BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION BY TRANSCANADA KEYSTONE PIPELINE, LP FOR A PERMIT UNDER THE SOUTH DAKOTA ENERGY CONVERSION AND TRANSMISSION FACILITIES ACT TO CONSTRUCT THE KEYSTONE XL PROJECT	)))))))	HP14-001 **KEYSTONE'S RESPONSES TO DAKOTA RURAL ACTION'S FIRST INTERROGATORIES TO TRANSCANADA KEYSTONE PIPELINE, LP**

Applicant TransCanada makes the following responses to interrogatories pursuant to SDCL § 15-6-33, and responses to requests for production of documents pursuant to SDCL § 15-6-34(a). These responses are made within the scope of SDCL 15-6-26(e) and shall not be deemed continuing nor be supplemented except as required by that rule. Applicant objects to definitions and directions in answering the discovery requests to the extent that such definitions and directions deviate from the South Dakota Rules of Civil Procedure.

GENERAL OBJECTION

Keystone objects to the instructions and definitions contained in Dakota Rural Action's First Set of Interrogatories and Requests for Production of Documents to the extent that they are inconsistent with the provisions of SDCL Ch. 15-6. *See* ARSD 20:10:01:01.02. Keystone's answers are based on the requirements of SDCL §§ 15-6-26, 15-6-33, 15-6-34, and 15-6-36.

INTERROGATORIES

INTERROGATORY NO. 1. Please identify the person or persons providing each answer to an Interrogatory or portion thereof, giving the full name, address of present residence, date of birth, business address and occupation. [Applicable Finding or Condition No.: all]

ANSWER: Given the extremely broad scope volume of more than 800 discovery requests received by Keystone in this docket, a range of personnel were involved in answering the interrogatories. Keystone will designate the following witnesses with overall responsibility for the responsive information as related to the Conditions and proposed changes to the Findings of Fact, which are identified in Appendix C to Keystone's Certification Petition: Corey Goulet, President, Keystone Projects, 450 1st Street S.W., Calgary, AB Canada T2P 5H1; Steve Marr, Manager, Keystone Pipelines & KXL, TransCanada Corporation, Bank of America Center, 700 Louisiana, Suite 700, Houston, TX 77002; Meera Kothari, P. Eng., 450 1st Street, S.W., Calgary, AB Canada T2P 5H1; David Diakow, Vice President, Commercial, Liquids Pipeline, 450 1st Street S.W., Calgary, AB Canada T2P 5H1; Jon Schmidt, Vice President, Environmental & Regulatory, exp Energy Services, Inc., 1300 Metropolitan Boulevard, Suite 200, Tallahassee, FL 32308; Heidi Tillquist, Senior Associate, Stantec Consulting Ltd., 2950 E. Harmony Rd., Suite 290, Fort Collins, CO 80528.

INTERROGATORY NO. 2. Prior to answering these interrogatories, have you made due and diligent search of all books, records, and papers of the Applicant with the view of eliciting all information available in this action? [Applicable Finding or Condition No.: all]

ANSWER: Yes, to the extent reasonably practicable in attempting to respond to over 800 discovery requests within the time allowed.

INTERROGATORY NO. 3. Describe the current status of the following permits and plans required prior to the start of construction of the KXL Pipeline:

A. Permits from US Army Corps of Engineers, S.D. Regulatory Office, including under:

1) §§404/401 of Clean Water Act, for authorization of discharge of fill material into waters of the United States including wetlands or other action;

2) §10 Rivers and Harbors Act, for authorization of pipeline crossings of navigable waters of the United States or other action;

3) Section 106 of the Natural Historic Preservation Act (NHPA), including consultation with potentially impacted Tribes and/or other action;

B. Permits from U.S. Fish and Wildlife Service, S.D. Ecological Services Field Office, including under the Endangered Species Act, Section 7 Consultation, to consider lead agency findings of impacts on federal-listed species, to provide a Biological Opinion if the Project is likely to adversely affect federally-listed or proposed species or their habitats, or other action;

C. Permits from Farm Service Agency of the Natural Resources Conservation Service, including the Crop Reserve Program, for authorization of crossing areas enrolled in the Crop Reserve Program, or other action;

D. Permit(s) from or Plan(s) Required to the S.D. Department of Environment and Natural Resources (DENR), including under:

1) National Pollutant Discharge Elimination System General Permit for Discharges of Hydrostatic Test Water, regarding proposed discharge into waters of the United States and construction dewatering of waters of the State, or other action;

2) Surface Water Withdrawal Permit, for temporary surface water withdrawal, or other action;

3) SDCL Chapter §34A-18, required submission of an Oil Spill Response Plan or Updated Plan to DENR, or other action;

E. Consultation with SD Game Fish and Parks Department, under State Listed Threatened and Endangered Species;

F. Any Updated Review and Comment from S.D. State Historical Society, State Preservation Office, under §106 of the NHPA, on activities regarding jurisdictional cultural resources;

G. Crossing Permits from S.D. Department of Transportation for crossing State highways;

H. Crossing Permits from County Road Departments for crossing of county roads;

I. Flood plain, Conditional Use, and building permits where required from County and Local Authorities.

[Applicable Finding or Condition No.: Conditions 1, 2; Findings 12(1)-(3), 60, 88, 90, 97-99]

ANSWER:

A. 1) No permit applications have been submitted to the US Army Corps of Engineers, S.D. Regulatory Office.

A. 2) No waterbody crossing in South Dakota requires permitting under the Section 10 of the Rivers and Harbor Act.

A. 3) The Department of State is the lead agency for the consultation process under the Section 106. See Section 4.11, Cultural Resources of the Department of State FSEIS (2014) for a full discussion of the Project's compliance with Section 106.

B. Keystone has not received any permits from the US Fish and Wildlife Service. The US Fish and Wildlife Service issued a Biological Opinion for the Project on May 15, 2013. The Biological Opinion is found in Appendix H of the Department of State FSEIS (2014)

C. In South Dakota, Keystone has not received any permits from the Farm Service Agency of Natural Resources Conservation Service.

D. 1) Keystone has received a General Permit for Temporary Discharge Activities on April 11, 2013 from the SD Department of Environment and Natural Resources.

D. 2) Keystone has not received a Surface Water Withdrawal Permit from SD Department of Environment and Natural Resources.

D. 3) Keystone has not submitted an Oil Response Plan to DENR.

E. The following is a summary of Keystone's consultation history with SD Game, Fish, and Parks as documented in the USFWS issued May 2013 Biological Opinion.

- June 10, 2008: Keystone met with staff from USFWS and South Dakota Department of Game, Fish, and Parks (SDGFP), at the SDGFP office in Pierre, South Dakota, to discuss issues pertaining to wildlife, special status species, and sensitive habitat that could potentially occur in the Project area. The goal of the meeting was to gather input on agency recommendations based on the information sent to them in April 2008 for species occurrence, habitat assessments, and future field surveys. Keystone incorporated comments from the meeting into survey protocols and BMPs for future agency verification.

- January/February 2009: Keystone initiated section 7 consultation with the USFWS. Keystone continued discussions with BLM, and state wildlife agency offices for South Dakota that included state-specific special status species survey protocols and BMPs for the species identified as potentially occurring during the 2008 meetings. A summary of the findings from the 2008 biological field surveys was included in the discussions.

- January 27, 2009: Keystone met with staff from the USFWS and SDGFP at the SDGFP office in Pierre, South Dakota, to discuss issues pertaining to special status species surveys. The goals of the meeting were to verify Keystone's survey approach, BMPs, discuss required field surveys, and review the information that was sent to the USFWS in the January/February 2009, informal consultation package. The USFWS and SDGFP provided additional recommendations to Keystone's sensitive species mitigation approach to be updated prior to final agency concurrence.

- October 23, 2012: A meeting was held between the USFWS, Department, SDGFP, BLM, and Keystone regarding the greater sage–grouse and a compensatory mitigation plan for the species in South Dakota. Discussions included a management plan and avoidance, minimization, and mitigation strategies.

F. Consultation with the SD SHPO is ongoing. Questions regarding specific cultural resources are resolved in a timely manner and would continue in the same manner in the future.

G. Thirteen crossing permits and twenty-four temporary approach permit applications have been filed with the State of South Dakota Department of Transportation (SD DOT) for the pipeline to cross under the state road rights-of-way. All crossing and temporary approach permits have been received from the SD DOT.

H. A total of 103 crossing permit applications have been filed for the pipeline to cross under all county road rights-of-way. Of the 103 applications filed, 101 have been acquired as of December 30, 2014.

I. The special use permits required for Harding County and Meade County pump stations have been approved. Of the remaining four pump stations, three do not require a special use permit. Special use permits applicable to valve sites, contractor yards, and contractor camps will be obtained prior to construction.

INTERROGATORY NO. 4. Do you agree that diluted bitumen spills require different spill response techniques and different equipment types and amounts as compared to (a) a spill of conventional crude oil and (b) a spill of Williston Basin light crude oil? Please explain your answer and list any scientific study(ies) providing the basis for your answer. [Applicable Finding or Condition No.: Amended Condition 31-42]

ANSWER: Crude oils are naturally variable; however, they share a range of common characteristics and properties that are important for emergency response purposes. The characteristics of the crude oils transported by Keystone XL are not unique and are transported throughout the US by truck, rail, pipelines, barges, and tankers. Crude oils has been safely transported by pipelines for decades. The Emergency Response Plan (ERP) will identify a range of appropriate standard response techniques that may be implemented in the event of a crude oil release. Ultimately, site-specific conditions, including the type of crude oil released, will assist in characterizing the nature of the release, its movement and fate within the environment, and selecting the most appropriate measures for containment and cleanup. The final version of the Keystone Pipeline Emergency Response Plan (ERP) is complete and complies with 49 C.F.R.

Part 194. The Keystone ERP will be amended to include Keystone XL. The ERP also addressed in the FSEIS at http://keystonepipeline-xl.state.gov/documents/organization/221189.pdf.

INTERROGATORY NO. 5. Do you agree that diluted bitumen is heavier than conventional crude and results in greater expenses to remediate leaks or spills? Please explain your answer and identify any known scientific study(ies) providing the basis for your answer. [Applicable Finding or Condition No.: Amended Condition 31-42/]

ANSWER: Physical characteristics of diluted bitumen are comparable to heavy conventional crude oil and consequently remediation costs would be anticipated to be equivalent. Diluted bitumen (API gravity of approximately 20-22) is heavier than light conventional crude oils (API gravity of approximately 35 to 40), but is consistent with heavy conventional crude oils (API gravity of approximately 19-22). All have API gravities greater than 10, indicating that the oils will float if released into water. The physicochemical properties and environmental fate of diluted bitumen are the same as that of heavy conventional crude oils. Thus, leaks and spills of diluted bitumen would not be expected to result in greater remediation expenses. A number of scientific studies have been conducted on the environmental fate and effects of diluted bitumen and other heavy crude oils, including:

Environment Canada. 2013. Properties, Composition and Marine Spill Behaviour, Fate and Transport of Two Diluted Bitumen Products from the Canadian Oil Sands. Federal Government Technical Report.

Rymell, Matthew. 2009. RP595 Sunken and submerged oils – behavior and response. February 2009. BMT Cordah. Available from:

http://www.dft.gov.uk/mca/s_mca_019_sunken__and__submerged_oils_final_report_270209_pub_1.pdf

SL Ross. 2012. Meso-scale Weathering of Cold Lake Bitumen/Condensate Blend. SL Ross Environmental Research Limited. Ottawa, Ontario.

INTERROGATORY NO. 6. Do you agree that soil and rocks that are contaminated by oil spills cannot be cleaned but instead must be removed and disposed of in hazardous waste facilities? Please explain your answer and list any scientific study(ies) providing the basis for your answer.

A. If so, do you agree that reclamation efforts for oil spills of the magnitude of the worst case discharge amount for the Keystone XL Pipeline fail to recover 100% of the oil contaminating the ground?

B. Identify the Documents created by or on your behalf which would show the basis for your answer to this Interrogatory.

[Applicable Finding or Condition No.: Amended Condition 32-38]

ANSWER: Keystone does not agree with this statement. Although removal and disposal of contaminated materials is an effective and well established means of limiting the area affected by a crude oil spill, it is not the only option. In the event of a release affecting soils in South Dakota, Keystone would be required to meet the state's soil remediation standards. This can be accomplished using a number of active remediation techniques, including removal of crude oil, dual-pump recovery, total fluids recovery, bioslurping, air sparging, chemical oxidation, and enhanced biodegradation through the addition of oxygen and nutrients into the

soil (Sutherson 1997). In addition, natural biodegradation and attenuation would ultimately allow for a return to preexisting conditions in soil.

Sutherson, S.S. 1997. Remediation Engineering: Design concepts. CRC Press, Boca Raton, FL.

A. Due to the volatility of many crude oil constituents (e.g., BTEX), a significant portion of crude oil will evaporate soon after being released to the environment. Fate modeling of diluted bitumen indicates that approximately 20% of released crude oil would evaporate within 6 hours of a spill (NOAA 2015). Additional processes such as photodegradation and biodegradation also naturally decrease the volume of crude oil in the environment. Thus, a significant fraction of the discharge volume of a crude oil spill would not be available for recovery due to these natural weathering processes.

If there is an accidental release from the proposed Project, Keystone would implement the remedial measures necessary to meet the federal, state, and local standards that are designed to help ensure protection of human health and environmental quality. Cleanup standards for the state of South Dakota are available in the South Dakota Department of Environment and Natural Resources' Petroleum Assessment and Cleanup Handbook (http://denr.sd.gov/des/gw/spills/handbook/hand_book.aspx). Additional information on remediation is presented in Section 4.13 of the FSEIS, Potential Releases.

B. NOAA. 2015. ADIOS2. Oil Spill response tool – documentation. http://response.restoration.noaa.gov/adios

INTERROGATORY NO. 7. For each incident since January 1, 2010 in which any pipeline transporting crude oil constructed by TransCanada and its Affiliates leaked or spilled pipeline contents, please provide the:

A. Date;

B. Location:

C. Amount of materials leaked or spilled;

D. Duration of leak or spill before (i) the control center being notified, (ii) pump shut down, (iii) valve shutoff, (iv) national response center notified, and (v) arrival of responders on the scene;

E. Duration of reclamation of affected soil and/or water resources;

F. Established and documented cause of leak/spill;

G. For each such spill, provide a copy of the Integrity Management Plan, the operational manual for the pipeline, the specifications for the SCADA system, and the ERP for each spill in the US and Canada;

H. Identify the documents which support your answers, above.

[Applicable Finding or Condition No.: Findings 12(2)-(3), 41-45, 47, 103; Amended Condition 32-38]

OBJECTION AND ANSWER: Please see the spreadsheet attached as Keystone 0774-0784. Keystone's Integrity Management Plan, SCADA specifications, and Emergency Response Plan are confidential and not relevant for the reasons identified elsewhere in these responses.

