BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

DOCKET NO. HP07-001

IN THE MATTER OF THE APPLICATION OF TRANSCANADA KEYSTONE PIPELINE, LP FOR A PERMIT UNDER THE SOUTH DAKOTA ENERGY CONVERSION AND TRANSMISSION FACILITY ACT TO CONSTRUCT THE KEYSTONE PIPELINE PROJECT

Direct Testimony of Tom Janssen on Behalf of the
Staff of the South Dakota Public Utilities Commission
October 31, 2007

BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

DIRECT TESTIMONY OF TOM JANSSEN

Q: Please state your name and business address

A: Tom Janssen, Merjent, Inc., 615 First Avenue NE, Suite 425; Minneapolis, MN 55413

Q: Describe your educational background.

A: I received my Bachelor of Arts Degree in 1996 from the University of St. Thomas in St. Paul, Minnesota with majors in Environmental Studies and Geography.

Q: **What is your employment history?**

A: From 1994 to 1997 I served as a GeoTechnical Specialist and Engineering Assistant at Braun Intertec, a Minnesota-based engineering and environmental consulting company. I was responsible for soil testing; sub-grade construction site preparation; onsite concrete inspection, installation monitoring, and strength testing; and working with drill teams on subsurface geotechnical investigations. From 1997 to 2004, I served as an Environmental Scientist at Natural Resource Group, Inc., a Minneapolis-based consulting company where I specialized in environmental permitting, surveys, and environmental inspection and monitoring services to the pipeline and power line industries.

Q: **By whom are you now employed?**

A: In 2004, I was a founding partner of Merjent, Inc., a Minneapolis-based professional consulting company specializing in the energy industry. I currently hold the position of Senior Analyst and Corporate Secretary at Merjent, Inc. providing environmental permitting, surveys, and environmental inspection and monitoring services to the pipeline and power line industries.

Q: **What work experience have you had that is relevant to your research on this project?**

A: I have over 10 years experience in the energy industry specializing in environmental project management for pipeline expansion and maintenance projects. I support various clients with project planning and scoping-related tasks, coordinating regulatory agency consultations, managing environmental field surveys, acquiring permits and approvals, preparing contract specifications for compliance with environmental requirements, providing pre-construction environmental training, and offering compliance support to

field personnel and environmental inspectors. I have been a lead environmental inspector and a post-construction restoration monitor for pipeline projects in Minnesota, Iowa, and Illinois. In November and December 2007, I will serve as an on-site environmental monitor on behalf of the Wisconsin Department of Natural Resources (DNR) for a large-scale crude oil pipeline construction project to document compliance with DNR permits and approvals issued for the project.

Q: **What is the purpose of your testimony?**

A: Evaluation of the TransCanada Keystone Pipeline L.P. (Keystone) Construction and Mitigation and Reclamation Plan (CMRP) prepared by Universal Ensco, Inc. to assess its adequacy to ensure areas affected by construction-related activities would be restored to original productivity within a reasonable timeframe along the proposed Keystone Pipeline Project route.

Q: **Which sectors did you study?**

A: I assessed standard construction, mitigation, and reclamation practices in the crude oil and natural gas industry.

Q: **What methodology did you employ?**

A: I compared the TransCanada Keystone Pipeline L.P. CMRP to assess its adequacy and consistency with standard industry practice.

Q: **Summarize your findings and how the possible negative impacts can be mitigated.**

A: Bay West, Inc. was contracted by the South Dakota Public Utilities Commission (SD PUC) to provide consulting services for the review of certain application documents for the proposed construction, operation and maintenance of a crude oil pipeline to be completed by TransCanada Keystone Pipeline, LP. I worked with Bay West, Inc. to assess adequacy of the CMRP, included as part of the application documents to the SD PUC. My findings and recommendations are included as part of Bay West's application review results submitted to the SD PUC. The results of Bay West's review are presented in the attached Limited Application Review Report dated October 31, 2007. .

