

ATTACHMENT 1

Montana Department of Environmental Quality

Environmental Specifications for the Proposed Keystone XL Project in Montana

**STATE OF MONTANA
ENVIRONMENTAL SPECIFICATIONS FOR THE
KEYSTONE XL PIPELINE PROJECT IN MONTANA**

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DEFINITIONS

ACCESS EASEMENT: Any land area over which the OWNER has obtained an easement from a landowner allowing travel to and from the Project. Access easements may or may not include access roads

ACCESS ROAD: Any travel course which is constructed by substantial recontouring of land and which is intended to permit passage by most four-wheeled vehicles

ACCESS ROUTE: Any state highway or county road that will be used to transport equipment, supplies and materials or personnel to and from the Project

ARM: Administrative Rules of Montana

BEGINNING OF CONSTRUCTION: Any project-related earthmoving or removal of vegetation (except for clearing of survey lines)

BLM: United States Department of Interior, Bureau of Land Management

BLM INSPECTOR: BLM employee or designee charged with inspecting the pipeline for compliance with the BLM requirements

BOR: United States Bureau of Reclamation

BOARD: Montana Board of Environmental Review

CERTIFICATE: Certificate of Compliance

CFR: Code of Federal Regulations

DOS: United States Department of State

DEQ: State of Montana, Department of Environmental Quality

DNRC: State of Montana, Department of Natural Resources and Conservation

EIS: Environmental Impact Statement for the Keystone XL Oil Pipeline Project

ENVIRONMENTAL INSPECTOR: Persons hired by the OWNER who shall be responsible for monitoring and ensuring compliance with all mitigation measures required by the CERTIFICATE and these specifications, and other grants, permits, certificates, or other authorizing documents

FWP: State of Montana, Department of Fish, Wildlife, and Parks

INITIAL RECLAMATION: The clean-up, backfilling, recontouring, respreading of topsoil, repairing of damage to roads and property, seeding, and installation of erosion controls following installation of the facility

LANDOWNER: The owner of private property or the managing agency for public lands

MCA: Montana Code Annotated

MDT: State of Montana, Department of Transportation

MOU: Memorandum of Understanding

NRCS: United States Department of Agriculture, Natural Resources Conservation Service

OWNER: The owner(s) of the facility, and its field representative or other agents

PA: Programmatic Agreement

ROD: Record of Decision

ROW: Right-of-Way

SENSITIVE AREA: Areas which exhibit environmental characteristics that may make them susceptible to impact from construction of a pipeline facility. The extent of these areas is defined for each project. These may include but are not limited to any of the areas listed in Circular MFSA-2 Sections 3.2(1)(d) and 3.4(1)

SHPO: State of Montana, Montana Historical Society, State Historic Preservation Office

STATE INSPECTOR: DEQ employee or DEQ's designee with the responsibility for monitoring the OWNER's and OWNER's contractor compliance with terms and conditions of the CERTIFICATE issued for the Project

SPECIAL USE SITES: Areas disturbed outside the construction right-of-way for a specific purpose including, but not limited to, staging areas, borrow pits, construction work camps, power lines less than 10 miles in length, storage or other building sites, and new sites for construction waste disposal

INTRODUCTION

These environmental specifications have been developed by DEQ to minimize adverse environmental impacts and would be incorporated into the CERTIFICATE. Measures proposed by the OWNER in its Construction, Mitigation, and Reclamation Plan (CMRP) to minimize adverse environmental impacts are set forth in Appendix B of the Environmental Impact Statement for the Keystone XL Oil Pipeline Project (EIS). If approved by DEQ, the measures proposed by the OWNER also would be incorporated by reference as enforceable provisions of the CERTIFICATE. Should there be a conflict between the environmental specifications developed by DEQ, the measures developed by the OWNER, or measures developed by a federal agency, the more environmentally protective provision would apply.

The purpose of these specifications is to mitigate potential environmental impacts during the construction and reclamation of the pipeline facility in Montana. These specifications are intended to be incorporated into the texts of contracts, plans, and Plan of Operations.

Appendices at the end of these specifications refer to individual topics of concern and to site-specific concerns. Some of the Appendices will be prepared by the OWNER working in consultation with DEQ prior to the start of construction and submitted for review and approval by DEQ. Other Appendices will be prepared by the agencies at the time a decision is made whether to approve the Project.