INTERROGATORY NO. 8. Describe any forecasts you have developed with respect to (i) re-exports of WCSB crude oil from PADD3, (ii) product exports from PADD 3, (iii) US domestic demand for PADD 3 refinery output, and (iv) total PADD 3 refinery output.

A. Identify the documents upon which this answer is based.

[Applicable Finding or Condition No.: Findings 14, 24-29]

OBJECTION AND RESPONSE: This request seeks information that is beyond the scope of the PUC's jurisdiction and Keystone's burden of proof under SDCL § 49-41B-27. It is within the purview of the United States Department of State to determine whether the proposed project is in the national interest, under the applicable Presidential Executive Order. This request also may seek information that is not within Keystone's custody or control and is not maintained by Keystone in the ordinary course of business. Keystone is a provider of transportation service. It does not own the oil that is transported, is not a refiner, and does not make decisions about potential exports of crude oil or refined products. The oil forecast information that Keystone relied on in Appendix C to its Certification was derived from the following sources: The Final Supplemental Environmental Impact Statement; the CAPP Crude Oil Forecast, Markets and Transportation June 2014; and the Energy Information Agency Annual Energy Outlook 2014. These documents, except for the FSEIS, which is available at http://keystonepipeline-xl.state.gov/finalseis/index.htm, are marked as Keystone 0001-0467.

INTERROGATORY NO. 9. What companies, if any, were partners or investors with TransCanada in the construction and operation of the KXL pipeline in 2009 which are no longer participating in the proposed project? [Applicable Finding or Condition No.: Findings 24-29]

ANSWER: Conoco Phillips is no longer participating in the Project as of August 14, 2009.

INTERRROGATORY NO. 10. Identify the companies which have binding contractual commitments with TransCanada or its Affiliates to ship WCSB or Williston Basin crude oil through the KXL Pipeline. For each such company:

A. Provide the termination dates, opt-out dates, or other material dates in the contractual commitments of shippers with the contractual commitments that underpin the viability and need for the project;

B. Identify all documents and sources for your answers.

[Applicable Finding or Condition No.: Findings 17, 24, 29]

OBJECTION: The identity of Keystone's shippers and the terms of their contracts have substantial commercial and proprietary value, are subject to substantial efforts by Keystone to protect this information from actual and potential competitors, and are required to be maintained on a confidential basis pursuant to the terms of the contracts between Keystone and its shippers and Section 15(13) of The Interstate Commerce Act.

INTERROGATORY NO. 11. Provide and describe in detail the development schedule for the Project and describe how the development schedule for the Project is consistent with the contractual commitments made by TransCanada. Identify all documents and sources for your answers. [Applicable Finding or Condition No.: Findings 17, 24, 29]

ANSWER: Currently, Keystone has not identified a date to commence construction, nor does it have a pipeline construction contract in place.

Construction of the proposed Project would begin after Keystone obtains all necessary permits, approvals, and authorizations. Keystone anticipates that he proposed Project would be placed into service approximately two years after receiving such authorizations. As currently planned, the proposed Project would be constructed using 10 spreads of approximately 46 to 122 miles long (*see* FSEIS Table 2.1-13). Final spread configurations and the final construction schedule may result in the use of more or fewer spreads than those indicated. Time periods and

key milestones including the relationship between contractor mobilization, start of construction (pre-welding), start and end of welding, post-welding and clean-up, and contractor demobilization are described in the FSEIS in Section 2.1.10.1 Schedule and Workforce. (FSEIS, pages 2.1-69 and 70).

Keystone will comply with all conditions set out in its permits including the SDPUC Order, including condition 12 to, once known, inform the Commission of the date construction will commence, report to the Commission on the date construction is started, and keep the Commission updated on construction activities. Keystone will also comply with condition 10 to, not later than six months prior to the commencement of construction, commence a program to notify and educate state, county, and municipal agencies on the planned construction schedule and the measures that such agencies should begin taking to prepare for construction impacts and the commencement of project operations. Additionally, in the Special Conditions Recommended by PHMSA, number 17 Construction Plans and Schedule, Keystone will at least 90 days prior to the anticipated construction start date submit its construction plans and schedule to the appropriate PHMSA Directors for review. Subsequent plans and schedule revisions must also be submitted to the appropriate PHMSA Directors, on a monthly basis. (FSEIS, Appendix Z, Compiled Mitigation Measures, page 70.)

INTERROGATORY NO. 12. Is there currently a growing (i) demand for crude oil US refineries, and (ii) demand for petroleum products by US consumers?

A. Please explain your answer;

B. Identify all sources for your answer;

C. How and why has this changed since 2009?

[Applicable Finding or Condition No.: Findings 14, 17]

OBJECTION AND RESPONSE: This request seeks information that is beyond the scope of the PUC's jurisdiction and Keystone's burden of proof under SDCL § 49-41B-27. It is within the purview of the United States Department of State to determine whether the proposed project is in the national interest, under the applicable Presidential Executive Order. This request also may seek information that is not within Keystone's custody or control and is not maintained by Keystone in the ordinary course of business. The oil forecast information that Keystone relied on in Appendix C to its Certification was derived from the following sources: The Final Supplemental Environmental Impact Statement; the CAPP Crude Oil Forecast, Markets and Transportation June 2014; and the Energy Information Agency Annual Energy Outlook 2014. These documents, except for the FSEIS, which is available at http://keystonepipeline-xl.state.gov/finalseis/index.htm, are marked as Keystone 0001-0467.

INTERROGATORY NO. 13. Identify the forecasts of "additional crude oil production from the WCSB" and the Williston Basin that create a need for the Keystone XL Pipeline.

A. As per such forecasts, state the potential impact of current low oil prices on these forecasts.

B. Identify the basis for your answers to these Interrogatories.

[Applicable Finding or Condition No.: Finding 24]

OBJECTION AND RESPONSE: This request seeks information that is beyond the scope of the PUC's jurisdiction and Keystone's burden of proof under SDCL § 49-41B-27. It is within the purview of the United States Department of State to determine whether the proposed project is in the national interest, under the applicable Presidential Executive Order. This request

also may seek information that is not within Keystone's custody or control and is not maintained by Keystone in the ordinary course of business. Keystone is a provider of transportation service. It does not own the oil that is transported, is not a refiner, and does not make decisions about potential exports of crude oil or refined products. The oil forecast information that Keystone relied on in Appendix C to its Certification was derived from the following sources: The Final Supplemental Environmental Impact Statement; the CAPP Crude Oil Forecast, Markets and Transportation June 2014; and the Energy Information Agency Annual Energy Outlook 2014. These documents, except for the FSEIS, which is available at http://keystonepipeline-xl.state.gov/finalseis/index.htm, are marked as Keystone 0001-0467.

INTERROGATORY NO. 14. Does TransCanada agree that domestic U.S. crude oil supplies are increasing?

A. Please explain your answer;

B. Identify documents which support your answer to this Interrogatory.

[Applicable Finding or Condition No.: Finding 26]

ANSWER: According to the Department of State FSEIS 1.4.2.3, U.S. production of crude oil has increased significantly, from approximately 5.5 million bpd in 2010 to 6.5 million bpd in 2012 and 7.5 million bpd by mid-2013. Even with the domestic production growth the U.S. is expected to remain a net importer of crude oil well into the future.

INTERROGATORY NO. 15. Provide a list of U.S. refineries that TransCanada expects to increase demand for WCSB and Williston Basin oil.

A. For each refinery, state the basis for TransCanada's claim that the refinery will increase such demand for crude oil;

B. Identify the refineries in PADD 3:

i. That could be served by the proposed KXL Project that are currently expanding refining capacity or have announced plans to expand their refining capacity;

ii. That TransCanada experts to import less offshore crude oil and replace it with crude oil that would be transported by the Project;

iii. That are "optimally configured to process heavy crude slates";

C. Identify the new refineries and refinery expansions that are currently proposed to be constructed in PADD 3;

D. Itemize the annual heavy crude oil imports into PADD 3 by country since 2010. For each, state whether the costs of crude oil production in the source country are greater, the same, or less than the cost of heavy crude oil production in the WCSB;

E. State whether pipeline expansions from the WCSB and the Williston Basin to the U.S. Gulf Coast operated by Enbridge (or companies affiliated with Enbridge) provide crude oil transportation services to the refineries that TransCanada claims would be served by the KXL Project. Please provide a detailed explanation for your answer.

F. Identify and describe the proposed delivery locations of the Keystone System in PADD 3.

G. Identify all pipelines in PADD 3 to which the Keystone System is connected;

H. State the year in which TransCanada expects the Keystone XL Pipeline to be fully utilized;

I. Describe the impact of growing crude oil production in PADD 3 on the demand in PADD 3 for crude oil from the WCSB and Williston Basin;

J. Describe the size of the potential market for Williston Basin light sweet crude oil in PADD 3 and state whether or not such market is limited in size by production of light sweet crude oil in PADD 3;

K. Identify the basis for your answers to these Interrogatories and identify all documents relied upon by you in answering this Interrogatory.

[Applicable Finding or Condition No.: Findings 24, 26 and 27]

OBJECTION AND RESPONSE: This request seeks information that is beyond the scope of the PUC's jurisdiction and Keystone's burden of proof under SDCL § 49-41B-27. It is within the purview of the United States Department of State to determine whether the proposed project is in the national interest, under the applicable Presidential Executive Order. This request also may seek information that is not within Keystone's custody or control and is not maintained by Keystone in the ordinary course of business. Keystone is a provider of transportation service. It does not own the oil that is transported, is not a refiner, and does not make decisions about potential exports of crude oil or refined products. The oil forecast information that Keystone relied on in Appendix C to its Certification was derived from the following sources: The Final Supplemental Environmental Impact Statement; the CAPP Crude Oil Forecast, Markets and Transportation June 2014; and the Energy Information Agency Annual Energy Outlook 2014. These documents, except for the FSEIS, which is available at http://keystonepipeline-xl.state.gov/finalseis/index.htm, are marked as Keystone 0001-0467.

INTERROGATORY NO. 16. Identify each existing pipeline that comprise the "insufficient pipeline capacity" identified by TransCanada as a factor driving the need for the KXL Project. For each of these pipelines:

A. Provide current usage as a percentage of each respective pipeline's total capacity;

B. Identify the basis for your answers to these Interrogatories.

[Applicable Finding or Condition No.: Finding 24]

OBJECTION AND RESPONSE: This request seeks information that is beyond the scope of the PUC's jurisdiction and Keystone's burden of proof under SDCL § 49-41B-27. It is within the purview of the United States Department of State to determine whether the proposed project is in the national interest, under the applicable Presidential Executive Order. This request also seeks information that is not within Keystone's custody or control and is not maintained by Keystone in the ordinary course of business. Without waiving the objection, the demand evidenced by Keystone's binding shipper commitments demonstrates insufficient pipeline capacity.

INTERROGATORY NO. 17. Given competing crude oil pipelines to Cushing, Oklahoma, and PADD 3 and forecast low oil prices, does TransCanada still contend its KXL pipeline is necessary and will allow North American crude oil to replace U.S. reliance on unstable sources of off-shore crude oil?

A. Please explain your answer;

B. Identify all documents and sources for your answer;

C. How and why has this changed since 2009?

[Applicable Finding or Condition No.: Findings 14, 17]

ANSWER: Shippers have committed to long-term binding contracts, which support construction of the pipeline once all regulatory, environmental, and other approvals are received. These long-term binding shipper commitments demonstrate a material endorsement of support

for the Project, its economics, proposed route, and target market, as well as the need for additional pipeline capacity to access North Dakota and Canadian crude supplies.

INTERROGATORY NO. 18. Provide the total current capacity of existing pipelines to transport crude oil from the WCSB and the Williston Basin to the U.S. Gulf Coast and identify the source(s) for your answer. [Applicable Finding or Condition No.: Finding 24]

ANSWER: Specifics to operating capacity of third-party pipelines are under the responsibility of the pipeline owners and are beyond Keystone's control.

INTERROGATORY NO. 19. Identify all other pipeline operations of TransCanada and its Affiliates, which since 2009 are utilizing the same pipeline materials, dimensions, and seals as proposed for the KXL pipeline through South Dakota, and described in Findings 18 and 28. [Applicable Finding or Condition No.: Findings 18, 28]

OBJECTION AND RESPONSE: To the extent that it seeks information for pipelines other than crude oil pipelines, this request seeks information that is not relevant and not likely to lead to the discovery of admissible evidence. Without waiving the objection, the Keystone I, Cushing Extension and Gulf Coast segments of the Keystone system are using similar materials to that of the proposed KXL pipeline.

INTERROGATORY NO. 20. Identify each pipeline operated by TransCanada and its Affiliates which have operated at 900,000 bpd, giving the pipeline name, location, dates of such operation, together with:

A. Identification of each such pipeline which subsequently developed a leak or spill, regardless of whether the pipeline was at that time operating at 900,000 bpd, giving date, location, amount spilled/leaked, damage caused;

B. Identify the documents upon which your answer(s) to these Interrogatories were based; [Applicable Finding or Condition No.: Findings 15, 18, 28]

ANSWER: Keystone and its affiliates do not operate any pipelines at 900,000 bpd.

INTERROGATORY NO. 21. State whether a failure by TransCanada to design, construct, test, or operate the proposed KXL Project in accordance with the special conditions developed by the Pipeline Hazardous Materials and Safety Administration (PHMSA), and set forth in Appendix Z to the Department of State, January 2014 Final Supplemental Environmental Impact Statement (FSEIS), would be a violation of federal law. If so:

A. Identify the law(s) under which enforcement of these special conditions would be brought;

B. Identify the enforcing agency;

C. Identify all correspondence between TransCanada and the PHMSA.

D. Identify the documents upon which your answer(s) to these Interrogatories were based; [Applicable Finding or Condition No.: Conditions 1-3; Findings 22, 28]

OBJECTION AND RESPONSE: This request seeks information that is beyond the scope of the PUC's jurisdiction and Keystone's burden under SDCL § 49-41B-27. This request also seeks information addressing an issue that is governed by federal law and is within the province of PHMSA. In addition, this request depends on a hypothetical condition and is therefore speculative and improper as to form. It is also overlybroad and burdensome to the extent that it seeks all correspondence between TransCanada and PHMSA, and asks for information that is not relevant and not likely to lead to the discovery of admissible evidence under SDCL § 15-6-26(b). Without waiving the objection, unless and until the Department

issues a Record of Decision and a Presidential Permit, the recommendations in the Final EIS are not binding on Keystone.

