keystone Pipeline LP

Heavy Oil MSDS

TransCanada
In business to deliver

1. Product and Company Identification

Product Name: Typical Heavy Oil

Synonyms: Not Available

Intended Use: Chemical feedstock

Chemical Family: Blend of Heavy Petroleum Crude, Medium Crude and Synthetic Crude

Supplier: TransCanada Keystone Pipeline LP
450 – First Street S.W.,
P.O. Box 1000, Station M Calgary, Alberta, CANADA, T2P 4K6

Emergency Phone: **1-800-982-7222 (24 Hour)**

2. Composition/Information on Ingredients

Hazardous Ingredients:

Name	CAS#	TWA (ppm)	TWA (Mg/M³)	Exposure Limits STEL (ppm)	STEL (Mg/M³)	CEIL (ppm)	CEIL (Mg/M³)	% by Weight
Crude Oil (Hydrocarbon C5 and C6 Rich)	8002-05-09	100	n/av	n/av	n/av	n/av	n/av	100
Hydrogen Sulfide	7783-06-04	10	14	15	21	20	28	<0.5
Benzene	71-43-2		3.2		16			0.05-1.0
Toluene	108-88-3	50	188					1-5
Xylene	1330-20-7							0.1-1.5

Toxicity values of the hazardous ingredients

Crude oil (Hydrocarbons C5 and C6 Rich) LD50:4,300 mg/Kg (Rat). LC50: Not available.

Hydrogen Sulphide (H_2S) LC50 Inhalation Mouse = 673 ppm 1 hour. LC50 Inhalation Rat = 444 ppm for 4 hours

Benzene. LD50 Oral rat = 930-5600 mg/Kg. LC50 Inhalation rat = 13,700 ppm for 4 hrs.

Xylene. LD50 Oral rat = 4300 mg/Kg. LC50 Inhalation rat = 6700 ppm for 4 hrs. LD50 Dermal rabbit >2000 mg/Kg.

Toluene. LD50 Oral rat = 5000 mg/Kg. LC50 Inhalation rat = 8000 ppm for n4 hrs. LD50 Dermal rabbit = 14000 mg/Kg.

3. First Aid Measures

Eye: Flush eyes for at least 15 minutes with clean water. Patch lightly, allowing drainage. Seek medical attention.

Skin: Remove contaminated clothing. Wash skin thoroughly with soap and water. Seek medical attention ifirritation develops.

Inhalation (Breathing): Protect rescuer. Move exposed person to fresh air. If breathing has stopped apply artificial respiration. Seek medical attention.

Ingestion (Swallowing): If swallowed, do not induce vomiting or give liquids. Seek immediate medical attention.

4. Protective Clothing

Respiratory: Respiratory protection may be required in poorly ventilated areas. Properly fitted air purifying masks equipped with organic vapour filters will provide protection at low concentrations. Air supplied respirators or positive pressure self contained breathing apparatus is required when atmospheric concentrations of hydrocarbon vapours are likely to exceed 10X the occupational exposure limit or when high concentrations of H2S may be present.

Skin: Impervious gloves and clothing should be worn as appropriate to protect against skin contact. Neoprene or nitrile material is suggested.

Eye: Non-vented chemical goggles to prevent eye irritation from the solvent vapours.

Other: As required by the situation according to your companies policies and procedures. Contact your supervisor for direction.

5. Physical Data

Appearance:	Black Brown
Physical State:	Liquid
Odour:	Petroleum Odor
Vapor Pressure (mm Hg):	155 - 520
Vapor Density:	2.5 - 5.0
Boiling Point/Range:	10°C - 1000°C
Freezing/Melting Point:	Not Available
Solubility in Water:	Not Available
Specific Gravity:	0.92-0.94 (Water =1)
Percent Volatile:	100 vol.%
pH (1% soln/water)	Not Applicable
Odor Threshold	0.13 ppm H2S
Freezing Point	Not Available
Molecular Weight	Not Applicable
Melting Point	Not available
Density (kg/m^3)	920-940
Evaporation Rate (nButAc=1):	Not Available

6. Stability and Reactivity

Stability: This product is stable

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide and irritant fumes and gases including sulphur oxides, nitrogen oxides and aldehydes.

Hazardous Polymerization: Will not occur

Materials to Avoid (Incompatible Materials): Strong acids, strong oxidizers, chlorine.

7. Toxicological Information

Routes of entry: Ingestion, inhalation, eye contact, skin contact.