0.0 GENERAL SPECIFICATIONS

These specifications apply to all lands affected by the pipeline and associated facilities. The OWNER may contract with the LANDOWNER for revegetation or reclamation if the LANDOWNER wants different reclamation standards from those listed herein to apply on the LANDOWNER's property, and if not reclaiming to the standards specified herein, would not adversely impact the public and other LANDOWNERS. Where the LANDOWNER requests practices other than those listed in these specifications, DEQ may authorize such a change provided that the STATE INSPECTOR is notified in writing of the change and determines that the change will not be in violation of (1) the CERTIFICATE; (2) any conditions imposed by DEQ, and (3) DEQ's finding of minimum adverse impact.

On private or state land, these specifications will be enforced by the STATE INSPECTOR. On BLM or other federal lands, enforcement will be the joint responsibility of the STATE INSPECTOR and the BLM INSPECTOR.

0.1 ENVIRONMENTAL PROTECTION

The OWNER shall conduct all operations in a manner to protect the quality of the environment.

0.2 CONTRACT DOCUMENTS

It is the OWNER's responsibility to ensure compliance with these specifications. If appropriate, the OWNER may incorporate by reference these specifications into contracts executed with its contractors or other agents. The OWNER is responsible for its agent's adherence to these specifications in performing the work.

0.3 BRIEFING OF EMPLOYEES

The OWNER shall ensure that its contractor(s) and all field supervisors are provided with a copy of these specifications and informed of the applicability of individual sections to specific procedures. It is the responsibility of the OWNER to ensure its contractor(s), subcontractor(s) and the contractor(s) and subcontractor(s) employees comply with these measures. The OWNER's Project Supervisor shall ensure all employees are informed of and implement the applicable environmental specifications discussed herein prior to and during construction. Site-specific measures provided in the appendices attached hereto shall be incorporated into the design and construction specifications or other appropriate contract document. The OWNER will have regular contact and site supervision of its contractors and subcontractors to ensure compliance is maintained.

0.4 COMPLIANCE WITH REGULATIONS

The OWNER shall comply with the CERTIFICATE issued by DEQ and applicable local, state, and federal laws, regulations, and requirements. Pursuant to 75-20-401, MCA, state or local governmental agencies may not require approval, consent, permit, certificate or other conditions for the construction, operation or maintenance of the pipeline following issuance of the CERTIFICATE. DEQ, however, retains authority to determine compliance with air and water quality standards. The OWNER is also required to comply with requirements of County Weed Control Boards (7-22-2201, *et seq.*, MCA), state laws regarding use of water (85-1-101, *et seq.*, MCA), protection of employees, and easements or licenses authorizing the crossing of state-owned land and the beds of navigable streams or rivers.

The OWNER must:

- a) Request any proposed modification to the procedures and measures described in its application submitted pursuant to 75-20-101, *et seq.*, MCA or

- CERTIFICATE conditions in a written amendment application to DEQ pursuant to 75-20-219, MCA and ARM 17.20.1801 through 1804;
- b) Justify each modification relative to site-specific conditions; and
 - c) Explain how that modification provides an equal or greater level of environmental protection than the original measure.

0.5 LIMITS OF LIABILITY

0.5.1 The OWNER is not responsible for correction of environmental damage or destruction of property caused by negligent acts of DEQ employees during construction, operation and maintenance, decommissioning, and reclamation of the Project.

0.5.2 The OWNER shall annually provide DEQ proof of liability insurance which covers the cost of cleaning up oil spills in Montana.

0.5.3 No person will be held responsible for a pipeline leak that occurs as a result of his/her normal farming practices over the top of or near the pipeline.

0.5.4 The OWNER shall pay commercially reasonable costs and indemnify and hold the LANDOWNER harmless for any loss, damage, claim or action resulting from the OWNER's use of the easement, including any resulting from any release of regulated substances or from abandonment of the facility, except to the extent such loss, damage claim or action results from the gross negligence or willful misconduct of the LANDOWNER or its agents.

0.6 DESIGNATION OF SENSITIVE AREAS

0.6.1 DEQ and the OWNER have designated areas along the ROW and associated facilities as SENSITIVE AREAS. The locations of these SENSITIVE AREAS are described in Appendix A. Additional SENSITIVE AREAS may be added by DEQ after review of plans submitted pursuant to Sections 0.9, 1.1.2, 1.1.4, and 1.1.3. Special precautions and procedures specified in Appendix A and elsewhere in these specifications shall be taken in these areas during construction, operation, and maintenance.