INTERROGATORY NO. 22: Identify all other crude oil pipeline operations of TransCanada and its Affiliates which, since 2009, have or are operating at a maximum operating pressure (MOP) of equal to or greater than 1,440 psig generally and/or 1,600 psig MOP for specific low elevation segments of pipeline with the same design factor and pipe wall thickness as described in Finding 19, close to the discharge of pump stations:

A. For each such pipeline which subsequently developed a leak or spill, regardless of the psig MOP the pipeline was operating at the time, giving date, location, amount spilled/leaked, psig MOP at which pipeline was operating at the time, and describe the amount and nature of damage caused by such a leak or spill;

B. Identify any documents upon which your answers to these Interrogatories were based; [Applicable Finding or Condition No.: Findings 19, 28]

ANSWER: There are currently no crude oil pipelines operating equal to or greater than 1,440 psig generally and/or 1,600 psig MOP.

INTERROGATORY NO. 23: For each spill/leak incident which has occurred from a pipeline transporting WCSB crude oil operated by TransCanada and its Affiliates since 2009, state the dates on which transportation of the crude oil through that pipeline was disrupted by planned maintenance, unplanned maintenance, power outages, spills, leaks, or any other causes. Identify any documents upon which your answers to this Interrogatory was based. [Applicable Finding or Condition No.: Finding 28]

ANSWER: See the spreadsheet attached as Keystone 0774-0784.

INTERROGATORY NO. 24: Explain why TransCanada has reduced the maximum operating pressure of the KXL pipeline at most locations to 1,307 psig;

A. State whether TransCanada has any plans to subsequently increase this general operating pressure;

B. If your answer to subpart A of this interrogatory is yes, what is the subsequent maximum operating pressure being contemplated for general use during pipeline operations?

[Applicable Finding or Condition No.: Conditions 31-38; Findings 19, 20]

ANSWER: On August 5 2010, TransCanada withdrew its application to the Pipeline Hazardous Materials and Safety Administration (PHMSA) for a special permit to design, construct and operate the pipeline at a 0.8 design factor and adopted the 57 additional safety measures that would have been required under the PHMSA special permit. The operating pressure reduction from 1,440 psig to 1,307 psig is a result of the use of the standard design factor (0.72) in accordance with 49 CFR 195.106 design pressure. TransCanada would be required to re-apply to PHMSA for a special permit in order to operate the pipeline at an increased design factor of 0.8 corresponding to an operating pressure of 1,440 psig. In addition, the attached Media Advisory, marked as Keystone 0647-0649, dated August 5, 2010, addresses this issue.

INTERROGATORY NO. 25: With regard to the plan for mainline valves to be remotely controlled, what guarantee can you give the PUC that TransCanada can prevent a cyber-security attack on the control system?

A. Describe the worst case scenario which could occur in the event of a computer systems security breach on the control system for the KXL Pipeline.

B. Describe the data security systems to be put in place to prevent any such system breach, identify any third-party vendor(s) providing system security software, hardware or monitoring, and identify the particular components or scopes of services such vendors will provide.

C. Identify any documents used to support your answer to this Interrogatory.

[Applicable Finding or Condition No.: Conditions 31-38; Finding 20]

ANSWER:

A. Once constructed, the Keystone XL pipeline will form part of North America's critical national energy infrastructure. Over time, actors such as terrorist organizations and hostile nation states can be expected to pursue their objectives by attempting to disrupt this critical infrastructure. Therefore, it is not prudent for TransCanada to publicly provide an opinion on how the adverse consequences of a cyber attack could be maximized.

B. Consistent with industry practice, TransCanada does not publicly disclose the details of the security systems it has in place. We believe that it is not prudent to make this information public because of the likelihood that it will assist, and, potentially encourage, attackers.

INTERROGATORY NO. 26. What is the current capacity contracted for WCSB crude oil from Canada? Identify any documents upon which you based your answer or which you are aware would be a basis for your answer. [Applicable Finding or Condition No.: Findings 14, 24-29]

OBJECTION: This request seeks information that is not within Keystone's custody and control. Keystone does not know the contractual details of other pipeline companies' commitments.

INTERROGATORY NO. 27. State whether there is a significant discount on the price currently of WCSB crude oil relative to West Texas Intermediate and Brent crude oils.

A. Please explain your answer;

B. Identify all documents which support your answers;

[Applicable Finding or Condition No.: Finding 27]

OBJECTION AND ANSWER: The scope of the question is too broad given the large number of crude oil grades available from the WCSB. The Canadian heavy benchmark discounts in 2014 range from $13 to $30.

A.
- Western Canadian crudes are priced against West Texas Intermediate (WTI).
- Canadian crudes are traded on Net Energy and TMX (NGX) trading exchanges.
- Canadian crude monthly blended indices are calculated using calendar moth volume weighted average between the two platforms.
- As an example, WCS blended indices for 2014 range from $13 to $30 discount to WTI monthly.

B. Responsive documents are attached as Keystone 1116-1118.

INTERROGATORY NO. 28: What is the current capacity contracted for Williston Basin oil? Identify any documents which would support your answer. [Applicable Finding or Condition No.: Findings 14, 24-29]

ANSWER: Shippers have committed about 65,000 barrels per day of capacity for transportation services on Bakken Marketlink.

INTERROGATORY NO. 29: Describe the changes in contracted capacity amounts and duration since 2009 from Canada and the Williston Basin and identify any documents which would support your answer. [Applicable Finding or Condition No.: Findings 14, 24-29]

ANSWER: Shippers have committed about 65,000 barrels per day of capacity for transportation services on Bakken Marketlink. Keystone also received additional commitments on Keystone XL Pipeline that would support an expansion of its total capacity from 700,000 barrels per day to 830,000 barrels per day. The contracted capacity amounts, delivery locations and duration of each of the commitments are confidential.

INTERROGATORY NO. 30. Regarding the "U.S. demand for petroleum products," i.e., produced for U.S. consumers and not for export to other countries:

A. What is the percent change since 2010?

B. What is the forecast for "U.S. demand for petroleum products" over the next 20 years?

C. What has been the annual import of crude oil for each year since 2010?

D. What is the forecast for offshore crude oil imports into the U.S. over the next 20 years?

E. Of the 15 million bpd of crude oil demand identified in revised Finding of Fact 25, state whether some of this demand is used to produce petroleum products for export from the U.S. If so provide the quantity of crude oil:

i. Needed for domestic demand for petroleum products;

ii. Needed to produce petroleum products for export;

F. Identify any documents which would support your answer;

[Applicable Finding or Condition No.: Findings 14, 24-29]

OBJECTION AND RESPONSE: This request seeks information that is beyond the scope of the PUC's jurisdiction and Keystone's burden of proof under SDCL § 49-41B-27. It is within the purview of the United States Department of State to determine whether the proposed project is in the national interest, under the applicable Presidential Executive Order. This request

also may seek information that is not within Keystone's custody or control and is not maintained by Keystone in the ordinary course of business. The oil forecast information that Keystone relied on in Appendix C to its Certification was derived from the following sources: The Final Supplemental Environmental Impact Statement; the CAPP Crude Oil Forecast, Markets and Transportation June 2014; and the Energy Information Agency Annual Energy Outlook 2014. These documents, except for the FSEIS, which is available at http://keystonepipeline-xl.state.gov/finalseis/index.htm, are marked as Keystone 0001-0467.

INTERROGATORY NO. 31. What is the status of pipeline and rail capacity to move oil from oil fields in the Williston Basin to the Baker, Montana on-ramp? Identify any documents which would support your answer. [Applicable Finding or Condition No.: Findings 14, 24-29]

OBJECTION AND ANSWER: This request seeks information that is not within Keystone's custody or control and is not maintained by Keystone in the ordinary course of business. Without waiving the objection, information regarding the Bakken on-ramp pipeline can be found in the Montana Department of Environmental Quality Certificate issued under the Montana Major Facility Siting Act available at http://www.deq.mt.gov/mfs/keystonexl/keystonecertificate.aspx.

INTERROGATORY NO. 32: Why would the existing Keystone I pipeline not be capable of shipping enough crude oil from the Western Canadian Sedimentary Basin (WCSB) to offset the need for unstable foreign oil supplies? Identify any documents which would support your answer. [Applicable Finding or Condition No.: Finding 14]

ANSWER: The Keystone Pipeline does not have sufficient capacity to meet additional demand.

INTERROGATORY NO. 33: What are the currently projected forecasts of production in the Western Canadian Sedimentary Basin (WCSB) and the Williston Basin over each of the next ten years? Identify any documents which would support your answer. [Applicable Finding or Condition No.: Findings 14, 24-29]

OBJECTION AND RESPONSE: This request seeks information that is beyond the scope of the PUC's jurisdiction and Keystone's burden of proof under SDCL § 49-41B-27. It is within the purview of the United States Department of State to determine whether the proposed project is in the national interest, under the applicable Presidential Executive Order. This request also seeks information that is not within Keystone's custody or control and is not maintained by Keystone in the ordinary course of business. The oil forecast information that Keystone relied on in Appendix C to its Certification was derived from the following sources: The Final Supplemental Environmental Impact Statement; the CAPP Crude Oil Forecast, Markets and Transportation June 2014; and the Energy Information Agency Annual Energy Outlook 2014. These documents, except for the FSEIS, which is available at http://keystonepipeline-xl.state.gov/finalseis/index.htm, are marked as Keystone 0001-0467.

INTERROGATORY NO. 34: Describe the impact of low oil prices on crude oil production in the WCSB and Williston Basin.

A. What is the effect on the forecast of demand for crude oil transportation services from the Williston Basin and WCSB given annual average West Texas Intermediate crude oil prices of $50/bbl, $60/bbl, $70/bbl, and $80/bbl?

B. In light of low oil prices, what will be the impact of the Enbridge pipelines from the WCSB and Williston Basin to the US Gulf Coast on the need for transportation services of the KXL pipeline?

C. Identify any documents which would support your answers;

[Applicable Finding or Condition No.: Findings 14, 24-29]

OBJECTION AND RESPONSE: This request seeks information that is beyond the scope of the PUC's jurisdiction and Keystone's burden of proof under SDCL § 49-41B-27. It is within the purview of the United States Department of State to determine whether the proposed project is in the national interest, under the applicable Presidential Executive Order. This request also seeks information that is not within Keystone's custody or control and is not maintained by Keystone in the ordinary course of business. The oil forecast information that Keystone relied on in Appendix C to its Certification was derived from the following sources: The Final Supplemental Environmental Impact Statement; the CAPP Crude Oil Forecast, Markets and Transportation June 2014; and the Energy Information Agency Annual Energy Outlook 2014. These documents, except for the FSEIS, which is available at http://keystonepipeline-xl.state.gov/finalseis/index.htm, are marked as Keystone 0001-0467.

INTERROGATORY NO. 35: Describe in detail, route changes in the proposed KXL pipeline since 2010, on a county by county basis, identifying specific land parcels to be affected by such changes. Identify any documents which would support your answers. [Applicable Finding or Condition No.: Finding 16]

ANSWER: Please see the attached route variation maps attached as Keystone 0470-0583.

INTERROGATORY NO. 36: Provide the dates on which pipe segments to be used in South Dakota were delivered to storage location in South Dakota or adjacent states.

A. For each such delivery of pipe segments, state the date on which an external fusion bonded epoxy (FBE) was applied;

B. Describe the materials comprising and dimensions of any covering placed over each shipment of delivered pipe segments on its arrival;

i. Provide the date of each covering of the respective pipe shipment after delivery;

C. As per the respective deliveries, state the longest time that any pipe segments were stored without protective covering;

D. Provide the FBE manufacturer's recommendations for protection of the FBE from the effects of outside storage;

E. Provide the pipeline manufacturer's recommendations for protection of FBE against the effects of outside storage;

F. Provide the manufacturer's suggested maximum amount of time of sunlight exposure of FBE without protective covering;

G. Describe the impact of UV radiation on FBE coating over time;

H. Provide the manufacturer's warrantees and guarantees for the FBE coating applied to the pipe segments;

I. Provide the manufacturer's warranties and guarantees for the pipe segments, including for the FBE;

J. Explain the elimination from use in the proposed Project of API 5L X80 high strength steel;

i. Describe how substituted material(s) would perform better than the API 5L X80 steel;

K. Identify any documents which would support your answers;

[Applicable Finding or Condition No.: Finding 18]

ANSWER:

A. January 2011- November 2011

B. Covering application commenced in October 2012 and was completed July 2013

C. Approximately 18 months

D. The manufacturer did not provide recommendation or direction for storage. Direction for storage is per TransCanada specification.

E. The manufacturer did not provide recommendation or direction for storage. Direction for storage is per TransCanada specification.

F. Per manufacture, pipe coated with FBE coatings can be stored for 730 days under most climatic weather conditions without commencement of deterioration of the coating. TransCanada specification provides criteria for minimum coating thickness requirements which would supersede any exposure time period. Applicable manufacturer warranties are related to application and workmanship to the specification

G. Sunlight exposure over a significantly extended period of time could cause a reduction in coating thickness and coating flexibility due to degradation by UV radiation

H. WARRANTY

Unless otherwise specified in the Order for Pipe, the Supplier hereby warrants that the Pipe, including, if applicable, the Work done thereto, shall meet and conform to the Specifications and the Technical Agreements, and such other product characteristics agreed to by the Parties in

writing, for a period of twelve (12) calendar months from the day the Pipe is incorporated into the Company's pipeline and the Company's pipeline is commissioned for regular service or eighteen (18) calendar months from the date of delivery of all Pipe to the Delivery Point, whichever is earlier. If during the aforesaid warranty period, the Company discovers any Pipe which fails to conform, the Company shall forthwith notify in writing the Supplier of such non-conformance. The Company and the Supplier shall jointly investigate any such non-conformance in an effort, in good faith, to determine the cause thereof, provided that such investigation shall not unreasonably delay any repair or replacement of the Pipe. If the Parties are unable to agree upon the cause of the non-conformance with this Agreement within ten (10) days of the date of the discovery of such non-conformance, either Party shall have the right to request that the matter be arbitrated pursuant to single party arbitration conducted in accordance with the then current International Chamber of Commerce's Rules of Arbitration.