TLV: TLV-TWA 100 PPM (525 mg/m3) for stoddard solvent from ACGIH.
Hydrogen Sulfide:
TWA: 10ppm, 14 mg/m3 ACGIH
STEL: 2.5 ppm STEL ACGIH
CEILING: 20 ppm, 28 mg/m3 Alberta OEL
Consult local authorities for acceptable exposure limits. Consult local authorities for acceptable exposure limits.
Benzene. TWA: (1ppm 3.2 mg/m3) STEL: 5.0 ppm (16 mg/m)^3) from Alberta OEL's SKIN
ACGIH (TLV) (United States) TWA 0.5 ppm. STEL 2.5 ppm (SKIN)

Toxicity to animals: Hydrocarbons C5 and C6 Rich
LD50: Not available
LC50: Not available
Hydrogen Sulphide (H2S)
LC50 Inhalation Mouse = 673 ppm 1 hour
LC50 Inhalation RAT = 444ppm for 4 hours
Remark: No additional remark

Chronic effects: This product may contain benzene. Benzene has been classified by the international agency for research on cancer as a group 1 product indicating sufficient evidence of carcinogenicity. Studies exist which report a link to crude oil and reproductive effects including fetal tumors and menstrual disorders. This product contains small quantities of xylene. High exposure to xylene has fetotoxic effects in animal studies. This product contains small quantities of polycylic aromatic hydrocarbons. Prolonged contact with these compounds has been associated with the induction of skin and lung tumours.
Remark: No additional remark

Acute effects: Sensitizing Capability: No effects known. Irritancy: Skin, eye and upper respiratory tract irritant.

Ingestion: Pulmonary aspiration hazard if swallowed and vomiting occurs.

Skin: Prolonged skin contact can cause defatting of the skin resulting in dry cracked skin and dermatitis.

Eyes: Eye contact with product or product vapours may result in eye irritation.

Inhalation: May cause headache, dizziness, loss of appetite and loss of consciousness. Product vapours are irritating to the respiratory tract.
Remark: This product contains small quantities of hydrogen sulphide (H2S) gas which may collect in confined spaces. Acute effects vary with concentration of H2S released from mild eye, nose and throat irritation at approximately 100 ppm to sudden unconsciousness or death at 500 ppm.

Synergistic: Not available

8. Fire and Explosion

Auto-ignition temperature: Not available

Flash points: CLOSED CUP: -40°C (-40°F)

Flammable Limits: Not available

Extinguishing Media: Use DRY chemicals, CO2, or foam to extinguish fire. Water may not be an effective medium to extinguish fire. Cool contained vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special fire fighting procedures: Use supplied air or self contained breathing apparatus (SCBA) for large fires or for fires in enclosed areas.

Flammability: Highly flammable liquid. Released vapours may form flammable/explosive mixtures at or above the flash point. Vapours may travel considerable distances to ignition sources and cause a flash fire. All storage containers and pumping equipment must be grounded.

Risks of explosion: This material is sensitive to static discharge. This product is not sensitive to mechanical impact.

9. Preventative Measures

Waste Disposal: Dispose of in accordance with all federal, provincial and local regulations.

Storage: Keep away from all ignition sources. Maintain temperature below the flash point. Head spaces in storage containers may contain hydrocarbon vapours and toxic hydrogen sulphide gas.

Ventilation: Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

Spill and Leak: Evacuate unecessary personnel. Eliminate all ignition sources. Be alert to the potential for the presence of hydrogen sulphide gas and don appropriate protective equipment. Stop leak if safe to do so. Contain spill and absorb with inert absorbent. Large spills should be removed with explosion proof vacuum equipment. Large pools may be covered with foam to prevent vapour evolution. Comply with federal, provincial, and local requirements for spill notification.

10. Classification/Regulatory Information

TDG road/rail: TDG CLASS 3: Flammable liquid with a flash point less than or equal to 60.5°C (140.9°F). Closed cup tes method.

PIN: 1267 - PETROLEUM CRUDE OIL

WHMIS: WHMIS CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).
WHMIS CLASS D-2A: Material causing other toxic effects (VERY TOXIC).
WHMIS CLASS D-2B: Material causing other toxic effects (TOXIC).

Other: This product is on the Domestic Substances List (DSL). TSCA (Toxic Substance Control Act): This product is listed on the TSCA Inventory.

Refer to federal, state, and local legislation for further requirements.

Appendix H.3

Request for Information #3

TABLE OF CONTENTS

Request for Information 11/9/2012

Data Request Response 11/9/2012

Appendix H.3

Request for Information Letter 11/9/2012

Sent via email

-----Original message-----

From: "Rice, Pat"
To: "Andrea Jalbert, Jim White
Sent: Tue, Nov 20, 2012 20:54:12 GMT+00:00
Subject: RFI #3

Attached is the RFI #3. Please respond as soon as possible. Thank you.