0.6.2 Throughout these specifications DEQ refers to locations of SENSITIVE AREAS and other features by mileposts. These mileposts were developed based on the location of the facility as depicted in the EIS. The OWNER shall depict these SENSITIVE AREAS and features on the final designs required by Sections 1.1.2 and 1.1.3.

0.7 PERFORMANCE BOND

To ensure compliance with these specifications, the OWNER shall submit to DEQ or its authorized agent a bond pertaining specifically to INITIAL RECLAMATION. Post-construction monitoring by DEQ will determine compliance with these specifications and other mitigating measures included herein. At the time INITIAL RECLAMATION is complete and revegetation is progressing satisfactorily, the OWNER shall be released from its obligation for INITIAL RECLAMATION. At the time the OWNER is released, a portion of the bond shall be retained for five years or until monitoring by DEQ indicates that reclamation and revegetation has been successful as described in Section 3 of these specifications. The amount and bonding mechanisms for this section shall be specified by DEQ in Appendix B and agreed to by the OWNER. The bond or bonds shall be submitted to DEQ at least two weeks prior to the start of construction. The OWNER may not start construction until DEQ approves the bond.

0.8 ACCESS

When easements for construction access are obtained, provision will be made by the OWNER to ensure that DEQ personnel and DEQ contractors will be allowed access to the right-of-way and to any off-right-of-way access roads and access easements used for construction during the term of the bonds. Liability for damage caused by providing such access for the STATE INSPECTOR shall be limited by section 0.5 Limits of Liability. The STATE INSPECTOR will inform the OWNER's on-site representative prior to use of any on and off right-of-way access sites. The OWNER shall not prevent STATE INSPECTORS from carrying out their duties under 75-20-402, MCA.

0.9 DESIGNATION OF INSPECTORS

0.9.1 DEQ shall designate a STATE INSPECTOR or INSPECTORS to monitor the OWNER's compliance with these specifications and any other project-specific mitigation measures adopted by DEQ. The STATE INSPECTOR shall be the OWNER's Liaison with the State of Montana on construction, post-construction, and construction reclamation activities for the certified pipeline facility on all lands. The STATE INSPECTOR may coordinate monitoring with BLM. All communications to DEQ shall be submitted to the STATE INSPECTOR. The names of the INSPECTORS are in Appendix C. The STATE INSPECTOR(S) shall implement the Monitoring Plan described in Appendix D.

0.9.2 The OWNER shall employ a team of one or more ENVIRONMENTAL INSPECTORS per construction spread, or as may be established by DEQ. The ENVIRONMENTAL INSPECTORS shall be:

- a) Responsible for monitoring and ensuring compliance with all mitigation measures required by the CERTIFICATE and other applicable state grants, permits, certificates, or other authorizing documents;
- b) Responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract and any other authorizing document;
- c) Empowered to order correction of acts that violate the environmental conditions of the CERTIFICATE and any other authorizing document;
- d) A full-time position, separate from all other activity inspectors;
- e) Responsible for documenting compliance with the environmental conditions of the CERTIFICATE; and
- f) Responsible for maintaining status reports on compliance with all mitigation measures required by the CERTIFICATE and these specifications and other grants, permits, certificates, or authorizing documents.

0.10 OTHER MEASURES

Adoption of other measures may be required for Project approval at the time of certification. These special measures shall be incorporated in Appendix A: SENSITIVE AREAS.

1.0 PRECONSTRUCTION PLANNING AND COORDINATION

1.1 PLANNING

1.1.1 Planning of all stages of construction and maintenance activities is essential to ensure that construction-related impacts will be kept to a minimum. Before commencement of construction, the OWNER shall plan the timing of construction, construction and maintenance access and requirements, location of special use sites, and location of associated facilities in order to reduce or minimize impacts to the environment.

1.1.2 At least 45 days before the start of construction, the OWNER shall submit a plan map(s) and an electronic version of the plan map(s) acceptable to DEQ depicting the location of the centerline of the pipeline; all ACCESS ROADS; and associated facilities such as pump stations, valves, power lines less than 10 miles in length, communication facilities, hydrostatic test discharge sites, variations in construction and operational ROW width (Appendix E), vehicle wash or cleaning stations specified by County Weed Control Boards, and if known, and other special use sites. The scale of the map(s) shall be 1:24,000 or larger. In addition the map(s) shall indicate the areas on range and pasture land where the ROW would be stripped of topsoil and areas where soil and vegetation on the working side of the trench would

not be removed. These locations must be reviewed and approved by the STATE INSPECTOR prior to construction.

