

BEFORE THE
PUBLIC UTILITIES COMMISSION
STATE OF SOUTH DAKOTA

KEYSTONE XL PROJECT
DOCKET HP09-001

SUPPLEMENTAL PREFILED TESTIMONY OF ROSS HARGROVE
ON BEHALF OF THE COMMISSION STAFF
OCTOBER 2009

BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

SUPPLEMENTAL TESTIMONY OF ROSS HARGROVE

Q: Please state your name and business address.

A: Ross Hargrove, Natural Resource Group, LLC, 1000 IDS Center, 80 South 8th Street, Minneapolis, MN, 55402.

Q: Did you review the application and previously provide direct testimony on behalf of Commission Staff?

A. Yes.

Q: Did the Applicant file rebuttal testimony and additional testimony based on your initial direct testimony?

A: Yes.

Q: Based on that rebuttal and the Applicant's answers to final discovery, do you wish to modify portions of your testimony? If so, please specify.

A: Yes. I would like to modify a portion of my Construction, Mitigation, and Reclamation Plan Review. Attached as Exhibit A is the Review with all updates and changes.

Specifically, I made the following changes:

- Section 3.0 Spill Prevention and Containment: NRG's recommendation is modified
- Section 4.3 Topsoil Segregation: NRG's recommendation is modified
- Section 4.6 Stringing: NRG made some language changes
- Section 4.7 Trenching (Alternative Soil Handling Methods): The section has been reworked and NRG's recommendation is modified
- Section 4.10 Cleanup: Language is added to address seasonal or other weather conditions
- Section 4.11.2 Rock Removal: NRG's recommendation remains the same, "to the extent possible"

- Section 4.11.5.3 Mulching: Language was added to include any other locations identified by the landowner
- Section 4.12 Pasture and Range Lands: NRG modified its recommendation
- Section 5.4 Responsibility for Repair of Drain Tile Systems: NRG made some language changes.

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Natural Resource Group, LLC's (NRG's) review of the TransCanada Keystone Pipeline, LP (Keystone) Construction, Mitigation, and Reclamation Plan (CMRP) found the document to be generally consistent with industry environmental standards for pipeline construction. Additionally, the plan commits to the use of Environmental Inspectors during construction to monitor the contractor's project activities for compliance with regulatory requirements. The discussion below identifies additional mitigation measures NRG recommends based upon industry standards. The section numbers presented correspond to those used in Keystone's CMRP.

2.13 - Weed Control

The CMRP contains a summary of several weed control measures that may be used by Keystone to prevent/reduce the spread of noxious weeds during construction. The methods described are likely to be successful if properly implemented. NRG recommends, however, that Keystone obtain the permission of individual landowners or the appropriate land management or state agency in writing before treating weeds with herbicides on their property.

2.18 - Adverse Weather

The CMRP states that the contractor would restrict certain construction activities in cultivated agricultural areas in excessively wet soil conditions to minimize rutting and soil compaction, but it does not provide specific performance measures to indicate when rutting would be considered excessive. NRG recommends that these wet weather restrictions be applied to improved hay lands and pasture lands in addition to agricultural lands.

3.0 - Spill Prevention and Containment

The CMRP identifies a number of measures that would be implemented to prevent the occurrence or minimize the severity of construction-related spills. The proposed measures are generally consistent with industry standards. NRG also recommends that fuel storage and/or refueling activities be avoided or minimized within 400 feet of municipal wells or wellhead protection areas and within 200 feet of private water wells.

2.17 - Road and Railroad Crossings

The proposed construction methods and procedures described in the CMRP for road and railroad crossings are generally consistent with industry standards. NRG additionally recommends that Keystone coordinate with emergency responders regarding the timing and intended duration of any temporary road closures.

4.3 - Topsoil Segregation

Keystone has indicated in its CMRP that it intends to segregate topsoil in cultivated and agricultural lands to the actual depth of the topsoil layer or up to a maximum depth of 12 inches, which is consistent with pipeline industry standards. Keystone states that three different methods may be used for topsoil segregation depending upon landowner agreements and site-specific conditions. NRG has briefly summarized the benefits and limitations for each method proposed by Keystone below. It is important to note that no single method may be practical or possible for all situations that may be encountered during construction of the pipeline. NRG recommends that Keystone work closely with landowners to determine the method most suitable for their property.