If such non-conformance is discovered after title to the Pipe passes to the Company, the Company may, after notification to the Supplier, to the extent the Company, acting reasonably, deems practical under the circumstances, repair the same at the Supplier's risk and expense. If repair is not practical in the Company's opinion, acting reasonably, the Company agrees that the Supplier may replace the non-conforming Pipe in the event that the Supplier can secure such replacement at delivery dates at least as favorable as those available to the Company from other sources.

Any Pipe that is repaired or replaced pursuant to the warranties specified herein shall be warranted for a further period of twelve (12) calendar months from the day the Pipe is incorporated into the Company's pipeline and the Company's pipeline is commissioned for

regular service or eighteen (18) calendar months from the date of delivery of the Pipe to the Delivery Point, whichever is earlier.

If the non-conforming Pipe cannot be repaired and the Company elects not to replace such Pipe, the Company shall have the right to return, at the Supplier's expense and risk, any or all of the non-conforming Pipe delivered by the Supplier to the Company whereupon the Supplier shall immediately repay the Company, without Interest, all monies previously paid by the Company to the Supplier on account of the non-conforming Pipe so returned, together with all costs and expenses incurred by the Company in returning such Pipe.

The express warranties of the Supplier in this Agreement are the only warranties as to the Pipe and are in lieu of all other warranties in respect thereof, whether written, statutory, oral, express or implied including, without limitation, any warranty of merchantability or fitness for purpose. The rights and remedies contained in this Agreement are the Company's exclusive rights and remedies against the Supplier whatsoever in relation to, or arising out of, or in connection with the performance or conformance of the Supplier's obligations under these warranties.

I. WARRANTY

Unless otherwise specified in the Order for Pipe, the Supplier hereby warrants that the Pipe, including, if applicable, the Work done thereto, shall meet and conform to the Specifications and the Technical Agreements, and such other product characteristics agreed to by the Parties in writing, for a period of twelve (12) calendar months from the day the Pipe is incorporated into the Company's pipeline and the Company's pipeline is commissioned for regular service or eighteen (18) calendar months from the date of delivery of all Pipe to the

Delivery Point, whichever is earlier. If during the aforesaid warranty period, the Company discovers any Pipe which fails to conform, the Company shall forthwith notify in writing the Supplier of such non-conformance. The Company and the Supplier shall jointly investigate any such non-conformance in an effort, in good faith, to determine the cause thereof, provided that such investigation shall not unreasonably delay any repair or replacement of the Pipe. If the Parties are unable to agree upon the cause of the non-conformance with this Agreement within ten (10) days of the date of the discovery of such non-conformance, either Party shall have the right to request that the matter be arbitrated pursuant to single party arbitration conducted in accordance with the then current International Chamber of Commerce's Rules of Arbitration. If such non-conformance is discovered after title to the Pipe passes to the Company, the Company may, after notification to the Supplier, to the extent the Company, acting reasonably, deems practical under the circumstances, repair the same at the Supplier's risk and expense. If repair is not practical in the Company's opinion, acting reasonably, the Company agrees that the Supplier may replace the non-conforming Pipe in the event that the Supplier can secure such replacement at delivery dates at least as favorable as those available to the Company from other sources.

Any Pipe that is repaired or replaced pursuant to the warranties specified herein shall be warranted for a further period of twelve (12) calendar months from the day the Pipe is incorporated into the Company's pipeline and the Company's pipeline is commissioned for regular service or eighteen (18) calendar months from the date of delivery of the Pipe to the Delivery Point, whichever is earlier.

If the non-conforming Pipe cannot be repaired and the Company elects not to replace such Pipe, the Company shall have the right to return, at the Supplier's expense and risk, any or all of the non-conforming Pipe delivered by the Supplier to the Company whereupon the Supplier shall immediately repay the Company, without Interest, all monies previously paid by the Company to the Supplier on account of the non-conforming Pipe so returned, together with all costs and expenses incurred by the Company in returning such Pipe.

The express warranties of the Supplier in this Agreement are the only warranties as to the Pipe and are in lieu of all other warranties in respect thereof, whether written, statutory, oral, express or implied including, without limitation, any warranty of merchantability or fitness for purpose. The rights and remedies contained in this Agreement are the Company's exclusive rights and remedies against the Supplier whatsoever in relation to, or arising out of, or in connection with the performance or conformance of the Supplier's obligations under these warranties.

J. API 5L X80 high strength steel was contemplated as an option during the early stages of the Project. Material evaluation and selection was finalized during the detail design phase of the Project at which time Keystone selected grade X70 materials for use in the pipeline.

INTERROGATORY NO. 37: State whether any power lines have been permitted and constructed to provide power to pump stations by local power providers;

A. Identify each such power line;

B. State the cost of construction of the power line and identify the source(s) of the funds used for construction of each power line;

C. Identify the contractors or vendors who will be engaged to construct power lines.

D. If any State or Tribal permit or other authorization is required for any planned construction of power lines to pump stations:

i. Identify the permits which have been obtained, together with date permit granted;

ii. Identify permits which have not yet been obtained;

iii. Identify which permits have been applied for and are pending.

E. Identify any documents which would support your answers to this interrogatory.

[Applicable Finding or Condition No.: Finding 20]

ANSWER: No power lines have been constructed to pump stations for KXL in South Dakota. All required permits pertaining to power lines are completed by the individual power providers.

INTERROGATORY NO. 38. Describe each increased estimated cost of the KXL pipeline due to each of the following:

A. New technical requirements;

B. Inflation;

C. Project management;

D. New regulatory requirements;

E. Material storage issues;

F. Preservation;

G. Identify documents upon which you base your answers;

[Applicable Finding or Condition No.: Finding 23]

OBJECTION: This request seeks information that is not relevant and not likely to lead to the discovery of admissible evidence under SDCL § 15-6-26(b). In addition, Keystone does not

maintain a breakdown of the estimated project cost in the way requested, and requiring such a breakdown of costs would require the disclosure of information that has substantial commercial and proprietary value, and is subject to substantial efforts by Keystone to protect it from actual and potential competitors.

INTERROGATORY NO. 39. Identify companies currently interested in using the KXL pipeline to "further" diversify supply away from offshore foreign crude supply." For each company identified,

A. State whether they are interested in "Canadian crude;"

B. Identify documents upon which you base your answers;

[Applicable Finding or Condition No.: Finding 27]

OBJECTION: The identity of Keystone's shippers and the terms of their contracts have substantial commercial and proprietary value, are subject to substantial efforts by Keystone to protect this information from actual and potential competitors, and are required to be maintained on a confidential basis pursuant to the terms of the contracts between Keystone and its shippers. This request also seeks information that is beyond the scope of the PUC's jurisdiction and Keystone's burden of proof under SDCL § 49-41B-27. It is within the purview of the U.S. Department of State to determine whether the proposed project is in the national interest, under the applicable Presidential Executive Order.

INTERROGATORY NO. 40: Describe the potential for pipeline transportation to replace rail transportation for shipments from the WCSB and the Williston Basin to PADDs 1 and 5.

A. Provide the quantity of oil exported from the WCSB and the Williston Basin to PADDs 1 through 5 by rail from 2010 to the present;

B. Identify any documents which would support your answers;

[Applicable Finding or Condition No.: Finding 27]

OBJECTION AND RESPONSE: This request seeks information that is beyond the scope of the PUC's jurisdiction and Keystone's burden of proof under SDCL § 49-41B-27. It is within the purview of the United States Department of State to determine whether the proposed project is in the national interest, under the applicable Presidential Executive Order. This request also seeks information that is not within Keystone's custody or control and is not maintained by Keystone in the ordinary course of business. The oil forecast information that Keystone relied on in Appendix C to its Certification was derived from the following sources: The Final Supplemental Environmental Impact Statement; the CAPP Crude Oil Forecast, Markets and Transportation June 2014; and the Energy Information Agency Annual Energy Outlook 2014. These documents, except for the FSEIS, which is available at http://keystonepipeline-xl.state.gov/finalseis/index.htm, are marked as Keystone 0001-0467

INTERROGATORY NO. 41: List the changes in the KXL Project route since 2010 and identify any documents which would support your answers. [Applicable Finding or Condition No.: Finding 33]

ANSWER: Please refer to the attached route variation maps attached as Keystone 0470-0583.

INTERROGATORY NO. 42: Identify paleontological studies within the Upper Cretaceous or Tertiary strata of which you have knowledge were conducted after 2009 in the

proximate location of the currently proposed KXL pipeline route and identify any documents which would support your answers. [Applicable Finding or Condition No.: Findings 34, 36; Conditions 43, 44]

ANSWER: Paleontological fieldwork methodology, literature search information, and results can be found in Sections 3.1.2.2 and 3.1.2.3 of the Department of State FSEIS (2014). A list of reports detailing the results of all pre-construction paleontological field surveys can be found in Table 3.1-4 of the Department of State FSEIS (2014).

INTERROGATORY NO. 43: Identify Section 106 type "cultural resource" studies of which you have knowledge that were conducted after 2009 in the proximate location of the currently proposed KXL pipeline route and identify any documents which would support your answers. [Applicable Finding or Condition No.: Conditions 43, 44]

ANSWER: Cultural resources survey reports are listed in Section 3.11 of the Department of State FSEIS (2014), with results of the SD surveys detailed in Table 3.11-3.

INTERROGATORY NO. 44: TransCanada is to identify the exact locations of active, shut-in, and abandoned wells and any associated underground pipelines in the construction ROW, what is the status of such identification procedures? As to the wells and pipelines to be identified:

A. How long does TransCanada expect such an identification process will take before the Company would be willing to assure the PUC that all such wells and pipelines have been identified;

B. If "appropriate precautions" prove inadequate, describe in detail a worst case scenario, especially involving a river, tributary, or other water resources, involving:

i. An unidentified well;

ii. An unidentified pipeline;

iii. An identified well where the precautions fail;

iv. An identified pipeline where the precautions fail;

C. What circumstance(s) or event(s) could potentially cause the "appropriate precautions" to fail?

i. How is it determined what the specific appropriate precautions to be undertaken are for each kind of scenario?

ii. Who determines whether each specific precaution is "appropriate" to prevent environmental and/or human damage;

iii. As to appropriate precautions to be undertaken for each possible scenario, how is the PUC assured TransCanada actually implements or undertakes the precaution(s) necessary.

D. What specific precautions have been or are planned to be taken to protect the soils in the Sand Hills from contamination;

E. What specific precautions have been or are planned to be taken to protect the underground water resources of the Oglala Aquifer and other potentially affected aquifers from contamination;

F. What specific precautions have been or are planned to protect the surface and alluvial waters of the State and respective Tribes from contamination;

G. What type of gas or oil or related solutions or gases pumped or injected by a well within a mile or more along the general route of the KXL pipeline, could be involved in such a "worst case scenario"?

H. What type of gas or oil or related solutions or gases being transported by a pipeline within a mile or more along the general route of the KXL pipeline, could be involved in such a "worst case scenario"?

I. Identify any documents which would support your answers.

[Applicable Finding or Condition No.: Conditions 15, 16, 21, 22, 42]

ANSWER: TransCanada has not yet identified the locations of the wells and pipelines as stated. TransCanada does not differentiate between active and abandoned but does identify wells and pipeline within the construction right of way utilizing public data, survey data and One Calls at the time of construction.

INTERROGATORY NO. 45: What kind of "significant problems" are anticipated by the weathering of shale underlying almost all of Haakon, Jones and portions of Tripp Counties:

A. To access roads;

B. To structural foundations for roads, power lines, or other structures constructed in connection with the KXL pipeline (in answering, identify the type of foundations are of concern);

C. To the proposed KXL pipeline or part thereof;

D. Identify any documents which would support your answers.

[Applicable Finding or Condition No.: Conditions 15, 16, 18, 21, 22, 23, 42]

ANSWER: There are no "significant problems" anticipated concerning the weathering of shale in South Dakota.

INTERROGATORY NO. 46: Describe a leak, the existence of which "may suggest a threat to the integrity of the pipeline."

A. Other than aerial patrols, ground patrols, and public awareness, what steps have been taken to prevent a leak of this nature and magnitude or prevent or minimize its effect on the pipeline's integrity?

B. Identify documents which support and/or were used to provide your answers.

[Applicable Finding or Condition No.: Finding 95; Conditions 31-38]

ANSWER: A confirmed leak is in fact a loss of integrity, however a direct observation reported leak may not be a result of a pipeline release (e.g. an apparent sheen on standing water near the ROW) or the release may be from another line in a multi-pipeline corridor or at a foreign pipeline crossing. In this context, a leak which "may suggest a threat to the integrity of the pipeline" is a reported potential leak that has yet to be confirmed as originating from a Keystone line.

Prevention of leaks of this magnitude are addressed in the sections of the FSEIS discussing pipeline integrity, Sections 3.13 and 4.13. In addition to these answer, in regard to remote sensing technologies, several initiatives have been undertaken by Keystone. A pilot implementation of a fixed thermal imaging system at a pump station will be tested this year, in addition to three industry projects that Keystone is participating in:

- C-FER Technologies' ELDER joint industry project (JIP) that is evaluating the performance of four different cable based leak detection systems.
- A second C-FER Technologies JIP that is quantifying the physical phenomenon that occur at the ground surface that could be detected by various technologies.
- PHMSA's project entitled "INO Technologies Assessment as Leak Detection Systems for Hazardous Liquid Pipelines".

INTERROGATORY NO. 47: Describe the status of the written manual for normal operations, maintenance activities, and handling abnormal operating and emergencies.

A. Identify the latest draft of the written manual and all prior drafts;

B. Identify all documents which support or were used to provide your answers.

[Applicable Finding or Condition No.: Finding 96; Conditions 31-38]

ANSWER: As required by the Department of Transportation, Pipeline and Hazardous Material Safety Administration 49 CFR §195.402 Keystone has prepared and follows a manual of written procedures for conducting normal operations and maintenance activities and handling abnormal operations and emergencies. The current manual is version 07 and the original manual version 01 issued August 01, 2010. Other manual revisions are defined:

- Version 02 – 11/15/2011
- Version 03 – 04/15/2012
- Version 04 – 06/07/2012
- Version 05 – 07/16/2012
- Version 06 – 07/09/2013

The Operations and Maintenance (O&M) Manual U.S. Hazardous Liquids Pipelines and referenced versions were utilized in support of TransCanada's response.