1.1.3 At least 45 days before the start of construction, the OWNER shall file an Implementation Plan, for the review and written approval of DEQ. The OWNER must file revisions to the plan as schedules change. The plan shall identify:

- a) How the OWNER will implement the construction procedures and mitigation measures described in its application, and supplemental mitigation measures identified in the EIS for the Project, and those required by the CERTIFICATE;
- b) How the OWNER will incorporate or has incorporated these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and ENVIRONMENTAL INSPECTORS;
- c) The number of the OWNER's ENVIRONMENTAL INSPECTORS assigned per spread and aboveground facility site, and how the OWNER will ensure that sufficient personnel are available to implement the environmental mitigation;
- d) Company personnel, including ENVIRONMENTAL INSPECTORS and contractors, who will receive copies of the appropriate materials in (a) and other communications from DEQ;
- e) The location and expected dates of the environmental compliance training the OWNER will give to all personnel involved with construction, restoration, reclamation, and revegetation (including initial and refresher training as the Project progresses and personnel change);
- f) The company personnel (if known) and specific portion of the OWNER's organization responsible for compliance;
- g) The procedures (including use of contract penalties) the OWNER will follow if noncompliance occurs; and
- h) For each component of the facility (pipeline, valves, pump station, road crossings, stream crossings and associated power lines), a Gantt or PERT chart (or similar Project scheduling diagram), and dates for:
 - (1) the completion of all required surveys and reports;
 - (2) the environmental compliance training of onsite personnel;
 - (3) the start of construction; and
 - (4) the start and completion of INITIAL RECLAMATION and revegetation.

1.1.4 Construction is anticipated to occur in two consecutive construction seasons. Prior to the start of construction in each of the two years, the OWNER shall submit a Montana Hydrostatic Test Plan (Appendix F) to DEQ for approval. The plan shall identify a final list of all water sources that would be used in Montana for hydrostatic testing, horizontal directional drilling, vehicle washing and dust abatement along with associated withdrawal rates and volumes approved by DNRC, a final list of hydrostatic test water discharge points, volumes and rates of discharges, site specific

measures that would be used to prevent rill and gully erosion, and a plan for monitoring the quality of water being discharged.

1.1.5 The OWNER shall submit detailed alignment maps/sheets and an electronic equivalent acceptable to DEQ at a scale not smaller than 1:24,000 identifying staging areas, pipe storage yards, and other areas that would be used or disturbed and have not been identified in plan map(s) required under Section 1.1.2, above. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, documentation of LANDOWNER approval, whether any cultural resources or federally listed threatened or endangered species would be affected, and whether any other environmentally SENSITIVE AREAS are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. DEQ shall make a good faith effort to complete its review as quickly as possible. Each area must be approved in writing by DEQ before construction in or near that area.

1.1.6 If special use sites are not known at the time of submission of the plan map(s), no later than seven days prior to the start of construction at that site, the OWNER shall submit for review and approval supplemental map(s) showing the following information: communication facilities and special use sites, including staging areas, pump stations, safety valves, directional drilling sites and associated staging areas, horizontal boring sites, batch plant sites, borrow pits, work camps, and storage or other buildings. This information shall be presented on a map with a scale of 1:24,000 or larger. The maps shall be accompanied by an electronic version acceptable to DEQ.

1.1.7 Changes or updates to the information submitted in Sections 1.1.2 and 1.1.3 shall be submitted to DEQ for approval as they become available. Changes affecting SENSITIVE AREAS must be submitted to DEQ for review at least five working days before construction at that site and approved before construction at that location by the STATE INSPECTOR. DEQ shall make a good faith effort to complete its review as quickly as possible.

1.1.8 Long-term maintenance routes to all points on the pipeline and associated power lines must be planned before construction begins. Where known, new construction ACCESS ROADS intended to be maintained for permanent use shall be differentiated from temporary ACCESS ROADS on the plan map(s) required under Section 1.1.2, above.