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Trench Line Only – Topsoil stripping of the trench line only would require that Keystone temporarily store subsoil on top of topsoil during construction. This practice often leads to some mixing of subsoil and topsoil which may be visible on the surface following construction of the pipeline but generally does not cause a measurable decrease in soil productivity. The method is often most effective for grazing or pasture lands where topsoil layers may be thin and the presence of grass under the stored subsoil would help reduce the likelihood of soil mixing during backfilling operations.

Trench and Subsoil Storage Area – With this method, topsoil is placed on topsoil and subsoil is temporarily stored on subsoil. This method decreases the probability of soil mixing, but storage of the extra topsoil would require a greater proportion of the construction right-of-way.

Full Right-of-Way Topsoil Segregation – This method involves stripping topsoil off the entire working portion of the construction right-of-way. This method is often used where side-slopes are encountered during construction, which requires leveling of the right-of-way for safe use of side-boom tractors. As such, Keystone has proposed to strip and stockpile topsoil from the entire right-of-way prior to cut-and-fill grading in areas of steep terrain.

The full right-of-way topsoil segregation method minimizes the probability of soil mixing during construction especially during wet construction periods. However, use of this method could require a wider construction right-of-way than currently proposed by Keystone in locations with deep topsoils. Further, if subsoil compaction problems are identified following completion of pipeline construction they can be difficult to reach with most typical deep ripping implements. Keystone states that the subsoil would be decompacted prior to replacing the topsoil. NRG also recommends that decompaction (e.g., ripping) be conducted following replacement of the topsoil if the topsoil is replaced under wet conditions or if the construction right-of-way is used for movement of equipment after the replacement of the topsoil.

4.5 - Temporary Erosion and Sediment Control

Keystone's provisions for erosion control as described in the CMRP are generally consistent with industry standards. NRG additionally recommends installing sediment barriers in the vicinity of delineated wetlands and waterbodies regardless of the presence of flowing or standing water at the time of installation. It is also industry practice not to use liquid mulch binders within 100 feet of wetlands and waterbodies.

4.6 - Stringing

Stringing of the pipeline has the potential to contribute to compaction in agricultural areas. NRG recommends that stringing trucks utilize the proposed trench line for travel when stringing the pipeline wherever conditions allow. Using this approach, some of the most compacted areas within the construction right-of-way would be alleviated by excavation of the pipeline trench.

4.7 Trenching (Alternative Soil Handling Methods)

There are two soil conditions where alternative soil handling procedures might be appropriate during the trenching and backfill operations: areas where indurated (hard), paralytic shale and sandstone underlie unconsolidated subsoils, and areas where saline subsoils underlie non-saline subsoil horizons. In such areas, mixing of poor quality subsoils with overlying soil layers could potentially reduce soil productivity and adversely affect crop yields. Because alternative soil handling procedures can be costly and can sometimes require additional workspace, the decision to use such procedures should be made based on consultation with NRCS staff, which has the expertise to evaluate soil conditions and appropriate soil handling methods for the project area. Therefore, NRG recommends that Keystone consult with the state or area NRCS

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offices to identify soils for which alternative handling methods in agricultural lands would be appropriate, develop construction procedures to minimize impacts on such soils, and potentially make those alternative soil handling methods available to landowners to maintain soil productivity in agricultural lands.

4.7.1 – Trench Dewatering/Well Points

Keystone has indicated that salinity would be considered during trench dewatering in locations where it could affect soil and crop productivity. Keystone stated that an Environmental Inspector would perform a field conductivity test of the water to determine a course of action for disposal if the water is found to be too saline. NRG recommends that Keystone provide the minimum electrical conductivity value (in appropriate units, e.g. millimhos/centimeter) below which standard discharge methods would be suitable. Keystone has indicated that treated (via overland flow or sediment barrier) water would be directed to alternative disposal locations (i.e., ditches or brackish water wetlands or waterbodies) if trench dewatering discharge water is too saline to discharge on site. NRG recommends that Keystone also develop procedures to follow when such disposal areas are not available.