Overall, I found the construction, mitigation, and reclamation practices included in the CMRP to be adequate and generally comply with pipeline industry standards. "Task 5" of the Bay West application review documents provides findings of where the CMRP

could be improved and offers recommendations for specific conditions to be included in the SD PUC permit. A general summary of the findings and recommendations to improve the CMRP are provided in the enclosed table.

Q: **Does this conclude your testimony.**

A: Yes.

TransCanada Keystone Pipeline L.P.
Construction and Mitigation and Reclamation Plan
Summary of Findings and Recommendations

Mitigation Measures	Findings	Recommendations
Section 2.0 General Conditions		
Environmental Inspection	The CMRP did not stipulate the use of an environmental inspector during and after construction.	The SD PUC should consider including the following stipulation as part of its permit to Keystone: At least one environmental inspector shall be required for each construction spread during construction and restoration to help ensure compliance with the PUC's permit, other environmental agency permit conditions, and landowner requirements. Environmental inspectors shall have peer status with all other activity inspectors and authority to order appropriate corrective actions or to stop activities that violate the environmental requirements.
Noise Control	The CMRP provides general measures to mitigate noise impacts; however, the measures did not specifically address how the noise impacts would be mitigated during construction and operation of the proposed facilities.	The SD PUC should consider including the following stipulations as part of its permit to Keystone: 1. Construction: The criterion of Ldn of 55 dBA shall be adopted for horizontal directional drilling operations near residences, or Keystone shall develop for Public Utility Commission review and approval specific measures to mitigate for noise impacts from drilling operations during non-daytime hours. Measures may include installing a temporary noise barrier system at the directional drill site. 2. Operation: Keystone shall perform a noise assessment survey during operation to confirm the level of noise at each listed noise-sensitive area. If the noise attributable to operation of any pump station exceeds 55 dBA Ldn at any noise-sensitive area, TransCanada shall implement noise mitigation measures to ensure that regulation levels are not exceeded.
Weed Control	The proposed measures in the CMRP are adequate and generally comply with pipeline industry standards; however, additional conditions are recommended to further mitigate impacts resulting from herbicide application.	The SD PUC should consider including the following stipulation as part of its permit to Keystone: Keystone shall obtain landowner consent in writing prior to herbicide application; inform landowners of the brand name/active ingredient, the application method, and application rate for each herbicide planned for use on this project; and make available a copy of the herbicide's MSDS information.
Dust Control	The proposed measures in the CMRP are adequate and generally comply with pipeline industry standards; however, additional conditions are recommended to further mitigate dust-related impacts.	The SD PUC should consider including the following stipulation as part of its permit to Keystone: Keystone shall cover all open-bodied trucks while in motion to minimize fugitive dust emissions.