1.1.9 Where requested by a LANDOWNER, at least 30 days prior to any construction in an area on private or state land where a request has been made, the OWNER will provide survey information for the construction right-of-way to document the baseline condition and topography, plant community (con/rec units), vegetative condition of lands enrolled in the Conservation Reserve Program, soil type(s), forage type (high, medium, or low quality grasslands), a map showing the location and species of noxious weeds, riparian areas, fences, and trees (mature or

otherwise). The report shall be prepared by a range scientist. The report shall include representative photographs of each such area prior to construction. A copy of the assessment shall be provided to the LANDOWNER at no charge.

1.2 PRECONSTRUCTION CONFERENCE

1.2.1 In each year of construction, before commencement of any construction activities defined in 75-20-104(6)(a) MCA, the OWNER shall hold a preconstruction conference. The STATE INSPECTOR shall be notified of the date and location for this meeting. One of the purposes of this conference shall be to brief the contractor and land management agencies regarding the content of these specifications and other DEQ-approved mitigating measures, and to make all parties aware of the roles of the OWNERS's ENVIRONMENTAL INSPECTOR(S) and STATE INSPECTOR.

1.2.2 The OWNER's representative, the contractor's representative, the OWNER's ENVIRONMENTAL INSPECTOR(S), STATE INSPECTOR, and representatives of affected state and federal agencies who have land management or permit and easement responsibilities shall be invited to attend the preconstruction conference.

1.3 PRECONSTRUCTION CONTACT WITH LOCAL OFFICIALS

1.3.1 In each year of construction, the OWNER shall provide written notification to local and county public officials and game wardens affected by construction near Malta, Glasgow, Circle, Glendive, Terry, and Baker and their respective counties, at least 30 days prior to the beginning of construction. The notice shall provide information on the temporary increase in population, when the increase is expected, and where the workers will be stationed. In each year of construction and prior to the start of construction, the OWNER shall hold a meeting in the closest towns listed above which may be affected for each active construction spread to discuss potential temporary changes. The invited local officials shall include the county commissioners, city administrators, law enforcement officials, local fire departments, emergency service providers, and representatives of the Chambers of Commerce.

1.4 HISTORICAL, ARCHAEOLOGICAL AND PALEONTOLOGICAL

1.4.1 The OWNER shall implement the PA in Appendix G regarding cultural resources.

1.4.2 The OWNER shall implement the measures required by the Paleontological MOU in Appendix H in consultation with the other state and federal agencies listed in Appendix G.

2.0 CONSTRUCTION OF FACILITIES

2.1 GENERAL

2.1.1 The preservation of the natural landscape contours and environmental features shall be an important consideration in the location and construction of all associated facilities. Construction of these associated facilities shall be planned and conducted so as to minimize destruction, scarring, or defacing of the natural vegetation and landscape. Any necessary earthmoving shall be planned and designed to be as compatible as possible with natural landforms.

2.1.2 Temporary special use areas shall be the minimum size necessary to accommodate the special use. The temporary special use areas shall be located where most environmentally compatible, considering slope, fragility of soils, or fragility of vegetation, and risk of erosion.

2.1.3 The OWNER shall maintain all work areas in a neat, clean, and sanitary condition at all times. Trash or construction debris (in addition to solid wastes described in Section 2.13) shall be regularly removed during construction, reclamation, and revegetation of the affected areas.

2.1.4 The OWNER shall segregate top soil from subsoil. Excepted as noted in Appendix A, up to 12 inches of topsoil shall be salvaged unless otherwise requested by the LANDOWNER.

2.1.5 In the development of the CMRP in areas where the NRCS recommends or LANDOWNERS request, the OWNER shall conduct analytical soil probing and/or soil boring and analysis in areas of particularly sensitive soils where reclamation potential is low. Records regarding this process shall be available to the STATE INSPECTOR and to the specific LANDOWNER affected by such soils upon request.

2.1.6 Through development of the CMRP and consultation with the NRCS and the LANDOWNER, Keystone shall identify soils for which alternative handling methods are recommended. Alternative soil handling methods shall include but are not limited to the "triple-lift" method where conditions justify such treatment. The OWNER shall thoroughly inform the LANDOWNER regarding the options applicable to their property, including their respective benefits and negatives, and implement whatever reasonable option for soil handling is selected by the LANDOWNER. Records regarding this process shall be available to the STATE INSPECTOR upon request.

2.1.7 The OWNER shall, in consultation with the NCRS and LANDOWNER, ensure that its construction planning and execution process, including CMRP and its other construction documents, shall adequately identify, plan, and implement mitigating measures for areas susceptible to erosion; areas with high concentrations of sodium bentonite; areas with sodic, saline, and sodic-saline soils; and any other areas with low reclamation potential.