Nebraska Department
of Environmental Quality

Request for Information Number 3
November 9, 2012

RFI Number	Comment	Information Requested
3-1	How does Keystone segregate the different crude oil products proposed to ship in the Keystone XL Pipeline?	Please provide a brief description of the batching process and how products are segregated, discussion topics should consider the following: • How are batches segregated? • How large are typical batches? • How many batches move through the system during a single day or week? If possible, please provide a list of different batches that move through the existing Keystone pipeline during a snapshot, such as one week.
3-2	How does Keystone identify leaks when performing aerial surveillance?	Please provide a table or list of data types collected during aerial surveys. Are cameras used to collect survey information? Does keystone use technologies such as thermal imaging to identify potential leaks during aerial surveys?
3-3	How frequently will Keystone conduct in-line inspections of the pipeline?	NDEQ recognizes PHMSA regulations and the 57 additional measures developed for the Keystone XL Pipeline establish the minimum frequency of in-line inspections. However, NDEQ would like to have a clearer understanding of Keystone's current plans for the frequency of in-line inspections.
3-4	Will the pipe and the steel come from North American sources?	Please provide the anticipated source of both the pipe and the steel used in the pipe. Will Keystone pay a sales tax for the pipe that would be used to offset the Nebraska use tax?
3-5	Does Keystone have a breakdown of the other indirect construction costs that would be inputs to NDEQ's economic analysis?	Please provide any additional data pursuant to the impacts of construction activities on the State of Nebraska considered in the economic analysis. Please provide data in support of the analysis of sales tax impacts in the State of Nebraska.

Appendix H.3

Data Request Response 11/9/2012

Nebraska Department of Environmental Quality3.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 3.1

Comment:

How does Keystone segregate the different crude oil products proposed to ship in the Keystone XL Pipeline?

Requested Information:

Please provide a brief description of the batching process and how products are segregated, discussion topics should consider the following:

- How are batches segregated?
- How large are typical batches?
- How many batches move through the system during a single day or week?

If possible, please provide a list of different batches that move through the existing Keystone pipeline during a snapshot, such as one week.

Response:

The batches that will move on the Keystone XL Pipeline (the pipeline) will be segregated utilizing fluid hydraulic principles. There are no physical separators between batches. Separation of batches is achieved by keeping the oil in a turbulent flow regime. With turbulent flow maintained during operations, the mixing of adjacent batches is minimal, i.e.less than 1%.

The tariff for the Keystone Pipeline does have a minimum batch size; both the NEB and FERC tariffs specify 100,000 barrels as minimum. Keystone's FERC tarrif provide for a minimum batch size of 100,000 barrels and a maximum batch size of 200,000 barrels. . Smaller or larger batches may be accepted at Keystone's reasonable discretion as outlined in the FERC tariff:

> *7.3 Batch Size. A Shipper's Tender will be accepted only when the total quantity covered thereby will be Tendered to Carrier at a Receipt Point for transportation within said*

Response provided by: Erik Tatarchuk, TransCanada

Month at a daily rate or in quantities and at times to be specified or accepted by Carrier. Except as hereunder provided, Carrier will not accept a batch size of less than sixteen thousand Cubic Meters (16,000 m3) (100,000 bbls) or a batch size of greater than thirty-two thousand cubic meters (32,000 m3) (200,000 bbls). Carrier may in its sole discretion, acting reasonably, (i) agree to accept Tenders of Petroleum in batch sizes less than 16,000 m3 (100,000 bbls) or in batch sizes greater than 32,000 m3 (200,000 bbls) and (ii) outline procedures or criteria under which it may accept Tenders of Petroleum in such batch sizes.

The linefill of the base Keystone system is 9 MM barrels, or 90 batches. Keystone delivers between 5 to 6 batches (of the 90 batches contained in the line) per day off of the system. The total transit time for a batch injected at Hardisty, Alberta to be delivered at Patoka, Illinois is 18 days.
The following batches, each of 100,000 barrels in size, identified by crude category are scheduled to be injected at Hardisty on the dates and times specified, a one week period:

Crude Category	Start of Injection	Injection Completion
Light Crude Type 1	12-Nov-20 06:53	12-Nov-20 11:27
Light Crude Type 2	12-Nov-20 11:27	12-Nov-20 15:55
Heavy Crude Type 1	12-Nov-20 15:55	12-Nov-20 20:24
Heavy Crude Type 2	12-Nov-20 20:24	12-Nov-21 01:09
Heavy Crude Type 1	12-Nov-21 01:09	12-Nov-21 06:07
Heavy Crude Type 1	12-Nov-21 06:07	12-Nov-21 10:05
Heavy Crude Type 1	12-Nov-21 10:05	12-Nov-21 14:27
Heavy Crude Type 3	12-Nov-21 14:27	12-Nov-21 18:49
Heavy Crude Type 1	12-Nov-21 18:49	12-Nov-21 23:31
Heavy Crude Type 4	12-Nov-21 23:31	12-Nov-22 04:24
Heavy Crude Type 2	12-Nov-22 04:24	12-Nov-22 08:44
Heavy Crude Type 1	12-Nov-22 08:44	12-Nov-22 15:15
Heavy Crude Type 5	12-Nov-22 15:15	12-Nov-22 20:24
Heavy Crude Type 3	12-Nov-22 20:24	12-Nov-23 01:54
Heavy Crude Type 1	12-Nov-23 01:54	12-Nov-23 06:14
Light Crude Type 1	12-Nov-23 06:14	12-Nov-23 10:56
Light Crude Type 1	12-Nov-23 10:56	12-Nov-23 15:30
Light Crude Type 1	12-Nov-23 15:30	12-Nov-23 20:04
Heavy Crude Type 1	12-Nov-23 20:04	12-Nov-24 00:28
Heavy Crude Type 1	12-Nov-24 00:28	12-Nov-24 07:07
Heavy Crude Type 1	12-Nov-24 07:07	12-Nov-24 11:52
Heavy Crude Type 1	12-Nov-24 11:52	12-Nov-24 16:34
Heavy Crude Type 1	12-Nov-24 16:34	12-Nov-24 21:30
Heavy Crude Type 1	12-Nov-24 21:30	12-Nov-25 03:37

Response provided by: Erik Tatarchuk, TransCanada

Crude Category	Start of Injection	Injection Completion
Heavy Crude Type 4	12-Nov-25 03:37	12-Nov-25 08:25
Heavy Crude Type 1	12-Nov-25 08:25	12-Nov-25 14:52
Heavy Crude Type 2	12-Nov-25 14:52	12-Nov-25 19:11
Heavy Crude Type 5	12-Nov-25 19:11	12-Nov-26 00:12
Heavy Crude Type 3	12-Nov-26 00:12	12-Nov-26 05:41
Heavy Crude Type 1	12-Nov-26 05:41	12-Nov-26 11:53
Light Crude Type 2	12-Nov-26 11:53	12-Nov-26 16:55
Light Crude Type 2	12-Nov-26 16:55	12-Nov-26 21:09
Heavy Crude Type 1	12-Nov-26 21:09	12-Nov-27 01:30
Heavy Crude Type 3	12-Nov-27 01:30	12-Nov-27 06:54
Heavy Crude Type 5	12-Nov-27 06:54	12-Nov-27 11:45

Response provided by: Erik Tatarchuk, TransCanada

Nebraska Department of Environmental Quality 3.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 3.2

Comment:

How does Keystone identify leaks when performing aerial surveillance?

Requested Information:

Please provide a table or list of data types collected during aerial surveys. Are cameras used to collect survey information? Does Keystone use technologies such as thermal imaging to identify potential leaks during aerial surveys?

Response:

Currently, the Keystone system is patrolled every two weeks via Cessna Caravan aircraft that utilizes a pilot and qualified aerial observer who is also a trained pilot. The right-of-way (ROW) is scanned by the observer at an altitude of approximately 500 feet above the ground. If an observation is observed, depending on the severity, either a One Call is made or a call is initiated to Oil Control with all the pertinent information. If the observation is not an immediate call in, it is presently put on an excel spreadsheet patrol report and sent out that evening to the responsible personnel for that area of the pipeline system.

A hand held camera is utilized for taking pictures of all observations that are attached to the patrol report. At present we do not utilize video recording equipment mounted to the aircraft. We do not use any thermal or other leak detection technology for the Keystone patrols; leaks are identified by visual observations in addition to all of the other leak detection methods utilized on the Keystone Pipeline, including a computational based SCADA system.

In looking for oil leaks, the pilot and qualified aerial observer are looking for signs of dead or dying vegetation, oil sheen on water, spray on sites or oil surfacing on ROW. The pilots capture "anomalies" during the patrol based on common observation types such as:

- **Pipeline Failure**
  - Leak

Response provided by: John Meyer Jr., Brad Watson, TransCanada

- Rupture

- **3rd Party**
  - Construction outside right-of-way (ROW)
  - Construction on ROW
  - Excavation less than 30m
  - Clearing
  - Excavation greater than 30m
  - Vehicle x-ing
  - Logging next to ROW
  - Drill Rig within 100m of ROW
  - Surveyors working on ROW
  - Fencing
  - Road Crossing-Unbermed
  - Road Crossing –Bermed
  - TCPL Maintenance
  - Seismic
  - Wellsite
  - Campers/Hunters on or near ROW
  - Explosives within 60m

- **Environmental**
  - Beaver Dam
  - Overgrown Brush
  - Leak Indication
  - Unusual Vegetation Patterns
  - Weed proliferation
  - Spill
  - Fire

