BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

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HP 14-001

IN THE MATTER OF THE PETITION OF TRANSCANADA KEYSTONE PIPELINE, LP FOR ORDER ACCEPTING CERTIFICATION OF PERMIT ISSUED IN DOCKET HP09-001 TO CONSTRUCT THE KEYSTONE XL PROJECT

REBUTTAL TESTIMONY OF JEFF MACKENZIE

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Pursuant to the Commission's Order Granting Motion to Define Issues and Setting Procedural Schedule, Petitioner TransCanada Keystone Pipeline, LP, offers the following rebuttal testimony of Jeff Mackenzie.

1. Please state your name and occupation.

A. Jeff Mackenzie, Senior Emergency Preparedness and Response Specialist with TransCanada.

2. Did you provide direct testimony in this proceeding?

A. No. I'm a highly-skilled Senior Emergency Manager with more than 20 years' experience in Emergency Management & Preparedness, Risk Management, Facilities and H&S. I have specialized knowledge in Emergency Services Management, EH&S Programs Development, Risk Management and Emergency Services Administration. A current copy of my resume is attached as Exhibit A.

3. To whose direct testimony are you responding in your rebuttal testimony?

A. I am responding to the direct testimony of Richard Kuprewicz and Dr. Arden Davis.

4. Mr. Kuprewicz's testimony (pg. 1) states "effective cleanup/remediation of ruptures into the rivers would be most unlikely, despite extensive and expensive efforts in this challenging terrain, and could be devastating to the state." Can you comment on this statement?

A. While the likelihood of a release is very low, TransCanada takes full responsibility for emergency response and clean-up for any of the pipelines that we own and operate. TransCanada will assume the responsibility for managing spill events and will pay for remediating any environmental impact or for any property damage that may result from a spill. Section 1002 of the Oil Pollution Act of 1990 states that TransCanada is liable for: (1) certain specified damages resulting from the discharged oil; and (2) removal costs incurred in a manner consistent with the National Contingency Plan (NCP). Additionally, PHMSA regulations at 49 CFR 194.115 require each operator to identify and ensure the resources necessary to remove a worst case discharge, to the maximum extent practicable, and to mitigate or prevent a substantial threat of a worst case discharge. This capability is demonstrated through the Keystone Pipeline System Emergency Response Plan. The Keystone Pipeline System Emergency Response Plan describes various techniques for containing spilled oil in water (e.g. deflection/diversion boom, containment boom). The Response Plan also describes the techniques used to recover spilled product using weir skimmers, oleophilic skimmers, and suction skimmers. These tactics are proven to be the most effective means to recover spilled product, and TransCanada has access to

all of the resources required to employ these tactics through internally owned equipment, trained company personnel, and contact resources. More detail specific to emergency response in rivers is provided in response to Question 9 herein.

TransCanada has extensive, recent experience working in challenging terrain where site access was challenging. In those instances, TransCanada proved it has ability to gain access and appropriately respond. For example, in 2013, TransCanada experienced a natural gas pipeline rupture in northern Alberta where swamp and muskeg made access to the site extremely challenging. TransCanada successfully responded to the incident by building roads with rig mats, using tracked vehicles to navigate swamps and sloughs, and employing heavy-lift helicopters to transport equipment to the isolated location. In addition, TransCanada is constructing pipelines in some of the most rugged mountains in Mexico. There, TransCanada has used winches and cable systems to transport personnel and equipment up and down steep, isolated, mountainous terrain. TransCanada has contractual agreements in place with helicopter companies in the United States having the ability to sling and lift emergency response equipment and resources into remote areas.

In addition to challenging terrain, TransCanada is prepared to respond to emergencies in harsh climates and weather conditions. Since the Keystone Pipeline has been in service, TransCanada has conducted emergency response exercises in extremely cold weather allowing personnel to test such tactics as ice slotting for product containment under frozen waterways. Similarly, TransCanada has responded to actual emergencies in Canada where ambient temperatures were dangerously low; still TransCanada was able to respond safely in those

conditions, which are comparable to those experienced in western South Dakota during the winter season.

5. Mr. Kuprewicz's testimony (pg. 2) references what he calls "past failures of [oil spill response] plans to be truly effective." Can you comment on this assertion?

A. Oil spill response plans are developed by pipeline operators as required by PHMSA regulations at 49 CFR Section 194.115. PHMSA is the federal agency with the technical expertise to review the adequacy of these plans. To the extent Mr. Kuprewicz has concerns with the efficacy of oil spill response plans across the industry, that would be an issue to be addressed with PHMSA.

The existing Keystone Pipeline System Emergency Response Plan was developed in accordance with 49 CFR Part 194. The Keystone ERP was reviewed and approved by PHMSA prior to Keystone commencing operations in 2010. Required Worst Case Discharge scenarios were calculated using the U.S. Coast Guard criteria. Using these figures, TransCanada identified and ensured, by contract or other approved means, the resources necessary to remove, to the maximum extent practicable, a worst case discharge and to mitigate or prevent a substantial threat of a worst case discharge. Keystone will augment the Keystone Pipeline System ERP to address these same issues along the route of the Keystone XL Pipeline. The augmented plan will be reviewed by PHMSA.