2.1.8 The OWNER shall strip topsoil from the trench, the trench plus the stockpile area, or the entire ROW as requested by the LANDOWNER. Soil salvage depths are estimated in Appendix I and actual amounts will be determined during construction as excavation indicates the amount of topsoil available. Other areas outside the pipeline ROW where soil is to be stripped may be designated by the STATE INSPECTOR(S).

2.1.9 Vegetation such as trees, plants, shrubs, and grass on or adjacent to the ROW which do not interfere with the performance of construction work, or operation of the pipeline, shall be preserved.

2.1.10 The OWNER shall take all necessary actions to avoid adverse impacts to SENSITIVE AREAS listed in Appendix A. The STATE INSPECTOR(S) shall be notified two working days in advance of initial clearing or grading in these areas. The OWNER shall mark or flag the clearing limits of disturbance in certain SENSITIVE AREAS as designated in Appendix A and Appendix L. All construction activities must be conducted within this marked area.

2.1.11 The OWNER shall acquire appropriate land rights and provide compensation for damages caused by construction, operation, maintenance, and decommissioning of the pipeline and associated facilities.

2.1.12 Flow in a stream course may not be permanently diverted. If temporary diversion is necessary, flow must be restored before a major runoff season or the next spawning season, as determined by the STATE INSPECTOR(S) in consultation with the managing agencies.

2.1.13 Construction of all pump stations and above ground facilities shall comply with federal and state mandated building and electric safety codes. The OWNER shall adhere to all International Code Council (ICC) regulations relating to the construction of the facility.

2.2 CONSTRUCTION MONITORING

2.2.1 Within one week of starting construction, the OWNER shall submit to DEQ weekly status reports until all construction and INITIAL RECLAMATION activities are complete. On request, these status reports will also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:

- a) The construction status of each spread, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally SENSITIVE AREAS;
- b) A listing of all problems encountered and each instance of noncompliance observed by the ENVIRONMENTAL INSPECTORS during the reporting

- period (both for the conditions imposed by DEQ and any environmental conditions/permit requirements imposed by other federal or state agencies);
- c) A description of the corrective actions implemented in response to all instances of noncompliance, and their cost;
 - d) The effectiveness of all corrective actions implemented; and
 - e) A description of any LANDOWNER complaints that may relate to compliance with the requirements of the CERTIFICATE, and the measures taken to satisfy the concerns.

2.2.2 The STATE INSPECTOR is responsible for implementing the Monitoring Plan contained in Appendix D. The plan specifies the type of monitoring data and activities required and terms and schedules of monitoring data collection, and assigns responsibilities for data collection, inspection reporting, and other monitoring activities.

2.2.3 The STATE or ENVIRONMENTAL INSPECTOR(S) may require mitigating measures or procedures at some sites beyond those listed in the Appendices in order to minimize environmental damage due to unique circumstances that arise during construction. The STATE INSPECTOR and the OWNER will attempt to rely upon a cooperative working relationship to reconcile potential problems relating to minimization of impacts. When construction activities will cause excessive environmental impacts due to seasonal field conditions or damage to sensitive features, the designated STATE INSPECTOR will discuss with the OWNER possible mitigating measures or minor construction rescheduling to avoid these impacts and may impose additional mitigating measures in the area of jurisdiction. The STATE INSPECTOR shall provide the OWNER with written documentation of the reasons for the additional mitigating measures within 24 hours of their imposition. All parties will attempt to adequately identify and address these areas and planned mitigation, to the extent practicable, during final design to minimize conflicts and delays during construction activities.

2.2.4 If these specifications are not being achieved, DEQ may take corrective action as described in 75-20-408, MCA.

2.3 TIMING OF CONSTRUCTION

2.3.1 Construction and motorized travel may be restricted or prohibited at certain times of the year in areas described in Appendix J. Exemptions to these timing restrictions may be granted by the STATE INSPECTOR in writing if the OWNER can clearly demonstrate to affected state agencies that no substantial environmental impacts will occur as a result.

2.3.2 In order to prevent rutting and excessive damage to vegetation outside of wetlands, the OWNER shall not perform construction activities during periods of high soil moisture when construction vehicles will cause rutting deeper than four

inches on a) areas where topsoil is not stripped from the construction ROW for the pipeline or other associated facilities or, b) areas where excessive soil mixing is occurring or would occur as a result of the rutting.