- **Geotechnical**
  - ROW Erosion
  - Water X-ing Erosion
  - Exposed Pipe/ Floating Pipe
  - Erosion Control Measures Failure
  - Bank (water body)
  - Slumping on ROW
  - Sinkhole on ROW

Response provided by: John Meyer Jr., Brad Watson, TransCanada

- Runoff
- Culvert Problem

- **Structure / Population Change**
  - New Structure within 200m (660') of ROW
  - Change in Structure /Area Use
  - Abandoned Structure
  - Structure removed
  - Large Industrial
  - Campground
  - Airport / Runway

- **Spill**
  - Tank
  - Vessel
  - Valve
  - Pump Jack
  - Building
  - Well Head
  - Water in Containment Berm

- **Other**
  - Signage / Marker Damage
  - Dumping on ROW
  - Tree on pole line
  - Damage to Company Property
  - Safety Issue
  - Vehicle on ROW
  - Wildlife activity
  - Other

Response provided by: John Meyer Jr., Brad Watson, TransCanada

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Nebraska Department of Environmental Quality 3.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 3.3

Comment:

How frequently will Keystone conduct in-line inspections of the pipeline?

Requested Information:

NDEQ recognizes PHMSA regulations and the 57 additional measures developed for the Keystone XL Pipeline establish the minimum frequency of in-line inspections. However, NDEQ would like to have a clearer understanding of Keystone's current plans for the frequency of in-line inspections.

Response:

The *Operations and Maintenance (O&M) Manual for Hazardous Liquid Pipelines US, Procedure 49 CFR §195.579, Internal Corrosion Control* and the *Pigging Procedure for LVP Liquid Pipeline,* define the requirements for conducting maintenance pigging operations for the Keystone XL Pipeline. Keystone will run cleaning pigs twice in the first year and as necessary in succeeding years based on the analysis of oil constituents, liquid test results, and weight loss coupons located in areas with the greatest internal corrosion threat. At a minimum in the succeeding years following the first year Keystone must run cleaning pigs once a year, with intervals not to exceed15 months.

In addition, two of the 57 Special Conditions agreed to with PHMSA, within three (3) years of placing the pipeline in service, Keystone must perform a baseline in-line inspection (ILI) using a high-resolution Magnetic Flux Leakage (MFL) tool. Keystone must perform a baseline geometry tool run after completion of the construction hydrostatic strength test and back fill of the pipeline but no later than six (6) months after placing the pipeline in service. Subsequent MFL inspections would occur at the minimum based on the frequency noted in 195.452(i) which is a 5 year interval not to exceed 68 months.

Response provided by: Meera Kothari, TransCanada

Nebraska Department of Environmental Quality 3.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 3.4

Comment:

Will the pipe and the steel come from North American sources?

Requested Information:

Please provide the anticipated source of both the pipe and the steel used in the pipe. Will Keystone pay a sales tax for the pipe that would be used to offset the Nebraska use tax?

Response:

It is important to understand pipeline companies do not purchase raw steel. Rather, Keystone purchases sophisticated manufactured products such as high strength steel pipe and pumps that are fabricated from steel and other metals. It is the responsibility of the manufacturers of these products to source the necessary raw materials and to produce a product that meets all relevant regulations, codes, and Keystone's specifications. There are a number of criteria that pipe suppliers must be able to satisfy in order to be acceptable suppliers to Keystone:

- Ability to meet TransCanada's line pipe specifications, applicable codes, and the PHMSA Special Conditions
- Appropriateness of their quality control and assurance programs
- Production capacity and availability to produce and deliver line pipe to meet construction and regulatory requirements
- Logistics capability
- Steel sources (must meet TransCanada specifications)
- The mill's financial strength
- Satisfactory commercial terms

Given the volume of steel required for this project (800,000 short tons) and the need to satisfy the criteria listed above, North American suppliers alone cannot provide all of the necessary steel or line pipe.

Response provided by: Darryl Sandquist, TransCanada

The pipe for installation in Nebraska will be sourced primarily from Welspun Pipes Inc in Little Rock, Arkansas. The steel for the Welspun pipe is sourced from multiple suppliers including: Hyundai (Korea), Arcelor Mittal (Germany), Steelforce/Rukki (Finland), Posco (Korea) and, Tisco (China). Additional steel will be sourced from the U.S. but the specific source is not defined at this time.

Keystone does not pay Arkansas sales tax on the pipe sourced from Welspun in Arkansas. Keystone expects to pay the full 5.5% Nebraska use tax on the pipe, without any offset for sales tax paid in another state.

Response provided by: Darryl Sandquist, TransCanada

Nebraska Department of Environmental Quality3.0

Reference: Nebraska Supplemental Environmental Report

ER Section: 3.5

Comment:

Does Keystone have a breakdown of the other indirect construction costs that would be inputs to NDEQ's economic analysis?