In the course of reviewing Keystone's Presidential Permit application, the State Department (DOS) tendered a data request to Keystone in which it required Keystone to describe its response to two spill scenarios. These scenarios are presented in the excerpt from the August 2011 Final Environmental Impact Statement, which is attached as Appendix A to my testimony.

DOS stated that Keystone's response to these scenarios provided an opportunity to review the level of preparedness and foresight that would be in place relative to potential spills from the proposed Project.

As stated in the FEIS, DOS and PHMSA reviewed these hypothetical spill response scenarios prepared by Keystone. Based on its review of the hypothetical spill response scenarios, DOS stated that it considers Keystone's response planning appropriate and consistent with accepted industry practice.

6. Mr. Kuprewicz's testimony (pg. 2) states "An oil spill plan should also include dealing with a possible release in the critical Ogallala Aquifer." Can you comment on this statement?

A. TransCanada will include the possibility of a release in the Ogallala Aquifer in the Emergency Response Plan for Keystone XL. As I have stated, the existing Keystone Pipeline System Emergency Response Plan will be augmented to include the risks and hazards associated with the Keystone XL route. Such risks and hazards include a release to groundwater, and the tactics for remediating this type of spill are already addressed in the Keystone Emergency Response Plan. Specifically, the following procedures and potential remediation techniques are included in the Keystone Emergency Response Plan:

<u>Procedures:</u>

- Evaluate the topography and evidence of surface contamination.
- Establish containment, accounting for public safety, spill volume, terrain, and presence of surface water.
- Notify landowner and appropriate public agencies of potential groundwater contamination.
- Immediately retain an independent consultant with expertise in this area to evaluate impacts and remediation options.

- Consult with appropriate agencies regarding remediation, including water and soil cleanup levels, and need for groundwater monitoring.
- Notify and procure additional response equipment and personnel as necessary to address site-specific conditions.

Remediation Techniques:

- Dig intercept trench down-gradient of release point.
- Line trench and stage vacuum truck to remove contaminated oil/water mixture.
- Excavate surface catchment up-gradient of the intercept trench and near leading edge of visible contamination.
- Excavate until contaminated soil is completely removed and clean soil is encountered or conditions prohibit continued digging.
- Line the catchment to limit or prohibit further groundwater contamination.
- Move vacuum truck from intercept trench to catchment to recover oil and/or oily water.
- Line drop down area to stage contaminated soil as excavated.
- Segregate waste streams to minimize later disposal.
- Based on anticipated release, stage temporary storage and additional vacuum trucks to ensure recovery efforts continue without interruption.

- Options for Long-term Remediation:
  - Air sparging
  - Vacuum extraction
  - Conventional pump and treat
  - Bio-slurping
  - Excavation
  - Enhanced biodegradation/bioremediation
  - Chemical addition/oxidation
  - Natural Attenuation
  - Enlist additional experts, as appropriate, for continuing remediation and coordination with appropriate agencies.
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7. Mr. Kuprewicz's testimony (pg. 2) states "The Keystone XL oil spill plans should be independently reviewed and made public to assure their effectiveness." Can you comment on that assertion?

A. The existing Keystone Pipeline System Emergency Response Plan was developed in accordance with 49 CFR Part 194 and is distributed, retained, and submitted to PHMSA in accordance with that federal regulation. Additionally, the plan satisfies South Dakota Codified

Laws 34A-12-9, 34A-18-2, and 34A-18-9. The South Dakota Department of Environment and Natural Resources – Division of Environmental Services is a plan holder of Controlled Copy #26 of the Keystone Pipeline System Emergency Response Plan, and the Department receives notification within 30 days of any change to the plan. A redacted version of the ERP for the Keystone System is available to the public as Appendix I to the State Department's January 2014 Final Supplemental Environmental Impact Statement.

8. Mr. Kuprewicz's testimony (pg. 6) states "[t]he potential to rapidly spread in this [steep terrain] environment raises a serious question as to whether the 12-hour or even the 6-hour Tier 1 time limit in federal regulations will be appropriate." Do you have a comment on that testimony?

A. First, the response time limits set forth at 49 CFR 194.115 have been established by the federal agency with demonstrated expertise in this area. If Mr. Kuprewicz believes they are inadequate, he should take that position up with the agency having responsibility and jurisdiction over this area.

TransCanada places great emphasis on ensuring the ability to promptly respond to an emergency. In fact, TransCanada has designed exercises to specifically assess the ability of their contracted response organizations to provide resource for a worst case scenario within the required time limits. These exercises evaluate contractor's availability to respond in specified time frames. In 2013, a Third Party Contractor Assessment Exercise was conducted in Yankton, SD to ensure adequate resources were available, and similar exercises are anticipated across the pipeline system in the future.