Mitigation Measures	Findings	Recommendations
Road and Railroad Crossings	The proposed measures in the CMRP are adequate and generally comply with pipeline industry standards; however, additional conditions are recommended to further mitigate impacts at roads and railroad crossings.	The SD PUC should consider including the following stipulation as part of its permit to Keystone: Keystone shall coordinate with emergency responders where project-related activities occur near road and railroads and where road closures are necessary.
Section 4.0 Uplands (Agricultural, Forest, Pasture, Range/Grasslands)		
Topsoil Removal and Storage	Keystone proposes in the CMRP to place subsoil excavated from the trench directly onto undisturbed topsoil on the non-working side of the right-of-way (also referred to as the subsoil storage area or the spoil side). Doing so would increase the potential for mixing of topsoil and subsoil in these areas. Mixing subsoil with topsoil reduces soil fertility and the ability of disturbed areas to revegetate successfully.	The SD PUC should consider including the following stipulations as part of its permit to Keystone: 1. Unless the landowner specifically approves otherwise, topsoil shall be segregated either along the full right-of-way or from the trench and subsoil storage area in actively cultivated or rotated crop lands and pastures, residential areas, hayfields, and other areas at landowner request. 2. In deep soils (more than 12 inches of topsoil), at least 12 inches of topsoil shall be segregated unless otherwise specified by the landowner. In soils with less than 12 inches of topsoil, every effort shall be made to segregate the entire topsoil layer. Segregated topsoil shall not be used to pad the pipe.
Temporary Erosion and Sediment Control	Keystone proposes in the CMRP to install temporary slope breakers and permanent slope breakers installed on slopes greater than 5 percent in non-cultivated areas with adequate spacing requirements. The proposed spacing of slope breakers is adequate. However, Keystone proposes to install the slope breakers at a gradient of 2 to 8 percent. Standard practice is to install the slope breaker at a gradient of 2 to 4 percent.	The SD PUC should consider including the following stipulation as part of its permit to Keystone: Slope breaker installed using the spacing parameters as proposed and shall be installed at 2 to 4 percent gradient.
Trenching	The proposed measures in the CMRP are adequate and generally comply with pipeline industry standards; however, additional conditions are recommended to better ensure safety during trenching operations and further minimize the effects of blasting.	The SD PUC should consider including the following stipulations as part of its permit to Keystone: 1. Exclusion fencing shall be installed around the perimeter of the pipe trench or pit excavations in residential areas if the trench/pit would remain open during non-working hours. 2. To better ensure safety during blasting operations, Keystone shall: ▪ post warning signs, flags, and barricades; ▪ sound warning horns or sirens; ▪ follow procedures for safe storage, handling, loading, firing, and disposal of explosive materials; ▪ coordinate with emergency responders as necessary; and ▪ blasting shall be conducted by registered blasters. 3. For blasting within 150 feet of structures, an independent contractor shall be used to inspect structures before blasting and other locations if requested by the landowner. During blasting, the independent contractor shall monitor ground vibrations at the nearest structure within 150 feet.

Mitigation Measures	Findings	Recommendations
		4. Post-blast inspections shall be performed as warranted. Damage complaints shall be evaluated. If any nearby water wells are adversely impacted, affected landowners shall be provided alternative sources of water or otherwise compensated. If buildings or structures are damaged as a result of the blasting activities, Keystone shall compensate the affected landowners and/or make arrangements to repair the damages in a timely manner.
Padding and Backfilling	The proposed measures in the CMRP for padding and backfilling are sufficiently prepared and comply with standard industry practices. However, one stipulation states if it is impossible to avoid water-related damages resulting from water discharges, Keystone would reasonably compensate the landowners for the damages or would correct the damages so as to restore the land, crops pasture, water courses, etc. to their preconstruction condition.	The SD PUC should consider including the following stipulation as part of its permit to Keystone: If it is impossible to avoid water-related damages resulting from water discharges, Keystone shall both reasonably compensate the landowners for the damages and correct the damages so as to restore the land, crops pasture, water courses, etc. to their preconstruction condition.
Clean Up	The proposed clean up measures in the CMRP are adequate and generally comply with pipeline industry standards; however, Keystone should be more specific with regard to the timing of clean-up activities.	The SD PUC should consider including the following stipulations as part of its permit to Keystone: 1. Cleanup operations shall commence immediately following backfill operations. 2. Final grading, topsoil replacement, and installation of permanent erosion control structures shall be completed within 20 days after backfilling the trench (10 days in residential areas). 3. If seasonal or other weather conditions prevent compliance with these time frames, temporary erosion controls (temporary slope breakers and sediment barriers) shall be maintained until conditions allow completion of cleanup.