INTERROGATORY NO. 48: Calculate the worst case discharge and describe in detail the worst case scenario that would result from damage caused to the Keystone XL pipeline from the "high swelling potential" of the Cretaceous and Tertiary rocks located in the Missouri River Plateau due to this land form's susceptibility to instability in the form of slumps and earth-flows, including landslides.

A. Provide the locations where such ground swelling can be anticipated;

B. Identify any documents which would support your answer;

[Applicable Finding or Condition No.: Finding 40, 77; Conditions 31-42]

OBJECTION AND RESPONSE: This request seeks information that is confidential. The volume and location of a worst case scenario spill are kept confidential for homeland security reasons. Without waiving the objection, Section 3 of Appendix A of the 2009 Keystone XL Risk Assessment (FSEIS Appendix P) discusses the state-specific incident frequencies for a variety of pipeline hazards, including ground movement and landslides. Within Section 3.5, specific failure mechanisms and mitigation measures relating to these natural hazards are also discussed. Pipelines are remarkably resilient to landslides and seismic events (CITE). If ground movement occurred and has the potential to affect the pipe's integrity, Keystone is required by federal regulations to inspect the pipe (49 CFR 195).

TransCanada's Integrity Management Program would continue to assess the Keystone XL Pipeline Project route and threats from outside forces (e.g., landslides) would be evaluated in a comprehensive and systematic program, as required by federal pipeline safety regulations (49 CFR 195). As part of the Integrity Management Program, Keystone evaluates the potential for a release along the entire length of its pipelines and determines what resources could potentially be affected by a release. This information is shared with TransCanada's Emergency Response staff to facilitate emergency response planning and to develop appropriate training scenarios.

A. Locations of ground swelling are identified in the FSEIS, Section 3.1 Geology. In Section 3.1 of the FSEIS, Table 3.1-6 and Figure 3.1.2-3 identify the high risk category Landslide Hazard Area (LSHR) areas for swelling soils and landslides.

Table 3.1-6 Locations within LSHR High-Risk Category along the Proposed Project Corridor

State	Start (MP)	End (MP)	Length
Montana	0.2	25.5	25.3
Montana	25.5	89.2	63.7
Montana	89.2	102.0	12.8
South Dakota	308.3	313.5	5.2
South Dakota	355.6	358.1	2.5
South Dakota	358.1	370.9	12.8
South Dakota	389.5	425.9	36.4
South Dakota	425.9	426.3	0.4
South Dakota	426.3	485.1	58.8
South Dakota	485.1	525.2	40.1
South Dakota	525.2	537.1	11.9
South Dakota	537.1	571.5	34.4
Nebraska	601.5	605.3	3.8
Nebraska	606.8	637.5	30.7
Total			338.8

Sources: USGS 2009a; PHMSA-NPMS 2007b

B. 49 CFR 194.105

U.S. Department of State (USDOS). 2014. Final Supplemental Environmental Impact Statement for the Keystone XL Project. Washington D.C. Includes all appendices of the FSEIS.

INTERROGATORY NO. 49: What lessons have been learned from previous pipeline construction, current right-of-way conditions and project requirements that have been incorporated into the Construction Mitigation and Reclamation (CMR) Plan? Identify any documents which would support your answers, including but not limited to the latest version of the CMR plan. [Applicable Finding or Condition No.: Finding 32, 37, 73; Conditions 13-30]

ANSWER: Lessons learned are incorporated through the changes to Keystone's CMR Plan, the current draft of which is attached to Exhibit C to Keystone's certification petition as Attachment A.

INTERROGATORY NO. 50: Provide a list of changes in the proposed KXL pipeline route since 2010.

A. For each change in the route:

i. State why the route was changed;

ii. State how the new route improves this Project when compared with the previously submitted route;

B. Identify any documents which would support your answers.

[Applicable Finding or Condition No.: Finding 33]

ANSWER: Please refer to the attached route variation maps attached as Keystone 0470-0583.

INTERROGATORY NO. 51: Describe the status of the development of procedures for handling and disposal of unanticipated contaminated soil discovered during construction, and consultation with relevant agencies thereon.

A. Identify any draft or final procures developed to date;

B. Identify any documents which would support your answers.

[Applicable Finding or Condition No.: Conditions 13-30]

ANSWER: Keystone has not yet drafted the Unanticipated Contaminated Soils Plan.

INTERROGATORY NO. 52: State whether or not TransCanada or its Affiliates have conducted any assessments or studies of potential risks to the structural integrity of the proposed KXL Pipeline from seismic activity. If so, describe the results of any such assessment or studies and describe the maximum impacts that could occur with respect to a pipeline rupture resulting

from seismic activity. Identify any documents which would support your answers. [Applicable Finding or Condition No.: Conditions 31-38]

ANSWER: Please refer to the FEIS section 3.1.4 Geologic Hazards.

INTERROGATORY NO. 53: Describe the status of TransCanada's efforts to obtain a permit process for water body crossings.

A. List the agency(ies) to whom TransCanada has submitted a permit application;

B. Identify all permit applications submitted;

C. List any permits which TransCanada needs to obtain prior to its proposed KXL pipeline construction for each of the water body crossings desired to be crossed.

D. Explain why horizontal directional drilling will not be used on water body crossing of perennial streams and intermittent water bodies;

E. Identify any documents which would support your answers.

[Applicable Finding or Condition No.: Finding 41; Conditions 1, 2, 13-30]

ANSWER: The following is the requested information addressing the permitting of the water body crossings:

A. To date, Keystone has not submitted any permit applications to any agencies for water body crossings in South Dakota. All permits for waterbody crossings, as required, will be filed closer to the time period of construction.

B. To date, Keystone has not submitted any permit applications for water body crossings in South Dakota. All permits for waterbody crossings, as required, will be filed closer to the time period of construction.

C. Keystone will permit all of the water body crossings in South Dakota under the US Army Corps of Engineers Nationwide General Permit (NWP) 12. Additionally, the South Dakota Department of Environment and Natural Resources is responsible for Clean Water Act permit certification under Section 401 and would review proposed stream and river crossings where necessary and may issue project-specific conditions.

D. The decision to use the horizontal directional drilling (HDD) crossing method was based on and evaluation of engineering and environmental factors and use of an HDD does not always provide the most suitable methodology for a waterbody crossing. During the Project design, TransCanada has complied with all regulations and permit stipulations in determining the proposed crossing method for each waterbody in South Dakota.

E. The Department of State FEIS (2014) Sections 4.3, Water Resources; 4.7 Fisheries; 4.8 Threatened and Endangered Species; and Appendix H.

INTERROGATORY NO. 54: Describe the maximum impacts that could occur from expected loss of in-stream habitat through direct disturbance, loss of bank cover, disruption of fish movement, direct disturbance to spawning, water quality effects, and sedimentation effects by open-cut trenching of water crossings other than the Little Missouri, Cheyenne and White River crossings. Identify any documents which would support your answers. [Applicable Finding or Condition No.: Finding 41; Conditions 34, 41]

ANSWER: The Department of State FSEIS (2014) evaluates the impacts to instream habitat as a result of the construction and operation of the Project in the following locations:

a. Section 4.3.2.2, Surface Water

b. Section 4.3.3.2, Surface Water

c. Section 4.7.3.2, Construction impacts

d. Section 4.7.3.3 Proposed Project Operational Impacts

INTERROGATORY NO. 55: Describe the maximum impacts that could occur during or as a result of horizontal directional drilling to cross the Little Missouri, Cheyenne, and White River crossings. Identify any documents which would support your answers. [Applicable Finding or Condition No.: Finding 41, 82-83; Condition 22]

ANSWER: This issue is addressed several times in the FSEIS, as follows:

At page 4.3-21:

In some instances, pressurized fluids and drilling lubricants used in the HDD process have the potential to escape the active HDD bore, migrate through the soils, and come to the surface at or near the crossing construction site, an event commonly known as a frac-out. Measures identified in a required HDD contingency plan would be implemented, including monitoring of the directional drill bore, monitoring downstream for evidence of drilling fluids, and mitigation measures to address a frac-out should one occur.

At page 4.8-20 :

The HDD method avoids direct disturbance to the river, channel bed, or banks. While the HDD method poses a small risk of frac-out (i.e., release of bentonite-based drilling fluids), potential releases would be contained by best management practices that would be described within the HDD Contingency Plans required for drilled crossings. Most leaks of HDD fluids occur near the entry, exit locations for the drill, and are quickly contained and cleaned up. Frac-outs that may release drilling fluids into aquatic environments are difficult to contain primarily because bentonite readily disperses in flowing water and quickly settles in standing water.

Should this type of release occur, bentonite is non-toxic but in sufficient concentration may physically inhibit respiration of adult fish and eggs.

At page 4.7-11,12:

The HDD method for crossing waterbodies would be used to minimize disturbance to aquatic habitat, stream banks, and recreational or commercial fisheries. Impacts could occur if there is an unintended release of drilling fluids (i.e., a frac out) during the HDD operation. A frac out could release bentonitic drilling mud into the aquatic environment. The released drilling mud would readily disperse in flowing water or eventually settle in standing water.

Although bentonite is non-toxic, suspended bentonite may produce short-term impacts to the respiration of fish and aquatic invertebrates due to fouled gills. Longer-term effects could result if larval fish are covered and suffocate due to fouled gills and/or lack of oxygen. If the frac out occurred during a spawning period, egg masses of fish could be covered, thus inhibiting the flow of dissolved oxygen to the egg masses. Benthic invertebrates and the larval stages of pelagic organisms could also be covered and suffocate.

INTERROGATORY NO. 56: Describe the worst case scenario of a worst case discharge into the Little Missouri, Cheyenne, and White River crossings. Identify any documents which would support your answers. [Applicable Finding or Condition No.: Findings 41-52, 68-69, 82-83; Conditions 31-42]

OBJECTION AND RESPONSE: This request seeks information that is confidential. The location and volume of a worst case scenario spill are kept confidential for homeland security reasons. Without waiving the objection, worst case discharge data were provided to regulatory agencies in Appendix A of the 2009 Keystone XL Risk Assessment.

The 2009 Keystone XL Risk Assessment discussed the range of impacts based on abroad range of spill volumes that encompassed 99.6 percent of all historical spill volumes, thereby describing a reasonable worst case scenario for the Keystone XL Pipeline Project. The 2009 Keystone XL Risk Assessment discussed the spill volumes and a very conservative assessment (i.e., assessment intentionally overestimates) of the magnitude of potential impacts in flowing waterbodies (2009 Keystone XL Risk Assessment, Section 4.2.3.4 Water Resources).

For streams that are HDD, most spills would not be expected to reach the river since the burial depth often can prevent a release from reaching the waterbody. However, as a worst case scenario for the purposes of this information response, a worst case scenario is assumed to reach the river. In the 2009 Keystone XL Risk Assessment, Table 4-1 from the 2009 Keystone XL Risk Assessment describes stream categories based on stream flows. The White River and Little Missouri Rivers are categorized as a stream with upper moderate flow, while the Cheyenne River would fall into the high flow Stream category. All three streams are being HDD. Based on those stream flow categories, impacts to water quality and aquatic biota can be identified in 2009 Keystone XL Risk Assessment text in Section 4.2.3.4 and Tables 4.2, and 4.3 and 4.7 to 4.10.

2009 Keystone XL Risk Assessment

Table 4-1 Stream Categories

Category	Streamflow (cubic feet per second [cfs])	Top of Bank Stream Width (feet)	Representative Streams
Low Flow Stream	10 – 100	<50	Many unnamed intermittent tributaries in all states crossed, Bear Creek (MT), South Branch Timber Creek (NE)

Lower Moderate Flow Stream	100 – 1,000	50 – 500	Upper Sevenmile Creek (MT), Lone Tree Creek (MT), Little Blue River (NE)
Upper Moderate Flow Stream	1,000 – 10,000	500 – 1,000	Yellowstone River (MT), White River (SD), Niobrara River (NE)
High Flow Stream	>10,000	1,000 – 2,500	Missouri River (MT), Loup River (NE), Platte River (NE), Canadian River (OK), Red River (TX)

INTERROGATORY NO. 57: Describe the worst case scenario which could occur from the Keystone XL pipeline as it passes under channels, adjacent flood plains and flood protection levees. Identify any documents which would support your answers. [Applicable Finding or Condition No.: Findings 41-49; Conditions 31-42]

OBJECTION: This request seeks information that is confidential by statute. The location and volume of a worst case scenario spill are kept confidential for homeland security reasons. Without waiving the objection, when the pipe crosses channels and flood plains, scenarios would be dictated by stream flow rate (discharge) and are discussed in Section 4.2.3.4 of 2009 Keystone XL Risk Assessment. Impacts are described in Section 4.2.3.4 for channels. Floodplain crossings are covered in FEIS Section 4.3.3.3 and Section 4.3.3.4 discusses impacts to floodplains. Worst case would be spill into low flow stream (Table 4-2 in 2009 Keystone XL Risk Assessment). Spills at individual river crossings are rare with occurrence interval of 1/22,000 years to 1/830,000 years based on representative crossing distances (2009 Keystone XL Risk Assessment). Most spills are less than 3 barrels.

River crossings by pipelines are very common, number of incidents are low, and safety is not affected by material transported. Predicted Project-specific incident frequencies are provided in Section 3.0 of the 2009 Keystone XL Risk Assessment. Spills at individual river crossings are rare with occurrence interval of 1/22,000 years to 1/830,000 years based on representative crossing distances (2009 Keystone XL Risk Assessment).

INTERROGATORY NO. 58: In light of the spill risk assessment provided by TransCanada in the HP09-001 docket:

A. Explain the number of leaks along the Keystone I pipeline since 2008;

B. Explain the number of leaks from the other oil pipelines constructed and/or operated by TransCanada or its Affiliates;

C. What would be a worst case scenario discharge from the KXL pipeline? Please explain your answer;

D. Identify any documents which would support your respective answers.

[Applicable Finding or Condition No.: Findings 41-49, 51-52; Conditions 31-38]

OBJECTION AND RESPONSE: Subpart(c) requests information that is confidential by statue. The location and volume of a worst case scenario spill are confidential for homeland security reasons. Subpart (d) is overlybroad and unduly burdensome. There are thousands of pages of documents supporting Keystone's spill risk assessment. In addition, many of the documents contain information that is confidential and proprietary. Without waiving the objection:

A. Keystone has delivered more than 760 million barrels of oil from Canada to the United States markets since it began operation in July 2010. The small number of leaks that

have occurred on the pipeline have had nothing to do with the integrity of the pipe itself. They have all occurred at our pump stations and other above-ground facilities and have been related to leakage from small-diameter fittings and seals. They have all been cleaned up with no environmental impact. We designed the pipeline to ensure that all small diameter fittings, valves and seals are located above ground where they can be easily accessed for maintenance and repairs. All of our pump stations are designed to capture and contain oil on our property. In total, less than 450 barrels of oil, out of more than 760 million barrels transported, have come out of the pipeline since it began operations five years ago TransCanada is constantly striving to improve our performance and working towards our goal of having zero leaks or safety incidents. All pipeline leaks are thoroughly investigated regardless of their size in order to understand the cause and prevent future such incidents. The leaks are identified in the spreadsheet attached as Keystone 0774-0784.