Requested Information:

Please provide any additional data pursuant to the impacts of construction activities on the State of Nebraska considered in the economic analysis.

Please provide data in support of the analysis of sales tax impacts in the State of Nebraska.

Response:

Please see attached spreadsheet for additional data pursuant to the impacts of construction activities on the State of Nebraska. Please note the following:

- It is estimated that approximately 5% of the jobs included in the tabs of this spreadsheet would be direct local hires;
- Keystone does not pay Arkansas sales tax on the pipe sourced from Welspun in Arkansas. Keystone expects to pay the full 5.5% Nebraska use tax on the pipe, without any offset for sales tax paid in another state.

Response provided by: Andrea Jalbert, TransCanada

Appendix H.4

Request for Information #4

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Appendix H.4

Request for Information Letter 12/7/2012

Nebraska Department
of Environmental Quality

Request for Information Number 4
December 7, 2012

RFI Number	Comment	Information Requested
4-1	Many commenters have been concerned with the pipe contents and how that information will be provided to First Responders. NDEQ recognizes that pipe contents and specific constituents will vary daily, but a general description of the types of information on an MSDS would be helpful to the public.	NDEQ is requesting Keystone provide the MSDS data that were viewed at the Operation Cornhusker exercise. A redacted version not showing specific company names is acceptable.
4-2	Will Keystone consider HDD as a construction method for crossing streams if federal or state list fish species are confirmed in the stream?	NGPC is requesting HDD be an option to avoid impacts to federal and state listed fish species.
4-3	1.5% leak detection limitation?	Please provide more information on how very small leaks are detected. Provide a table on the time involved to detect a range of small leaks.
4-4	How with Keystone coordinate training with First Responders?	Please provide a description of the coordination Keystone would have with Emergency Response agencies. Please provide examples of the coordination Keystone has had with First Responders on Keystone 1.
4-5	What specific regulation(s) define “Significant finds of vertebrate fossils”?	Please define “significant find” and the source of that definition.

Appendix H.4

Data Request Response 12/7/2012

Nebraska Department of Environmental Quality4.0

Reference: NDEQ Request for Information

Request For Information No: 4.1

Comment:

Many commenters have been concerned with the pipe contents and how that information will be provided to First Responders. NDEQ recognizes that pipe contents and specific constituents will vary daily, but a general description of the types of information on an MSDS would be helpful to the public.

Requested Information:

NDEQ is requesting Keystone provide the MSDS data that were viewed at the Operation Cornhusker exercise. A redacted version not showing specific company names is acceptable.

Response:

Attached hereto is the MSDS for the MGE Energy Corp product involved in the Cornhusker exercise.

Response provided by: Andrea Jalbert

Nebraska Department of Environmental Quality 4.0

Reference: NDEQ Request for Information

Request For Information No: 4.2

Comment:

Will Keystone consider HDD as a construction method for crossing streams if federal or state list fish species are confirmed in the stream?

Keystone would plan to utilize dry flume or dry dam-and-pump methods (CMR Plan Details 13 and 14) where technically feasible (e.g., less than 30 feet wide) for environmentally sensitive waterbodies (i.e., containing endangered/threatened species, species of concern or high quality coldwater fisheries at the time of crossing). The flume crossing method involves diverting the flow of water across the trenching area through one or more flume pipes placed in the waterbody. The dam-and-pump method is similar to the flume method except that pumps and hoses will be used instead of flumes to move water around the construction work area. In both methods, trenching, pipe installation, and backfilling are done while water flow is isolated from construction. Once backfilling is completed and the stream channel is restored to original grade, the stream banks are restored and stabilized and the flume or pump hoses are removed.

Keystone will coordinate with the NE GPC with respect to determining spawning windows and sensitive periods for streams containing endangered or threatened species, species of concern or high quality fisheries.

Keystone plans to cross the majority of streams in Nebraska using the open-cut wet method as detailed in the CMRP (Details 11 and 12).

Response provided by: Stephen Craycroft

Nebraska Department of Environmental Quality 4.0

Reference: NDEQ Request for Information

Request For Information No: 4.3

Comment:

1.5% leak detection limitation?

Requested Information:

Please provide more information on how very small leaks are detected. Provide a table on the time involved to detect a range of small leaks.