Keystone's CMRP states that heavily silt-laden trench water would not be allowed to *directly* (emphasis added) enter waterbodies or wetlands. NRG recommends that Keystone implement best management practices to prevent heavily silt-laden trench water from reaching all wetlands and waterbodies, directly or indirectly, to prevent exceeding federal and state water quality standards.

4.9 – Padding and Backfilling

Keystone's CMRP states that the lesser of 4 feet or the actual depth of topsoil cover would not be backfilled with soil containing rocks of any greater concentration or size than existed prior to pipeline construction. It is industry practice to replace rock in the trench only to the top of the existing bedrock profile. All other rock should be considered construction debris and removed from the right-of-way.

4.10 – Cleanup

Keystone states that clean-up would occur immediately following backfilling operations when weather or seasonal conditions allow. NRG recommends that final grading, topsoil replacement, and installation of permanent erosion control structures be completed in non-residential areas within 20 days after backfilling the trench and within 10 days in residential areas unless practically infeasible. In the event seasonal or other weather conditions prevent compliance with the time frames, temporary erosion controls should be maintained until conditions allow completion of cleanup and reclamation.

4.11 - Reclamation and Revegetation

Keystone's procedures for reclamation and revegetation of the pipeline right-of-way are generally consistent with industry standards. Below is a summary of NRG's additional recommendations.

4.11.1 – Relieving Compaction – NRG recommends that Keystone prepare a winterization plan for submittal to the Public Utilities Commission if construction would continue into the winter season when weather conditions could delay successful decompaction, topsoil replacement, or seeding until the following spring.

4.11.2 – Rock Removal – NRG recommends that excess rock be removed from at least the top 12 inches of soil to the extent practicable in all actively cultivated, rotated cropland and

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pastures, and in hayfields. The size, density, and distribution of rock within the construction right-of-way should be similar to adjacent areas not disturbed by construction.

4.11.5.1 – Trench Breakers – NRG recommends that trench breakers be installed in all areas crossed by the pipeline where slope breakers are not practical (e.g., in cultivated areas) at the same spacing provided in the CMRP for permanent slope breakers. NRG also recommends that Keystone install trench breakers at crossings of saline seeps or zones transmitting saline water, if present, to ensure that seepage water is not diverted along the pipeline trench to create a new saline seepage area.

4.11.5.3 – Mulching – NRG recommends that mulch be installed on slopes (except in actively cultivated cropland or other locations identified by the landowner) concurrent with or immediately after seeding wherever necessary to stabilize the soil surface and to reduce wind and water erosion. Mulch should be installed prior to seeding only if final grading and installation of permanent erosion control measures would not be completed in an area within 20 days after the trench is backfilled (10 days in residential areas) or when construction or restoration activities are interrupted for extended periods (e.g., when seeding cannot be completed due to seeding period restrictions). If liquid binders are used to anchor mulch they should be used at the rates specified by the manufacturer.

4.11.5.5 – Riprap and Stream Bank Stabilization – NRG recommends that erosion control fabric be installed on waterbody banks immediately following final stream bank restoration unless riprap or other bank stabilization methods are utilized in accordance with federal or state permits.

4.12 - Pasture and Range Lands

NRG recommends that Keystone coordinate with the landowners of grazing and pasture lands regarding the movement of livestock after the pipeline has been welded and prior to installation of the pipeline. Keystone should leave gaps in the welded pipeline at specific intervals or areas frequently crossed by livestock where requested by the landowner or land management agency. NRG also recommends that Keystone compensate landowners for the loss of any livestock caught in the pipeline trench.

4.16 - Operation and Maintenance

NRG recommends that Keystone monitor the revegetation of the pipeline for at least 2 years following installation of the pipeline. Revegetation of non-cultivated areas should be considered successful if upon visual survey the density and cover of non-nuisance vegetation are similar in density and cover to adjacent areas. Temporary erosion control devices should be maintained or replaced as necessary until successful revegetation of the right-of-way or as required by federal or state permits.