B. None.

INTERROGATORY NO. 59: Describe in detail the impact of a worst case scenario spill from the proposed KXL Pipeline through the Sand Hills in South Dakota. Identify any documents which would support your answers. [Applicable Finding or Condition No.: Findings 43-49, 53; Conditions 16, 35]

OBJECTION AND ANSWER: This request seeks information that is not within Keystone's custody or control. Without waiving the objection, there are no Sand Hills in South Dakota. *See* Table 3.5.-2 of the Department of State FSEIS (2014).

INTERROGATORY NO. 60: Describe in detail the impact of a worst case scenario spill into the shallow and surficial aquifers in Tripp County from the proposed KXL Pipeline. Identify

any documents which would support your answers. [Applicable Finding or Condition No.: Findings 43-49, 53; Conditions 16, 35]

OBJECTION AND ANSWER: This request seeks information that is confidential by statute. The location and volume of a worst case scenario spill are confidential for homeland security reasons. Without waiving the objection, the 2009 Keystone XL Risk Assessment (FSEIS, Appendix P) described the movement of crude oil and its constituents in soils and groundwater. Field investigations of more than 600 historical petroleum hydrocarbon release sites indicate the migration of dissolved constituents typically stabilizes within several hundred feet of the crude oil source area (Newell and Conner 1998; USGS 1998). Over a longer period, the area of the contaminant plume may begin to reduce due to natural biodegradation. Removal of crude oil contamination will eliminate the source of dissolved constituents impacting the groundwater.

Spills are also discussed in the FSEIS in Section 4.1.3.4, including those in shallow and surficial aquifers. The fate and transport of benzene and other crude oil constituents is discussed in numerous studies and articles, including those referenced in the 2009 Keystone XL Risk Assessment, such as:

Freeze, R. A. and J. A. Cherry. 1979. Groundwater. Prentice Hall, Inc. Englewood Cliffs, New Jersey. 604 pp.

Minnesota Pollution Control Agency. 2005. Assessment of Natural Attenuation at Petroleum Release Sites. Guidance Document c-prp4-03, Petroleum Remediation Program, Minnesota Pollution Control Agency. April 2005. 11 pp.

Neff, J. M. 1979. Polycyclic aromatic hydrocarbons in the aquatic environment. Applied Science publ. Ltd., London. 262 pp.

Newell, C. J. and J. A. Connor. 1998. Characteristics of Dissolved Petroleum Hydrocarbon Plumes: Results from Four Studies. American Petroleum Institute Soil / Groundwater Technical Task Force. December 1998.

Spence, L. R., K. T. O'Reilly, R. I. Maagaw, and W. G. Rixey. 2001. Chapter 6 – Predicting the fate and transport of hydrocarbons in soil and groundwater. In :risk-based decision-making or assessing petroleum impacts at exploration and production sites. Edited by S. McMillen, R. Magaw, R. Carovillano, Petroleum Environmental Research Forum and US Department of Energy.

United States Geological Service (USGS). 1998. Groundwater Contamination by Crude Oil near Bemidji, Minnesota. US Geological Survey Fact Sheet 084-98, September 1998.

Additional references on this subject from the FSEIS include:

American Petroleum Institute (API). 1992. Review of Natural Resource Damage Assessments in Freshwater Environments: Effects of Oil Release into Freshwater Habitats. API Publ. No. 4514.

API. 1997. Petroleum in the Freshwater Environment: An annotated Bibliography 1946-1993. API Publ. No. 4640.

Grimaz, S., S. Allen, J. Steward, and G. Dolcetti. 2007. Predictive evaluation of the extent of the surface spreading for the case of accidental spillage of oil on ground. Selected Paper IcheaP8, AIDIC Conference series, Vol. 8, 2007, pp. 151-160.

Hult, M.F. 1984. Groundwater Contamination by Crude Oil at the Bemidji, Minnesota, Research Site: U.S. Geological Survey Toxic Waste—Ground-Water Contamination Study. Papers presented at the Toxic-Waste Technical Meeting, Tucson, Arizona, March 20-22. USGS Water Investigations Report 84-4188.

Weaver, J.W., R.J. Charbeneau, J.D. Tauxe, B.K. Lien, and J.B. Provost. 1994. The hydrocarbon spill screening model (HSSM) Volume 1: User's guide. USEPA/600/R-94/039a.U.S. Environmental Protection Agency, Office of Research and Development, Robert S. Kerr, Environmental Research Laboratory, Ada, OK

INTERROGATORY NO. 61: Identify the USGS or other geological, hydrological, geo-hydrological studies conducted in the areas including what is now the proposed KXL pipeline route through South Dakota, which:

A. Provide the thickness of the purportedly low permeability confining materials that would underlie the entirety of the proposed route either through the Sand Hills and over any shallow High Plains Aquifer;

B. Provide the thickness of the confining materials underlying the balance of the proposed pipeline route;

C. Provide the permeability of the sediment or bedrock underlying the proposed pipeline route for each part of the KXL pipeline;

D. Describe the composition of the sediments and/or bedrock underlying each part of the proposed route;

E. Describe the absence of any fractures (including micro-fractures), faults, karsts, sinkholes within a mile of the entirety of the proposed route and which might lengthen the "unlikely" travel of crude oil more than 300 feet from a spill site;

F. Describe the absence of channels in the underlying strata along each part of the proposed route which might lengthen the "unlikely" travel of crude oil more than 300 feet from a spill site;

G. Describe other factors which could lengthen the travel of crude oil beyond 300 feet from a spill site;

H. The location(s) of shallow aquifers along each part of the route;

I. The location(s) of surficial aquifers along each part of the route;

J. The location of domestic and livestock wells, public and private, within a mile of each part of the proposed route;

K. Describe the "appropriate" measures that TransCanada will take to prevent groundwater contamination;

L. Describe the "steps" to be taken to manage the flow of any ground water encountered;

M. Identify any documents which would support your respective answers.

[Applicable Finding or Condition No.: Findings 43-49, 53; Conditions 16, 35]

OBJECTION AND ANSWER: This request is overlybroad and unduly burdensome. This request may also seek information that is not within Keystone's custody or control and is not maintained by Keystone in the ordinary course of business.

Without waiving the objection, geological references and hydrogeological references are listed in chapters 3 and 4 in the FSEIS. Some pertinent additional references are:

Gutentag (1984): USGS Prof. Paper 1400-B

Downey (1986): USGS Prof. Paper 1402-E

Thamke et al (2014): USGS Scientific Inv. Report SIR 2014-5047.

In addition, lithologic logs available from the South Dakota Dept. Natural Resources at http://denr.sd.gov/des/wr/dblog.search.aspx and http://denr.sd.gov/data.aspx provide aquifer thickness data.

A. Geological references and hydrogeological references are listed in chapters 3 and 4 in the FSEIS. Some pertinent additional references are:

Gutentag (1984): USGS Prof. Paper 1400-B

Downey (1986): USGS Prof. Paper 1402-E

Thamke et al (2014): USGS Scientific Inv. Report SIR 2014-5047.

In addition, lithologic logs available from the South Dakota Dept. Natural Resources at http://denr.sd.gov/des/wr/dblog.search.aspx and http://denr.sd.gov/data.aspx provide aquifer thickness data.

B. Geological references and hydrogeological references are listed in chapters 3 and 4 in the FSEIS. Some pertinent additional references are:

Gutentag (1984): USGS Prof. Paper 1400-B

Downey (1986): USGS Prof. Paper 1402-E

Thamke et al (2014): USGS Scientific Inv. Report SIR 2014-5047.

In addition, lithologic logs available from the South Dakota Dept. Natural Resources at http://denr.sd.gov/des/wr/dblog.search.aspx and http://denr.sd.gov/data.aspx provide aquifer thickness data.

C. Geological references and hydrogeological references are listed in chapters 3 and 4 in the FSEIS. Some pertinent additional references are:

Gutentag (1984): USGS Prof. Paper 1400-B

Downey (1986): USGS Prof. Paper 1402-E

Thamke et al (2014): USGS Scientific Inv. Report SIR 2014-5047.

In addition, lithologic logs available from the South Dakota Dept. Natural Resources at http://denr.sd.gov/des/wr/dblog.search.aspx and http://denr.sd.gov/data.aspx provide aquifer thickness data.

D. Geological references and hydrogeological references are listed in chapters 3 and 4 in the FSEIS. Some pertinent additional references are:

Gutentag (1984): USGS Prof. Paper 1400-B

Downey (1986): USGS Prof. Paper 1402-E

Thamke et al (2014): USGS Scientific Inv. Report SIR 2014-5047.

In addition, lithologic logs available from the South Dakota Dept. Natural Resources at http://denr.sd.gov/des/wr/dblog.search.aspx and http://denr.sd.gov/data.aspx provide aquifer thickness data.

E. Geological references and hydrogeological references are listed in chapters 3 and 4 in the FSEIS. Some pertinent additional references are:

Gutentag (1984): USGS Prof. Paper 1400-B

Downey (1986): USGS Prof. Paper 1402-E

Thamke et al (2014): USGS Scientific Inv. Report SIR 2014-5047.

In addition, lithologic logs available from the South Dakota Dept. Natural Resources at http://denr.sd.gov/des/wr/dblog.search.aspx and http://denr.sd.gov/data.aspx provide aquifer thickness data.

In addition, consider the following:

Whitehead et al (1996): USGS Hydrologic Atlas HA 730-I

Hammond (1994): South Dakota Geol. Survey open file report UR-68

Lobmeyer (1985): USGS Prof. Paper 1402-D

Luckey et al (1986): USGS Prof. Paper 1400-D.

F. Geological references and hydrogeological references are listed in chapters 3 and 4 in the FSEIS. Some pertinent additional references are:

Gutentag (1984): USGS Prof. Paper 1400-B

Downey (1986): USGS Prof. Paper 1402-E

Thamke et al (2014): USGS Scientific Inv. Report SIR 2014-5047.

In addition, lithologic logs available from the South Dakota Dept. Natural Resources at http://denr.sd.gov/des/wr/dblog.search.aspx and http://denr.sd.gov/data.aspx provide aquifer thickness data.

G. Geological references and hydrogeological references are listed in chapters 3 and 4 in the FSEIS. Some pertinent additional references are:

Gutentag (1984): USGS Prof. Paper 1400-B

Downey (1986): USGS Prof. Paper 1402-E

Thamke et al (2014): USGS Scientific Inv. Report SIR 2014-5047.

In addition, lithologic logs available from the South Dakota Dept. Natural Resources at http://denr.sd.gov/des/wr/dblog.search.aspx and http://denr.sd.gov/data.aspx provide aquifer thickness data.

Lithologic logs available from the South Dakota Dept. Natural Resources at http://denr.sd.gov/des/wr/dblog.search.aspx and http://denr.sd.gov/data.aspx provide the thickness data. In addition, consider the following:

Davis and Putnam (2013): USGS Scientific Inv. Report SIR 2013-5069

Downey (1986): USGS Prof. Paper 1402-E

Gutentag (1984): USGS Prof. Paper 1400-A and 1400-B.

H. Geological references and hydrogeological references are listed in chapters 3 and 4 in the FSEIS. Some pertinent additional references are:

Gutentag (1984): USGS Prof. Paper 1400-B

Downey (1986): USGS Prof. Paper 1402-E

Thamke et al (2014): USGS Scientific Inv. Report SIR 2014-5047.

In addition, lithologic logs available from the South Dakota Dept. Natural Resources at http://denr.sd.gov/des/wr/dblog.search.aspx and http://denr.sd.gov/data.aspx provide aquifer thickness data.

In addition, consider the following:

Downey (1986): USGS Prof. Paper 1402-E

Gutentag et al (1984): USGS Prof. Paper 1400-B.

I. Geological references and hydrogeological references are listed in chapters 3 and 4 in the FSEIS. Some pertinent additional references are:

Gutentag (1984): USGS Prof. Paper 1400-B

Downey (1986): USGS Prof. Paper 1402-E

Thamke et al (2014): USGS Scientific Inv. Report SIR 2014-5047.

In addition, lithologic logs available from the South Dakota Dept. Natural Resources at http://denr.sd.gov/des/wr/dblog.search.aspx and http://denr.sd.gov/data.aspx provide aquifer thickness data.

J. Keystone has not yet identified the location of wells, but will do so before construction.

K. "In order to reduce the risk of spills, if permitted Keystone has agreed to incorporate additional mitigation measures in the design, construction, and operation of the proposed Keystone XL Project, in some instances above what is normally required, including:

- 59 Special Conditions recommended by PHMSA;
- 25 mitigation measures recommended in the Battelle and Exponent risk reports; and
- 11 additional mitigation measures.

Many of these mitigation measures relate to reductions in the likelihood of a release occurring. Other measures provide mitigation that reduces the consequences and impact of a spill should such an event occur. Mitigation measures are compiled I Appendix Z, Compiled Mitigation Measures, of this Supplemental EIS. Mitigation measures are actions that, if the proposed Project is determined to be in the national interest, Keystone would comply with as conditions of a Presidential Permit." (FSEIS Executive Summary, pg. ES-19").

In the FSEIS Appendix Z, Section 14.1, Potential Releases, Table 4, are listed the 59 Special Conditions recommended by the PHMSA. TransCanada has committed to complying with the PHMSA 59 Special Conditions as listed in Appendix Z of the FSEIS.

"These regulations are intended to ensure adequate protection for the public and to prevent crude oil pipeline accidents. Among other design standards, 49 CFR 195 and the proposed Project-specific special conditions specify pipeline material and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion" (FSEIS Appendix H1-H2, pg. 2.0-32)".

L. Keystone would coordinate with the South Dakota Department of Environment and Natural Resources regarding specific steps to be taken in the event that potential contamination of groundwater was suspected. These steps may include, but may not be limited to, soil and groundwater sampling, installation of monitoring wells, and use of groundwater remediation technologies.