Response:

Keystone will use a SCADA system to remotely monitor and control the pipeline system. The SCADA system will include a redundant, fully functional, backup Operational Control Center (OCC), available for service at all times; automatic features to ensure operation within prescribed pressure limits; and additional automatic features installed at the pump stations to provide pipeline pressure protection in the event communications with the SCADA host are interrupted. A number of complementary leak detection methods and systems are available with the OCC and in the field. These methods are overlapping in nature and progress in leak detection thresholds. These leak detection methods and systems are as follows:

- Remote monitoring performed by the OCC Operator, which consists primarily of monitoring pressure and flow data received from pump stations and valve sites fed back to the OCC by the Keystone SCADA system. Remote monitoring is typically able to detect leaks down to approximately 25 percent to 30 percent of pipeline flow rate;
- Software-based volume balance systems that monitor receipt and delivery volumes. These systems are typically able to detect leaks down to approximately 5 percent of pipeline flow rate. For leaks just below the approximate 25 percent threshold of the SCADA system, the volume balance method is expected to have a deletion time of a few minutes;
- Computational Pipeline Monitoring or software-based leak detection systems that utilize a model to break the pipeline system into smaller segments and monitor each of these segments on a mass balance basis. These systems are typically capable of detecting leaks

down to a level approximately 1.5 percent to 2 percent of pipeline flow rate within 102 minutes;

- Computer-based, non-real time, accumulated gain/(loss) volume trending to assist in identifying low rate or seepage releases below the 1.5 to 2 percent by volume detection thresholds; and
- Direct observation methods, which include aerial patrols, ground patrols, and public and landowner awareness programs that are designed to encourage and facilitate the reporting of suspected leaks and events that may suggest a threat to the integrity of the pipeline.

While releases above the threshold of the various computerized leak detection methods are quickly detected, a pinhole leak with a slow rate of release will not be detected as quickly as a larger leak by the first four detection mechanisms outlined above. However, these very small leaks will be detected in time, through the latter detection methods. In fact, while exact detection times for these very small leaks will be idiosyncratic, detection by direct observation such as an employee or third party report (members of the public), or by TransCanada's aerial patrol may detect the leak quicker than the leak detection systems in some cases. Aerial patrols occur every two weeks via Cessna Caravan aircraft that utilizes a pilot and qualified aerial observer who is also a trained pilot. The pipe is scanned by the observer at an altitude of approximately 500 feet above the ground. The pilot and observer are trained to recognize indications of a leak such as signs of dead or dying vegetation, oil sheen on water, spray on sites or oil surfacing on ROW. If the ground is covered with snow, typically leaked crude oil would melt the snow by rising to the surface and become obvious to the surveillance. The aerial patrol would quickly be able to see signs of the release due to the nature of the product.

Long-term PHMSA data indicate that the majority of pipeline spills are usually detected within three hours and 97 percent of spills are detected within seven days (PHMSA 2008). As for leaks that are not detected within the first 24 hours, PHMSA data indicate that such leaks were 15 barrels or less and the maximum leak volume was 12,000 barrels (detected after four days).

Response provided by: Meera Kothari

Nebraska Department of Environmental Quality 4.0

Reference: NDEQ Request for Information

Request For Information No: 4.4

Comment:

How with Keystone coordinate training with First Responders?

Requested Information:

Please provide a description of the coordination Keystone would have with Emergency Response agencies. Please provide examples of the coordination Keystone has had with First Responders on Keystone 1.

Response:

Keystone ensures emergency services agencies that may be involved in an emergency on the pipeline system are trained via multiple means. Coordination of training includes Keystone's Liaison/Outreach activities such as mailouts of TransCanada emergency response brochures describing how to respond, phone call follow-ups, delivery of response information via participation in State Associations, face to face meetings and invitation to participate in TransCanada's exercises.

Examples of Keystone 1's Liaison/Outreach activities in 2012in Nebraska include:

1. Keystone involvement in NE Pipeline Association meetings:
    - O'Neill
    - Neligh
    - Albion
    - Norfolk
    - York
    - Lincoln
    - Beatrice; and
    - Specialty meetings held throughout the year on behalf of member operators
2. Keystone attendance at Regional LEPC meeting in York NE this July (presented standard TC pipeline safety information)
3. Keystone attendance at the Homestead LEPC quarterly meeting

Response provided by: Niki Affleck

4. Keystone attendance at Butler Co. Mutual Aid meeting (presented standard TC pipeline safety information)
5. Annual mail outs (in process)

One of the most effective means of ensuring emergency response agencies including police, fire, ambulance, 911 centers, local, county and state emergency management offices are trained is by coordinating emergency response exercises with these agencies. Keystone invites response agencies to participate and observe table top, deployment and full scale exercises conducted multiple times annually.

TransCanada personnel organizing the exercise invite external agencies well in advance via all means possible including e-mail, mail and phone. To encourage attendance, meals are brought in and training is offered at no cost to external agencies.

Examples of previous exercises with emergency service agencies includes:

1. Yankton, South Dakota Field Exercise, Sept. 22, 2010.
    - State of South Dakota – Department of Natural Resources.
    - Yankton County – Emergency Services including participation of the County Director and the County rescue boat.
    - City of Yankton – Emergency Services, Fire Chief and Yankton Parks and Recreation
    - Clay County Emergency Management – Emergency Manager.