Mitigation Measures	Findings	Recommendations
Reclamation and Revegetation	The proposed measures for reclamation and revegetation are adequate and generally comply with pipeline industry standards; however, additional conditions are recommended to further ensure areas impacted by the project are restored.	The SD PUC should consider including the following stipulations as part of its permit to Keystone: 1. Compaction relief: approval of a winterization plan shall be obtained from the SD PUC in writing if construction will continue into the winter season when temperature conditions could delay successful de-compaction, topsoil replacement, or seeding until the following spring. 2. Rock removal: rock excavated from the trench may be used to backfill the trench only to the top of the existing bedrock profile. Rock that is not returned to the trench shall be considered construction debris, unless approved for some other use on the construction work areas by the landowner. 3. Mulching: mulch shall by applied on all slopes (except in actively cultivated cropland) concurrent with or immediately after seeding, where necessary to stabilize the soil surface and to reduce wind and water erosion. If anchoring with liquid mulch binders, rates recommended by the manufacturer shall be used. Liquid mulch binders shall not be used within 100 feet of wetlands or waterbodies. Mulch shall be applied prior to seeding only if: • final grading and installation of permanent erosion control measures will not be completed in an area within 20 days after the trench in that area is backfilled (10 days in residential areas); or • construction or restoration activity is interrupted for extended periods, such as when seeding cannot be completed due to seeding period restrictions. 4. Erosion control matting: erosion control fabric shall be installed on waterbody banks at the time of final bank re-contouring, unless riprap or other bank stabilization are employed in accordance with federal, state, and local permits and approvals.
Forested Lands	The proposed measures to minimize impacts to forested areas are adequate and generally comply with pipeline industry standards; however, an additional condition is recommended to further minimize impacts to affected landowners. Keystone stipulated it would allow the landowner the right to retain ownership of the trees of commercial or other value with the disposition of the trees negotiated prior to clearing. This provision does not include requirements for reasonable compensation to landowners for the value of the timber.	The SD PUC should consider including the following stipulation as part of its permit to Keystone: If trees need to be removed that have commercial or other value to affected landowners, Keystone shall compensate the landowners fair market value of the trees to be cleared and/or allow the landowner the right to retain ownership of the felled trees.

Mitigation Measures	Findings	Recommendations
Operation and Maintenance	The proposed measures for operation and maintenance are sufficiently prepared and generally comply with standard industry practices, with exception to the following: • Keystone stated is would conduct post-construction monitoring after the first growing season. It is standard industry practice to perform post-construction monitoring after the first and second growing seasons. • Keystone stated it would monitor yield of cultivated lands impacted with the help of an agricultural specialist, when requested by landowners. Yield monitoring is typically offered in all cases, unless specifically declined by specific landowners.	The SD PUC should consider including the following stipulations as part of its permit to Keystone: 1. Follow-up inspections shall be conducted of all disturbed areas after the first and second growing seasons to determine the success of revegetation. If after the first growing season, revegetation is successful, no additional monitoring would be required. 2. In cultivated areas, Keystone shall monitor for at least two years the yield of land impacted by construction using agricultural specialists in all cases, unless specifically declined by specific landowners.
Section 5.0 Drain Tile Systems		
Drain Tile Systems	The proposed measures for minimizing impacts to drain tile systems are adequate and generally comply with pipeline industry standards; however, additional conditions are recommended with regard to collecting location information of drain tile crossed during the project. Future availability of this information would be essential to relocate drain tiles in the event a pipeline leak/spill occurs during the operation of the facility and would help in a spill recovery effort to contain transport of pipeline liquids via drain tiles.	The SD PUC should consider including the following stipulations as part of its permit to Keystone: 1. Location information of drain tiles exposed during the project shall be collected by a craft inspector, environmental inspector, or its equivalent, using a sub-meter accuracy global positioning system, or at a minimum, by accurately documenting the pipeline station numbers of each exposed drain tile. 2. Keystone shall maintain on file the drain tile location information and tile specifications (*e.g.*, diameter, type, depth, *etc.*).
Section 6.0 Wetland Crossings		
Easement and Workspace	Keystone stipulated that the width of the construction right-of-way should be reduced to 85 feet or less in standard wetlands unless non-cohesive soil conditions require utilization of a greater width. Standard industry practice is to reduce the width to 75 feet in standard wetlands. Keystone also stipulated that it would locate all extra work areas (such as staging areas and additional spoil storage areas) at least 10 feet away from wetland boundaries. Standard industry practice is to locate extra work areas at least 50 feet away from wetland boundaries, except where the adjacent upland is actively cultivated or rotated cropland or other disturbed land.	The SD PUC should consider including the following stipulations as part of its permit to Keystone: 1. Unless a wetland is actively cultivated or rotated cropland, the width of the construction right-of-way shall be limited to 75 feet or less in standard wetlands unless non-cohesive soil conditions require utilization of a greater width. 2. Unless a wetland is actively cultivated or rotated cropland, extra work areas (such as staging areas and additional spoil storage areas) shall be located at least 50 feet away from wetland boundaries. 3. Vegetation clearing shall be limited between extra work areas and the edge of the wetland to the construction right-of-way. 4. Wetland boundaries and buffers shall be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.
Operation and Maintenance	To facilitate periodic pipeline corrosion/leak surveys during the operation of the facilities in wetland areas, Keystone proposed to maintain a corridor centered on the pipeline and up to 30 feet wide in an herbaceous state. Trees within 30 feet of the pipeline greater than 15 feet in height would be selectively cut and removed from the permanent right-of-way. Standard industry practice is to maintain a corridor centered on the pipeline up to 15 feet wide and to selectively cut trees greater than 15 feet in height within 15 feet of the pipeline.	The SD PUC should consider including the following stipulations as part of its permit to Keystone: 1. To facilitate periodic pipeline corrosion/leak surveys during the operation of the facilities in wetland areas, a corridor centered on the pipeline and up to 15 feet wide can be maintained in an herbaceous state. 2. Trees within 15 feet of the pipeline greater than 15 feet in height can be selectively cut and removed from the permanent right-of-way.