2.3.3 In order to reduce rutting and excessive damage to off-right-of-way ACCESS ROADS, vehicle travel shall be restricted during periods when there is a substantial buildup of mud on tires and cleats or formation of ruts deeper than four inches. This condition would be waived if the OWNER shows written approval from the affected LANDOWNER in advance of construction activity on a private road. The OWNER shall present the STATE INSPECTOR with written documentation, a map, and shape file of such LANDOWNER approval at least five days in advance of construction traffic using a road. Nonetheless, the OWNER shall not create hazardous driving conditions on private roads. The OWNER shall repair damage to private roads when conditions dry sufficiently to effect repairs. Damage shall be repaired to a reasonably acceptable condition in consultation with the STATE INSPECTOR and the LANDOWNER.

2.4 PUBLIC SAFETY

2.4.1 All construction activities shall be done in compliance with existing health and safety laws.

2.4.2 After construction is complete, noise levels shall not exceed the following standards as a result of the operation of the facility and associated facilities. For the pipeline and associated facilities, the average annual noise levels, as expressed by an A-weighted day-night scale (Ldn), will not exceed 60 decibels at the fence line or property boundary, whichever is further from the pumps, unless the affected LANDOWNER waives this condition.

2.5 PROTECTION OF PROPERTY

2.5.1 Construction shall not take place over or upon the ROW of any railroad, public road, public trail, or other public property until negotiations and/or necessary approvals have been completed with the LANDOWNER. Where it is necessary to cross a trail with ACCESS ROADS, the trail corridor will be restored. All roads and trails designated by government agencies as needed for fire protection or other purposes shall be kept free of logs, brush, and debris resulting from operations under these specifications. Any such trail damaged by this Project shall be promptly restored to its original condition.

2.5.2 Reasonable precautions shall be taken to protect, in place, all public land monuments and private property corners or boundary markers. If any such land markers or monuments are destroyed, the marker shall be reestablished and referenced in accordance with the procedures outlined in the "Manual of Instruction

for the Survey of the Public Land of the United States” or, in the case of private property, the specifications of the county engineer. Reestablishment will be at the expense of the OWNER.

2.5.3 Construction shall be conducted so as to prevent damage to existing property including, but not limited to, water lines, transmission lines, distribution lines, telephone lines, pipelines, railroads, ditches, irrigation canals, and fiber optic lines. If such property is damaged by construction, operation, or decommissioning, the OWNER shall repair such damage immediately to a reasonably satisfactory condition in consultation with the LANDOWNER.

2.5.4 In areas with livestock, the OWNER shall comply with the reasonable requests of LANDOWNERS regarding measures to control livestock or wildlife until the vegetation meets the standards established in Section 3.2.1(b) and Appendix A. LANDOWNERS shall be compensated for lost grazing during reclamation. Where requested by LANDOWNERS, temporary gates shall be constructed of sufficiently high quality to withstand repeated opening and closing during construction, to the satisfaction of the LANDOWNER. Care shall be taken to ensure that all gates are left in the condition in which they are found upon entry. The LANDOWNER shall be compensated for any losses to personal property due to construction, operation, maintenance, or decommissioning activities. Gates shall be inspected and repaired when necessary during construction and decommissioning. Any gates installed by the OWNER shall be inspected and repaired when necessary during the operation and maintenance period. When wire fences are replaced, wire shall be stretched tight with a fence stretcher before stapling or securing to the fence posts.

2.5.5 During construction, operation, and decommissioning, the OWNER must notify the STATE INSPECTOR and, if possible, the affected LANDOWNER within two working days of damage to land, crops, property, or irrigation facilities; contamination or degradation of water; or livestock injury caused by the OWNER’s activities. The OWNER shall restore any damaged resource or property, or provide reasonable compensation to the affected party.

2.5.6 The OWNER shall install permanent gates as requested by a LANDOWNER to provide access for maintenance vehicles.

2.5.7 When facilities cross fences, the OWNER shall make reasonable effort to accommodate the LANDOWNER’s wishes on gate location and width.

2.5.8 Any breaching of natural barriers to livestock movement by construction activities will require fencing sufficient to control livestock unless alternative arrangements are made with the affected LANDOWNER. Alternative arrangements shall be indicated on a line list or environmental worksheet describing these arrangements and submitted to the STATE INSPECTOR prior to construction.