5.0 - Drain Tile Systems

Keystone's procedures for identification and repair of drain tile systems are generally consistent with industry standards. Below is a summary of NRG's additional recommendations.

5.5 – Drain Tile Repairs - NRG questions the effectiveness and practicality of repairing drain tile systems using headers as shown in drawings #26 and #27 in the CMRP for most situations that may be encountered along the pipeline route. The potential for varying grades of the existing drain tile system make repairs such as these difficult and prone to error. Rerouting of the drain tile system outside of the trench additionally may reduce soil drainage in the vicinity of the pipeline.

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If solid pipe or culverts are used to support the permanently repaired drain tile across the trench, NRG recommends that holes or slots be cut in the support around its entire circumference so that the drainage capacity of the previous drain tile remains unchanged.

5.6 – Inspection/Acceptance of Drain Tile Repairs - NRG recommends that Keystone record the location of permanent drain tile repairs for identification on as-built alignment sheets to aid in their relocation, if necessary, for repairs or in the event of a pipeline release during operation of the facility.

5.4 - Responsibility for Repair of Drain Tile Systems - NRG recommends that only qualified drain tile specialists be employed to complete permanent drain tile repairs.

6.0 - Wetland Crossings

Keystone's procedures for wetland crossings are generally consistent with industry standards. Below is a summary of NRG's additional recommendations.

6.2 – Easement and Workspace – Keystone has indicated that the width of the construction right-of-way would be reduced to 85 feet or less in wetlands unless non-cohesive soil conditions require utilization of a greater width. Industry practice is to reduce the typical construction right-of-way width to 75 feet in non-cultivated wetlands, although exceptions are sometimes made for larger-diameter pipelines or where warranted due to site-specific conditions.

Keystone states that extra work areas (such as staging areas and additional spoil storage areas) would be located at least 10 feet from wetland boundaries where topographic conditions permit. Industry practice is to locate these extra work areas a minimum of 50 feet back from wetland boundaries except where the adjacent upland consists of actively cultivated or rotated cropland, disturbed land, or where site-specific conditions do not permit a 50-foot setback.

Vegetation clearing should be limited to the construction right-of-way between extra work areas and the edge of the wetland. If the pipeline parallels a wetland, Keystone should attempt to maintain at least 15 feet of undisturbed vegetation between the wetland and the construction right-of-way. Wetland boundaries and buffers should be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.

6.3 – Vehicle Access and Equipment Crossing – NRG does not recommend the use of timber and slash to support equipment crossings of wetlands due to the difficulty of its removal from the wetland following construction activities.

6.4 – Temporary Erosion and Sediment Control – NRG recommends that temporary sediment barriers be installed as necessary to prevent sediments from entering all delineated wetlands crossed or adjacent to the project.

7.0 Waterbodies and Riparian Areas

Keystone's procedures for waterbody crossings are generally consistent with industry standards. Below is a summary of NRG's recommendations.

7.2 – Easement and Workspace – Keystone states that extra work areas (such as staging areas and additional spoil storage areas) would be located at least 10 feet from waterbody boundaries wherever topographic conditions permit. Industry practice is to locate these extra work areas a minimum of 50 feet back from the waterbody's edge, except where the adjacent upland consists

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of actively cultivated or rotated cropland, disturbed land, or where site-specific conditions do not permit a 50-foot setback. Vegetation clearing should be limited to the construction right-of-way between extra work areas and the edge of the waterbody. If the pipeline parallels a waterbody, Keystone should attempt to maintain at least 15 feet of undisturbed vegetation between the waterbody and the construction right-of-way. Waterbody boundaries and buffers should be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.

7.7 – Temporary Erosion and Sediment Control – NRG recommends that temporary sediment barriers be installed as necessary to prevent sediments from entering all waterbodies crossed or adjacent to the project.

7.8 – Trenching – NRG recommends that spoil from waterbody crossing construction be temporarily stored at least 10 feet from the waters edge. Temporary in-stream sidecasting of spoil for wide waterbody crossings should only be conducted with approval of the appropriate federal or state agency.