Mitigation Measures	Findings	Recommendations
Section 7.0 Waterbodies and Riparian Lands		
Easement and Workspace	Keystone stipulated it would locate all extra work areas (such as staging areas and additional spoil storage areas) at least 10 feet away from the water's edge. Standard industry practice is to locate extra work areas at least 50 feet away from water's edge, except where the adjacent upland is actively cultivated or rotated cropland or other disturbed land.	The SD PUC should consider including the following stipulations as part of its permit to Keystone: 1. Extra work areas (e.g., staging areas, additional spoil storage areas, etc.) shall be located at least 50 feet away from water's edge, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land. Limit clearing of vegetation between extra work areas and the edge of the wetland to the construction right-of-way. 2. Work area boundaries and buffers shall be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete. 3. Spoil from minor and intermediate waterbody crossings, and upland spoil from major waterbody crossings shall be placed in the construction right-of-way at least 10 feet from the water's edge or in additional extra work areas.
Operation and Maintenance	Keystone did not include a section in its CMRP that addresses post-construction operation and maintenance activities.	The SD PUC should consider including the following stipulations as part of its permit to Keystone: 1. Limit vegetation maintenance adjacent to waterbodies to allow a riparian strip at least 25 feet wide, as measured from the waterbody's mean high water mark, to permanently revegetate with native plant species across the entire construction right-of-way. 2. To facilitate periodic pipeline corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be maintained in an herbaceous state. 3. Trees that are located within 15 feet of the pipeline that are greater than 15 feet in height may be cut and removed from the permanent right-of-way. 4. Herbicides or pesticides shall not be used in or within 100 feet of a waterbody except as allowed by the riparian landowner, and appropriate land management or state agency.
Section 8.0 Hydrostatic Testing		
Hydrostatic Testing	Water from up to five streams in South Dakota would be used to hydrostatically test the pipe during the final phases of the project. Provided Keystone obtains and complies with the necessary permits and approvals for the appropriation and discharge of hydrostatic test water, the measures included in the CMRP for hydrostatic testing are sufficiently prepared and comply with standard industry practices.	No recommendations provided Keystone obtains the necessary permits and approvals for the appropriation and discharge of hydrostatic test water.