INTERROGATORY NO. 62: Describe the direct and indirect effects to people, other animals, plants and trees, fish, when exposed individually and or in combination to components of crude oil including: benzene, toluene, ethyl benzene and xylene. Identify any documents which would support your respective answers. [Applicable Finding or Condition No.: Findings 43-49; Conditions 31-37]

ANSWER: Effects to these receptors are discussed in the 2009 Keystone XL Risk Assessment and in the FSEIS (Chapter 4). Additional information, including effects of individual compounds, can be found in the Agency for Toxic Substances and Disease Registry (ATSDR) or the Hazardous Substances Data Bank (HSDB). Benzene is often used for screening for effects in petroleum products due its combined high water solubility and ability to cause toxicity at very low concentrations.

U.S. Department of Health and Human Services. 2015. Agency for Toxic Substances and Disease Registry (ATSDR). Internet website: http://www.atsdr.cdc.gov. Accessed January 21, 2015.

U.S. National Library of Medicine, Toxicology Data Network (TOXNET). 2015. Hazardous Substances Data Bank (HSDB). Internet website: http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB. Accessed January 21, 2015.

INTERROGATORY NO. 63: Provide an explanation of why the occurrence of a spill or leak that could affect the High Consequence Area (HCA) only once every 250 years over the 34.4 miles of HCA (Finding 50), while such a spill would purportedly occur once in 7,400 years per mile of pipeline (Finding 44). Identify any documents which would support your respective answer. [Applicable Finding or Condition No.: Findings 44, 50; Conditions 15-16, 35]

ANSWER: Finding of Fact 44 in the South Dakota Public Utilities Commission Amended Order states that, "Keystone's expert estimated the chance of a leak from the Project to be not more than one spill in 7,400 years for any given mile of pipe." This is calculated based on historical incident data from Pipeline and Hazardous Materials Safety Administration (PHMSA), as discussed in Section 3.0. The occurrence interval of 7,400 years is calculated by taking the inverse of the incident frequency (0.000135 incidents per mile per year). The result is an estimate, in years, of the time between spills. This is similar to the concept of flood recurrence intervals (i.e., 100-year floods).

Page 4-21 of the 2009 Keystone XL Risk Assessment shows that a spill affecting a High Consequence Area (HCA) in any state crossed by the Keystone XL Pipeline Project has an

occurrence interval of 53 years. This is calculated by taking the inverse of the incident frequency (measured as incidents per mile per year) multiplied by the miles of HCAs crossed (141.2 miles).

INTERROGATORY NO. 64: Describe the contents of the "information concerning activities of concern" to be made available to landowners and others. Identify any documents which would support your respective answer. [Applicable Finding or Condition No.: Finding 57; Condition 16]

ANSWER: Condition 16 does not address "information concerning activities of concern." With respect to Finding 57, it is landowners who are permitted to contact Keystone regarding "activities of concern." Accordingly, Keystone does not know specifically what activities may be of concern to individual landowners. In the context of the Finding, it is likely that such activities can be expected to involve farming operations above the pipeline.

INTERROGATORY NO. 65: Describe the worst case scenario for landowners of a spill from the proposed pipeline onto only land, as well as other risks deemed "low" by the PUC. Identify any documents which would support your respective answer. [Applicable Finding or Condition No.: Findings 57; Conditions 16, 31-38]

ANSWER: Keystone cannot speak to risks deemed "low" by the PUC.

INTERROGATORY NO. 66: Provide a list of claims or complaints (of any kind) made to the Commission by landowners along the Keystone I pipeline corridor since 2008. Identify any documents which would support your respective answer. [Applicable Finding or Condition No.: Finding 57; Conditions 49-50]

OBJECTION AND ANSWER: Assuming that the request is for a list of claims or complaints made by landowners along the Keystone Pipeline corridor in eastern South Dakota to

the PUC since 2008, this information is publicly available on the PUC website. To the extent that the request is for complaints made by landowners along the Keystone XL Pipeline corridor since 2008, the request is vague, overlybroad, unduly burdensome, and seeks discovery of information that is not relevant and not likely to lead to the discovery of admissible evidence under SDCL 15-6-26(b). All complaints reported to the liaison by the SDPUC are documented by the liaison and reported quarterly. These reports are available at: https://puc.sd.gov/dockets/hydrocarbonpipeline/2009/publicliaisonreports.aspx. Without waiving the objection, attached as Keystone 0785-1115 are documents related to landowner complaints or concerns regarding damages resulting from Keystone XL's use of the easement, which is within the scope of Amended Permit Condition 49.

INTERROGATORY NO. 67: Identify the latest version of the Unanticipated Discovery Plan, including any prior drafts. [Applicable Finding or Condition No.: Finding 58; Condition 43]

ANSWER: The Unanticipated Discovery Plan can be found within the Programmatic Agreement in Appendix E of the Department of State FSEIS (2014).

INTERROGATORY NO. 68. Explain why TransCanada has sought a special permit from the PHMSA for authorization "to design, construct, and operate the Project up to 80% of the steel pipe specified minimum yield strength at most locations."

A. Identify and describe all spills/leaks from TransCanada pipeline operations since 2009 in Canada which have involved a "0.8 design factor" and therefore involving use of steel pipe up to 80% of the specified minimum yield strength.

B. Identify documents upon which your answers are based.

[Applicable Finding or Condition No.: Findings 60-61]

ANSWER: Keystone is no longer seeking a special permit from PHMSA.

A. There are currently no TransCanada crude oil pipelines operating at 0.8 design factor in Canada.

B. Keystone's decision to withdraw its special permit request is explained in a Media Advisory dated August 5, 2010, attached as Keystone 0647-0649.

INTERROGATORY NO. 69: Explain why it is expected that any special permit issued by PHMSA would exclude pipeline segments in High Consequence Areas (HCAs).

A. Describe the potential risks of using pipeline segments with a design factor of 0.80 rather than 0.72, as required by 49 CFR § 195.106.

B. Identify documents upon which your answers are based.

[Applicable Finding or Condition No.: Findings 60-62]

ANSWER: Keystone has withdrawn its request for a Special Permit. Hypothetically, if Keystone were to reapply for a Special Permit, it is reasonable to anticipate that such a Permit would exclude pipeline segments in HCAs since the Special Permit for the original Keystone Pipeline excluded such areas.

INTERROGATORY NO. 70: Explain how application of the "0.8 design factor and API 5L PSL2 X70 high-strength steel pipe" with thinner walls would "provide a level of safety equal to or greater than that which would be provided if the pipeline were operated under the otherwise applicable regulations." [Applicable Finding or Condition No.: Finding 63]

OBJECTION: This request seeks information that is beyond the scope of the PUC's jurisdiction and Keystone's burden of proof under SDCL 49-41B-27. The issue is within the

exclusive jurisdiction of PHMSA. Keystone has withdrawn its application for a special permit. Without waiving the objection, on August 5 2010, TransCanada withdrew its application to the Pipeline Hazardous Materials and Safety Administration (PHMSA) for a special permit to design, construct and operate the pipeline at a 0.8 design factor and adopted the 57 additional safety measures that would have been required under the PHMSA special permit.

INTERROGATORY NO. 71: With regard to over-pressure events:

A. What are the potential causes of over-pressurization?

B. Describe the failures of the SCADA system that could cause a full rupture of the KXL Pipeline;

C. Describe TransCanada's maintenance and operational protocols and system redundancies that are intended to prevent failure of the SCADA system;

D. Describe the ability of the SCADA system to detect leaks in the Keystone I pipeline from 2008 through today;

E. Describe improvements in SCADA technology since 2010;

F. Describe actions TransCanada has taken to prevent a cyber-attack on the SCADA monitoring system;

G. Identify documents upon which your answers are based.

[Applicable Finding or Condition No.: Finding 72, 92-94; Conditions 31-38]

ANSWER:

A. There are two main causes of over-pressurization in pipelines: static pressure, and dynamic pressure. Static pressure excursions can occur during steady-state operation due to differences in elevation along the pipeline. In a static pressure excursion situation, it is possible

to see pressures in excess of the pipeline's MOP at points of low elevation along the line. Dynamic pressure excursions result from a disturbance which causes a change in fluid velocity. Disturbances can result from events such as valve closure and pump shutdowns. Automated and independent pressure control and overpressure protection systems are designed to protect against static and dynamic overpressure.

B. Potential threats contributing to releases from small to large volumes are described within section 3.13.3.10 of the FSEIS. Equipment malfunctions including those of SCADA components are addressed within this section. Associated threats have been addressed through the following:

- Design practices including system fail safe functionality, key component and power supply redundancy (including key pressure and level sensors).
- Functional validation of systems including factory and site acceptance testing as well as comprehensive point to point verification between SCADA and associated field devices.

C. TransCanada has a dedicated team to provide operational support for its SCADA systems. The team provides 7x24 on-call SCADA support, primarily to the Oil Control Center. Additionally, automated monitoring systems alert the SCADA team in the event that a SCADA system requires maintenance. The support team ensures that routine maintenance is performed on the SCADA systems, as required. Non-routine maintenance is managed through a risk-based integrity management process. The design of the Keystone XL SCADA system includes, at a minimum, dual redundant components at both the primary and backup Oil Control Centers.

D. TransCanada utilizes a state of the art Computational Pipeline Monitoring (CPM) leak detection system capable of identifying leaks down to the size of 1.5 to 2.0% of pipeline flow rate within a 2-hour window.

TransCanada has maintained the CPM to meet or exceed this level of leak detection sensitivity since the beginning of operations. The Keystone pipeline is monitored 24/7 by a dedicated Leak Detection controller within the Oil Control Center who is trained to identify and to respond to emerging events.

E. TransCanada actively funds and participates with Industry in the evaluation and development of leak detection technologies to augment our current systems. Examples of this effort include:

1. **New Generation of Rarefaction Wave Leak Detection**

This technology utilizes negative pressure waves generated to detect the onset of a leak. These waves travel from the origination point down both directions of the pipeline through the pipeline fluid at the speed of sound of the fluid medium and attenuate over distance as they travel. Dynamic pressure sensors installed at facilities with power and communication accesses (pump stations, mainline valves, etc.) can then measure these pulsations and detect the start of a leak and locate the leak by calculating the difference of arrival time of the pulsations at the two ends of the pipeline section.

2. **In Line Inspection Leak Detection**

An acoustic In Line Inspection (ILI) tool that is launched and received on a periodic basis like any other In Line Inspection (ILI) tool and is propelled by the commodity in the line. This technology claims to be able to detect leaks smaller than the current threshold of CPM systems; however, detection only occurs as the tool passes the leak location and is therefore not a continuous real time monitoring system.

3. **Infrared thermal camera for facilities**

The camera based leak detection technology functions by employing Infrared and color video cameras to detect temperature differences between objects of interest and the surrounding environment. Software analytics then attempt to determine whether the detection constitutes a leak or an environmental transient such as a wild animal, weather or other event (snow, rain, etc.). In the event of a detected leak, confirmation can be obtained through color cameras and

real time notifications would be sent the Control Center and/or control room as pre-specified. This technology is still its infancy.

4. Aerial or Ground Patrol Leak Detection

This is a transportable leak detection technology designed for aerial or ground. This technology takes advantage of the difference of light absorption rates between the atmosphere and hydrocarbon vapors to detect hydrocarbon leak. Performance depends on the selected spectrum band, visible or non-visible, and the analysis algorithm vendors choose.

5. Cable Based External Leak Detection Systems

Cable based leak detection systems are buried along the pipeline to provide external means of leak detection. Different cable based technologies apply different physical principles to detect phenomena accompanying a leak as temperature change (DTS), leakage caused sound and vibration (DAS), and existence of hydrocarbon liquid (HSC) or hydrocarbon vapor molecules (VST) outside the pipe. These can be used as independent means of detection outside of the mass balance CPM systems. Despite its long history of use for leak detection at oil and gas facilities and pipeline security, application for leak detection on long-haul transmission pipelines is a recent emerging development.

Some of the above technologies are in a state of development, while others are commercially available today yet their practical application to long haul transmission pipelines such as Keystone XL has not been established. As part of our commitment to safety, TransCanada continues to evaluate these new and evolving leak detection technologies to potentially augment the best in class leak detection capabilities of our current system and for potential implementation on new pipelines including Keystone XL.

F. Consistent with industry practice, TransCanada does not publicly disclose the details of the security systems it has in place. We believe that it is not prudent to make this information public because of the likelihood that it will assist, and, potentially encourage, attackers.

INTERROGATORY NO. 72: Describe how TransCanada will report its full compliance with the CMR to the Commission, so that the Commission can confirm that TransCanada will minimize impacts on cultivated lands, grasslands, wetlands, streams, and

waterways? Identify documents upon which your answers are based. [Applicable Finding or Condition No.: Finding 73]

ANSWER: Keystone will submit quarterly progress reports to the Commission that summarize the status of construction and environmental control activities as directed by Amended Permit Condition #8. Keystone has incorporated environmental inspectors into its CMR Plan Rev4 and will obtain follow-up information reports from such inspections upon the completion of each construction spread to help ensure compliance the CMR Plan Rev4 to the Commission as directed by Amended Permit Condition #14.

INTERROGATORY NO. 73: Describe the status of TransCanada's training of each of local first responders along the proposed route of the KXL Pipeline.

A. Identify each first responder entity along the Keystone I pipeline routes for which TransCanada has provided training and describe this training;

B. Describe how the training for the Keystone XL Pipeline will differ from the training provided for the Keystone I pipeline;

C. Identify documents upon which your answers are based.

[Applicable Finding or Condition No.: Finding 100; Conditions 10, 15]

ANSWER: Emergency response training is addressed in detail at Appendix D of the Keystone Pipeline System Emergency Response Plan attached as Appendix I of the State Department January 2014 Final Supplemental EIS.

See http://keystonepipeline-xl.state.gov/documents/organization/221231.pdf

Specific training for Keystone XL has not yet been established but will be similar to that described in the Keystone ERP above.

INTERROGATORY NO. 74: Do you admit that ground movement can cause abnormal movement of the proposed KXL pipeline?

A. Describe incidents where ground movement has resulted in abnormal movement of the Keystone I or other pipeline similar to the proposed KXL Pipeline;

B. Identify documents upon which your answers are based.

[Applicable Finding or Condition No.: Finding 101; Conditions 31-38]

ANSWER: Because there are no areas of high ground movement potential along the Keystone XL route in South Dakota, Keystone does not expect any incidents of ground movement. There have been no incidents of ground movement resulting in abnormal movement of the Keystone I pipeline.