2. Atchison, Kansas Field Exercise, Aug 23, 2012
    - Kansas State Fire Marshall – Hazmat Fire Chief.
    - Kansas Department of Health and Environment
    - Atchison County Emergency Management
    - Missouri Department of Natural Resources

3. Yankton, SD Field Exercise, Sept. 14, 2012
    - SD Office of Emergency Mgmt
    - SD DENR
    - Nebraska Emergency Mgmt
    - Nebraska Game and Parks
    - Nebraska DEQ
    - Yankton County Emergency Mgmt
    - Cedar County Emergency Mgmt
    - Dakota County Emergency Mgmt
    - National Park Service
    - US Army Corps of Engineers
    - Knox County Emergency Mgmt
    - National Park Service

Response provided by: Niki Affleck

4. Omaha, NE MSDS Exercise, Operation Cornhusker, Nov 20, 2012
    - DOS
    - NDEQ
    - NEMA

Response provided by: Niki Affleck

Nebraska Department of Environmental Quality 4.0

Reference: NDEQ Request for Information

Request For Information No: 4.5

Comment:

What specific regulation(s) define "Significant finds of vertebrate fossils"?

Requested Information:

Please define "significant find" and the source of that definition.

Response:

Keystone has adhered to BLM's definition of "scientific interest" or "significant paleontological resource" to be "significant finds". According to BLM's IM 2009-011 (BLM 2008, p. 1-18 to 1-19) a Significant Paleontological Resource is defined as

> Any paleontological resource that is considered to be of scientific interest, including most vertebrate fossil remains and traces, and certain rare or unusual invertebrate and plant fossils. A significant paleontological resource is considered to be scientifically important because it is a rare or previously unknown species, it is of high quality and well-preserved, it preserves a previously unknown anatomical or other characteristic, provides new information about the history of life on earth, or has identified educational or recreational value. Paleontological resources that may be considered to not have paleontological significance include those that lack provenience or context, lack physical integrity because of decay or natural erosion, or that are overly redundant or are otherwise not useful for research. Vertebrate fossil remains and traces include bone, scales, scutes, skin impressions, burrows, tracks, tail drag marks, vertebrate coprolites (feces), gastroliths (stomach stones), or other physical evidence of past vertebrate life or activities.

Response provided by: Jon Schmidt

Appendix H.5

Request for Information #5

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Request for Information Letter 12/17/2012

Data Request Response 12/17/2012

Appendix H.5

Request for Information Letter 12/17/2012

Nebraska Department
of Environmental Quality

Request for Information Number 5
December 17, 2012

RFI Number	Comment	Information Requested
5-1	Nebraska Game and Parks has indicated that downshield sodium vapor lights could reduce potential impacts to the American Burying Beetle.	Please indicate whether Keystone will provide downshield sodium vapor lights at ancillary facilities
5-2	The DOS FEIS indicates that Keystone would coordinate with the appropriate federal agencies in the event of a significant paleontological discovery. NDEQ would like specifics on who would be notified.	Describe notification protocol for significant paleontological discoveries. Please provide specifics regarding agencies that would be notified.

Appendix H.5

Data Request Response 12/17/2012

Nebraska Department of Environmental Quality 5.0

Reference: NDEQ Request for Information

Request For Information No: 5.1

Comment:

Nebraska Game and Parks have indicated that down shield sodium vapor lights could reduce potential impacts to the American Burying Beetle.

Requested Information:

Please indicate whether Keystone will provide down shield sodium vapor lights at ancillary facilities.

Response:

Use down shield lighting and sodium vapor lights at ancillary facilities or equivalent lighting acceptable to USFWS and NGPC.

Response provided by: Sandra Barnett, TransCanada

Nebraska Department of Environmental Quality 5.0

Reference: NDEQ Request for Information

Request For Information No: 5.2

Comment:

The DOS FEIS indicates that Keystone would coordinate with the appropriate federal agencies in the event of a significant paleontological discovery. NDEQ would like specifics on who would be notified.

Requested Information:

Describe notification protocol for significant paleontological discoveries. Please provide specifics regarding agencies that would be notified.

Response:

Keystone has conducted paleontological surveys along the proposed pipeline route in Nebraska in areas where landowner permission has been granted. Keystone followed BLM paleontological survey protocols. To date, no scientifically significant resources have been identified; however, these surveys are not yet complete. In the event that scientifically significant paleontological resources are identified, Keystone will consult with the landowner who has ownership rights to the resource. Keystone will also advise the DOS, Nebraska SHPO, and the University of Nebraska State Museum.

Response provided by: Jon Schmidt, exp