9. As recent ruptures have indicated in the Yellowstone River, Oil Spill Response can be highly ineffective at containing or recovering spilled oil, which can rapidly spread tens of miles downstream in major river ways.

A. TransCanada maintains contracts with US Coast Guard classified Oil Spill Removal Organizations. These organizations have access to the most efficient and technologically advanced containment and recovery equipment available.

The Keystone Pipeline System Emergency Response Plan describes various tactics for containing and recovering spilled oil in flowing waterways. Dikes, berms, and dams are land-based tactics, with the objective of containing spilled oil and limiting spreading of oil slicks, thus minimizing impacts to the environment. Dikes, berms and dams are embankment structures built-up from the existing terrain, placed to contain and accumulate oil for recovery. These barriers can serve to:

- Contain and stabilize a contaminated area.
- Contain or divert oil on water or oil that has potential to migrate.
- Create cells for recovery.
- Use natural depressions to act as containment areas for recovery.

The Response Plan also describes the techniques and equipment used to recover spilled product in waterways through the use of skimmers, which fall into three types:

- Weir skimmers draw liquid from the surface by creating a sump in the water into which oil and water pour. The captured liquid is pumped from the sump to storage. Weir skimmers can recover oil at high rates, but they can also recover more water than oil, especially when the oil is in thin layers on the surface of the water. This creates the need to separate the water from the oil and decant it back into the environment. Otherwise, the recovered water takes available storage volume. Weir skimmers are best employed where oil has been concentrated into thick pools or where there are very large volumes of oil and recovered liquid storage capacity.

- Oleophilic skimmers pick up oil that adheres to a collection surface, leaving most of the water behind. The oil is then scraped from the collection surface and pumped to a

storage device. Oleophilic skimmers do not recover oil as fast as weir skimmers, but they have the advantage of recovering very little water. Oleophilic skimmers may be used where oil is very thin on the surface. Oleophilic skimmers are a good choice where liquid storage capacity is limited.

- Suction skimmers use a vacuum to lift oil from the surface of the water. These skimmers require a vacuum pump or air conveyor system. Like weir skimmers, suction skimmers may also collect large amounts of water if not properly operated. Most suction skimmers are truck mounted and work best at sites with road access.

These tactics are proven to be the most effective means to recover spilled product, and TransCanada has access to all of the resources required to employ these tactics through internally owned equipment, trained Company personnel, and contacts resources.

10. Kuprewicz testifies that oil spill response and remediation for the segment of the pipeline in Tripp County spanning the Ogallala Aquifer should focus on surrounding the release site with "reverse flow" injection and soil capture and remediation methods to limit its spread and involves removing underground soil contaminated from spill plumes that may be developed.

A. TransCanada will implement the most effective strategies, techniques, and equipment available to respond to any emergency in all our operating environments along the pipeline. During an emergency, TransCanada will work in collaboration with regulatory agencies to develop our strategies based on site specific conditions such as land or surface water, weather, geology, soil type, etc. While reverse flow injection may be one tactic to respond to an oil spill, TransCanada will not limit itself to a single response tactic. Instead, TransCanada will maintain contracts with US Coast Guard classified Oil Spill Removal Organizations who have access to the most efficient and technologically advanced containment and recovery equipment available.

11. Dr. Davis testifies that diluted bitumen that sinks in water is significantly more difficult to clean up. Can you comment on that statement?

A. TCP considers the potential for sinking and submerged oil as part of our Emergency Response plans and in the execution of such plans. In the unlikely event of a spill, TCP would work hand-in-hand with regulatory bodies to determine the correct response and remedial actions given to the specific variables of the event. While sinking crude oils do pose a greater challenge for containment and clean up compared to floating oil, the industry has emergency response containment and clean up procedures that have substantially improved, in part because of the lessons learned from the Kalamazoo spill.

Such emergency response tactics may include, but not limited to the following:

- Mechanical methods such as suction dredging and air bubbling.
- Non-Mechanical methods could include chemical treatment / dispersants, bio-mediation and in-situ burning.

Petroleum hydrocarbon plumes do not sink within groundwater as observed with chlorinated solvent plumes (e.g., trichloroethylene [TCE], perchloroethylene [PCE]); instead, they form along the uppermost layer of groundwater.

Therefore, contamination of groundwater would be limited to the uppermost volume associated with the groundwater surface. Petroleum hydrocarbons are naturally degraded by microbial communities naturally found within soils. As a result, petroleum hydrocarbon plumes would be expected to result in highly localized effects. Removal of the source oil and remediation actions would help to further minimize groundwater impacts. Kuprewicz reaches the same conclusion (p. 7), specifically stating that impacts to RST groundwater wells are not anticipated due to the slow-moving nature of the groundwater plumes.

Dated this 26TH day of June, 2015.

Jeff Mackenzie