INTERROGATORY NO. 75: Since 49 CFR Part 195 would require TransCanada Keystone to conduct an "internal inspection" of any pipe section(s) potentially moved by abnormal ground movement, describe the timeframe within which an inspection would take place considering the time required to transport personnel and equipment from their staging area to the most distant segment of the KXL Pipeline in South Dakota, and the time required to notify and mobilize inspectors to their staging area. Identify documents upon which your answers are based. [Applicable Finding or Condition No.: Finding 101; Conditions 31-38]

ANSWER: It would take between one and two weeks to mobilize and conduct an internal inspection.

INTERROGATORY NO. 76: Identify the location(s) where slope instability poses a potential threat of ground movement along the Project route.

A. Identify TransCanada's most current Integrity Management Plan (IMP) showing incorporation of locations where slope instability poses a potential threat to the pipeline;

B. Identify documents upon which your answers are based.

[Applicable Finding or Condition No.: Finding 79; Conditions 8, 15, 20-21]

OBJECTION AND ANSWER: To the extent that it seeks information outside South Dakota, this request is overlybroad and unduly burdensome and seeks the discovery of information that is not relevant and not likely to lead to the discovery of admissible evidence under SDCL 15-6-26(b). In addition, the request for the Integrity Management Plan is beyond the scope of the PUC's jurisdiction and Keystone's burden under SDCL § 49-41B-27. This request also seeks information addressing an issue that is governed by federal law and is within the exclusive province of the PHMSA. The PUC's jurisdiction over the Integrity Management Plan is preempted by federal law. See 49 C.F.R. Part 194; 49 U.S.C. § 60104(c). This request further seeks information that is confidential and proprietary. See Amended Final Order, HP 09-001, Condition ¶ 36. Public disclosure of the Integrity Management Plan would commercially disadvantage Keystone. Without waiving the objection, please refer to FSEIS Chapter 3 Affected Environment, Section 3.1.2 Environmental Setting, Section 3.1.2.5 Landslide. Also, see Chapter 4 Environmental Consequences, Section 4.1.3.4 Geologic Hazards Landslides.

INTERROGATORY NO. 77: What is the status of preparation and publication of the "public awareness programs" required to be prepared by 49 CFR Part 195? Identify the documents upon which your answers are based. [Applicable Finding or Condition No.: Finding 102; Conditions 1-3, 6-7]

ANSWER: Keystone's existing public awareness program will be updated prior to KXL pipeline commencing service to incorporate any updated materials.

INTERROGATORY NO. 78: Describe the status of preparation of different construction and reclamation techniques for the variety of geological for differing soils conditions, slopes, vegetation and land use along the pipeline route, in consultation with the National Resource Conservation Service, construction/reclamation unit. Identify documents upon which your answers are based. [Applicable Finding or Condition No.: Finding 80; Conditions 15-16]

ANSWER: The preparation of different construction and reclamation techniques for the variety of geological for differing soils conditions, slopes, vegetation and land use along the pipeline route, in consultation with the National Resource Conservation Service, construction/reclamation unit has been completed. The 2013 Construction/Reclamation Unit Specifications contains this information and are found in Appendix R of the Department of State FSEIS (2014).

INTERROGATORY NO. 79: With regard to the inspectors that TransCanada will have "on a construction spread" during construction:

A. What is the number of inspectors to be onsite;

B. What is the number of such inspectors who will be "environmental inspectors;"

C. Describe the minimum qualifications for such environmental inspectors;

D. What is the distance of each construction spread that an individual environmental inspector will be responsible for monitoring on any given day of construction;

E. In what manner and how often or under what circumstances will these inspectors submit their documentation of their findings to the Commission;

F. Identify documents upon which your answers are based.

[Applicable Finding or Condition No.: Finding 85; Condition 14]

ANSWER: The final Project construction schedule has not been determined.

A. The number of inspectors including Environmental Inspectors (EIs) and the configuration of the EIs along the Project route in South Dakota will not be determined until the final Project schedule is determined.

B. There will be a minimum of one environmental inspector per spread.

C. The minimum requirements for an environmental inspector will be specified by Keystone during the hiring process.

D. Environmental inspectors are not stationary. They review procedures and activities along a spread based upon what work may be occurring on that spread on a given day. They then review and report on compliance by moving between the different spread activities that are occurring on a given day.

E. Keystone will submit quarterly progress reports to the Commission that summarize the status of construction and environmental control activities as directed by Amended Permit Condition #8. Keystone has incorporated environmental inspectors into its CMR Plan Rev4 and will obtain follow-up information reports from such inspections upon the completion of each construction spread to help ensure compliance the CMR Plan Rev4 to the Commission as directed by Amended Permit Condition #14.

F. The Department of State FSEIS (2014), The Amended Permit Conditions issued by the Commission.

INTERROGATORY NO. 80: Identify all bonding requirements with which TransCanada must comply for construction of the KXL Pipeline. In answering, also state the current bond amount under SDCL §49-41B-38 for damage to highways, roads, bridges and other related facilities during and after construction.

A. Describe in detail how figures for perceived repair and reclamation were determined;

B. Has TransCanada committed itself to pay any costs of repair or reclamation above the bond amount, should the bond amount prove too low to cover the total cost thereof?

[Applicable Finding or Condition No.: Finding 88; Condition 23]

OBJECTION AND RESPONSE: This request is not relevant or likely to lead to the discovery of admissible evidence to the extent that it seeks information outside South Dakota. Without waiving the objection, the bond requirements for Keystone XL are stated in the June 2010 Amended Final Order at Condition 23(f). The amount of the bond was proposed by Keystone and recommended by staff witness Binder in Docket HP 09-001.

INTERROGATORY NO. 81: State whether or a bond requirement exists with respect to damage to rivers, streams, shallow or surface or deeper aquifers during construction. If so, state the bond amount.

A. Describe in detail how figures for perceived repair and reclamation were determined;

B. Has TransCanada committed itself to pay any costs of repair or reclamation above the bond amount, should the bond amount prove too low to cover the total cost thereof?

[Applicable Finding or Condition No.: Finding 88; Conditions 23, 49]

ANSWER: The bond requirement referenced in the response to No. 80 above is the only bond requirement in South Dakota.

INTERROGATORY NO. 82: Describe each proposed location in South Dakota and adjacent states of spill response equipment prepositioned to respond to a spill from the KXL Pipeline.

A. For each such location, estimate the time required to mobilize personnel to their assigned equipment and the time required for this equipment to travel to the most distant point on the pipeline in South Dakota from its storage location, showing the distance travelled and assumed speeds;

B. Identify the documents upon which you relied to answer these questions;

[Applicable Finding or Condition No.: Finding 98; Conditions 31-38]

ANSWER: Oil spill response equipment (amounts, types and locations) that are owned by TransCanada are listed in Appendix A of the Keystone Emergency Response Plan, which was filed as a confidential document with the PUC in HP 07-001. The Keystone ERP will be amended to accommodate Keystone XL. PHMSA requires response times as outlined in the table below. TransCanada locates equipment and people that are transported by air, land and water to ensure that regulatory guidelines are meant.

INITIAL RESPONSE ACTIONS - SUMMARY PERSONNEL AND PUBLIC SAFETY IS FIRST PRIORITY			
RESPONSE TIMES*			
US DOT Tier	1	2	3
High Volume Area	6 HR	30 HR	54 HR
All Other Areas	12 HR	36 HR	60 HR

CONTROL

- Eliminate sources of ignition
- Isolate the source of the discharge, minimize further flow

NOTIFY

- Make internal and external notifications
- Activate local Company personnel as necessary
- Activate response contractors and other external resources as necessary

CONTAIN

- Begin spill mitigation and response activities
- Monitor and control the containment and clean-up effort
- Protect the public and environmental sensitive areas

* Response resources and personnel available to respond within time specified after discovery of a worst case discharge per US DOT 49 CFR Part 194.115 (Keystone ERP. Sec 3.1).

INTERROGATORY NO. 83: Identify the most recent IMP submitted to the Commission and other appropriate agencies, including but not limited to sections in it related to HCAs. [Applicable Finding or Condition No.: Finding 102; Conditions 1-2]

OBJECTION: This request seeks information that is beyond the scope of the PUC's jurisdiction and Keystone's burden under SDCL § 49-41B-27. This request also seeks information addressing an issue that is governed by federal law and is within the exclusive province of PHMSA. The PUC's jurisdiction over the integrity management plan is preempted by federal law. See 49 C.F.R. Part 194; 49 U.S.C. § 60104(c). This request further seeks

information that is confidential and proprietary. See Amended Final Order, HP 09-001, Condition ¶ 36. Public disclosure of the Integrity Management Plan would commercially disadvantage Keystone.

INTERROGATORY NO. 84: Itemize the property tax payments paid by TransCanada and its Affiliates to respective South Dakota towns, cities, and counties each year since 2010 for the Keystone I pipeline:

A. Compare TransCanada's property tax estimates for the Base Keystone Pipeline prepared prior to its construction to TransCanada's actual payments and explain any discrepancy;

B. Identify the documents upon which you relied to answer these questions;

[Applicable Finding or Condition No.: Finding 23, 102, 108; Conditions]

ANSWER: Keystone has paid $14,128,224 in property taxes in South Dakota from 2009 through and including 2013. 2014 real property taxes are due and payable in 2015. Keystone paid Beadle County $1,796,731; Brookings County $5,734; Clark County $1,602,403; Day County $2,294,723; Hanson County $627,561; Hutchinson County $2,015,399; Kingsbury County $955,201; Marshall County $1,533,417; McCook County $568,591; Miner County $1,782,412; and Yankton County $1,040,782; 2009 through 2013. The documents on which the answer is based are the tax bills rendered by the county treasurer in each county.

In HP07-0100, the base Keystone Pipeline docket, the company first estimated ad valorem on property taxes spread among host counties in the first year as $6.5 million, then amended the estimate to $9.1 million. Calculations were based on an "all in" cost of construction of approximately $300 million, later amended to $500, million. The estimate assumed that the pipeline would be assessed based on its construction cost. The Department of

Revenue chose not to use construction cost as the basis for the assessment. In 2011, the legislature changed the way the value of agricultural property was assessed for ad valorem real property tax purposes. The change in valuation method has resulted in a substantial increase in the assessed value of agricultural property. An increase in the assessed valuation of one category of property affects the local need and local contribution calculations under the South Dakota school aid formula and affects the way the county, city, township and school levies are spread across other categories of property. A combination of the method of assessment, levies and the change in agricultural land valuation assessment methodology explains the difference. Documents used for the answer include the tax bills rendered, a summary thereof marked as Keystone 0768-0773, and Exhibit TC14 HP07-0100 Docket.

INTERROGATORY NO. 85: With respect to the jobs you allege will be brought to South Dakota by the KXL pipeline project:

A. State the number, job title, and expected duration of the temporary construction related jobs expected;

i. State what percentage of current South Dakota citizens, as opposed to persons who move to South Dakota for a job, are expected to be hired for each job title.

ii. Is there any preference for South Dakota citizens to obtain any or all of these temporary jobs?

iii. State the number and percentage of the total construction jobs expected to be filled by out-of-state workers.

B. State the number, type, and expected duration of the permanent jobs expected in South Dakota;

i. State the number of permanent jobs expected to be held by current South Dakota citizens, as opposed to someone who moves from out of state to South Dakota to take the job.

ii. Will there any preference for South Dakota citizens to obtain any or all of the permanent jobs to be created in South Dakota?

C. Identify the documents upon which you relied to answer these questions;

[Applicable Finding or Condition No.: Finding 23, 102, 108; Conditions 1-2]

ANSWER:

A. Assuming this question refers to 'average annual jobs' - It is estimated that Project construction in South Dakota will support 3,500 jobs across all sectors, of which between 1,038 and 1,500 jobs will be directly construction-related. The 3,500 jobs supported by construction of the Project are considered 'average annual jobs', defined as one position that is filled for one year, while the 2,700 to 3,900 temporary construction personnel are expected to be employed for the 4- to 8-month seasonal construction period over 1 to 2 years.

i. It is estimated that between 270 and 390 temporary construction positions created in South Dakota will be filled by residents of the State.

ii. Jobs are filled based on the availability of qualified personnel.

iii. It is estimated that between 2,430 and 3,510 temporary construction positions created in South Dakota will be filled by non-South Dakota residents.

B. Approximately 25 permanent employees and 15 temporary contractors will be distributed along the proposed pipeline route, including the route in South Dakota. Job duration is commensurate with operations of the pipeline and titles will vary.

i. Jobs are filled based on the availability of qualified personnel.

ii. Jobs are filled based on the availability of qualified personnel.

C. Section 4.10 of the Final SEIS.

INTERROGATORY NO. 86: Should there be a worst case discharge or even a substantial release of crude oil into farmland and/or water resources and/or an explosion of the pipeline near homes or towns with people, explain how the Project will have a "minimal" effect on the health, safety, or welfare of its inhabitants. Identify the documents upon which you relied to answer these questions.

[Applicable Finding or Condition No.: Finding 23, 102, 108; Conditions 1,2, 31-36]

OBJECTION: This request is argumentative and improper in form. It calls for speculation and assumes facts not in evidence and is therefore beyond the scope of discovery under SDCL § 15-6-26(b). The PUC found in its conclusions of law, ¶ 6, that Keystone met its burden of proof on this issue.

Dated this 5TH day of February, 2015.

TRANSCANADA KEYSTONE PIPELINE, LP
by its agent, TC Oil Pipeline Operations, Inc.

By _____

Its Director, Authorized Signatory

Subscribed and sworn to before me

this 5th day of February, 2015.

_____

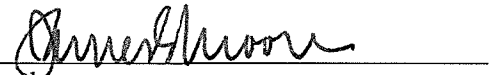
John W. Love, Lawyer
Notary Public - Canada

OBJECTIONS

The objections stated to Dakota Rural Action's Interrogatories and Request for Production of Documents were made by James E. Moore, one of the attorneys for Applicant TransCanada herein, for the reasons and upon the grounds stated therein.

Dated this 6th day of February, 2015.

WOODS, FULLER, SHULTZ & SMITH P.C.

By 

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CERTIFICATE OF SERVICE

I hereby certify that on the 6th day of February, 2015, I sent by e-mail transmission, a true and correct copy of Keystone's Responses to Dakota Rural Action's First Interrogatories, to the following:

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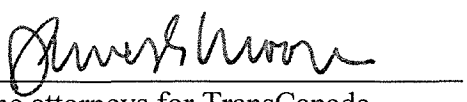

One of the attorneys for TransCanada