2.5.9 During construction and operation, the OWNER shall preserve wind breaks where they would not interfere with operation of the pipeline, unless otherwise requested by a LANDOWNER.

2.6 TRAFFIC CONTROL

2.6.1 Before beginning any construction within a state highway ROW, the OWNER shall consult with the appropriate MDT field office regarding the proposed occupancy and to resolve any problems. The OWNER shall provide DEQ with documentation that this consultation has occurred at least 30 days before the start of construction in each year of construction. This documentation shall identify measures recommended by MDT and to what extent the OWNER agrees to comply with these measures. In the event the OWNER does not agree to a measure recommended by MDT, DEQ shall resolve any disputes regarding state highways.

2.6.2 In areas where the construction creates a potential hazard on ACCESS ROUTES, the OWNER shall control traffic according to the applicable MDT regulations. Safety signs or flaggers advising motorists of construction equipment shall be placed on major state highways, as required by MDT and on county roads, as required by the applicable county, and in accordance with the Manual on Uniform Traffic Control Devices. The installation of proper road signing will be the responsibility of the OWNER.

2.6.3 The managing agency shall be notified, as soon as practicable, when it is necessary to close public roads to public travel for short periods to provide safety during construction. If roads are closed to public travel for more than 30 minutes, a detour shall be provided.

2.6.4 Construction vehicles and equipment will be operated at speeds safe for existing road and traffic conditions.

2.6.5 Access for fire and emergency vehicles will be provided at all times.

2.6.6 Public travel through and use of active construction areas shall be limited at the discretion of the managing agency.

2.7 ACCESS ROADS AND VEHICLE MOVEMENT

2.7.1 Construction of new ACCESS ROADS shall be held to the minimum reasonably required to construct and maintain the facility. State, county, and other existing roads shall be used for construction access wherever possible. ACCESS ROADS intended to be permanent should be appropriately designed. The location of ACCESS ROADS shall be established in consultation with affected LANDOWNERS, and LANDOWNER concerns shall be accommodated where

reasonably possible and not in contradiction to these specifications or other DEQ conditions.

2.7.2 All new roads to and from the pipeline construction ROW, both temporary and permanent, shall be constructed with the minimum possible clearing and soil disturbance to minimize erosion.

2.7.3 Where practical, all roads shall be designed to accommodate one-way travel of the largest piece of equipment plus pull-outs for passing. Road width shall be no wider than necessary.

2.7.4 Where practical, temporary ACCESS ROADS shall be constructed on the most level land available. Where temporary roads cross flat land, they shall not be graded or bladed unless necessary, but will be flagged or otherwise marked to show their location and to prevent travel off the roadway.

2.7.5 The OWNER will maintain all permanent ACCESS ROADS, including drainage facilities, which are constructed for use during the period of construction. In the event that a road would be left in place, the OWNER and LANDOWNER may enter agreements regarding maintenance for erosion control following construction.

2.7.6 All permanent ACCESS ROAD surfaces, including those under construction, will be prepared with the necessary erosion control practices as determined by the STATE INSPECTOR or the managing agency prior to the onset of winter.

2.7.7 Snow removal shall be done in a manner to preserve and protect topsoil, road signs, and culverts; to ensure safe and efficient transportation; and to prevent excessive erosion to roads, streams, and adjacent land.

2.7.8 At the conclusion of construction, final maintenance will be performed on all existing private roads used for construction access by the OWNER. These roads will be returned to a condition at least as good as when construction began.

2.8 EQUIPMENT OPERATION

2.8.1 During construction, unauthorized cross-country travel and the development of roads other than those approved shall be prohibited. The OWNER shall be liable for any damage, destruction, or disruption of private property and land caused by construction personnel and equipment as a result of unauthorized cross-country travel and/or road development.

2.8.2 To prevent excessive soil damage in areas where a graded roadway has not been constructed, the limits and locations of access for construction equipment and vehicles shall be marked or specified at each new site before any non-survey related equipment is moved to the site. Construction foremen and personnel shall be well

versed in recognizing these markers and shall understand the restriction on equipment movement that is involved.

2.8.3 Work crew foremen shall be qualified and experienced in the type of work being accomplished by the crew they are supervising. Earthmoving equipment shall be operated only by qualified, experienced personnel.

2.8.4 Prior to the start of construction, final locations of cleaning stations and other conditions required by County Weed Control programs will be shown on environmental worksheets or an appended line list and indicated on appropriate project maps (see Section 2.1.1). Vehicles shall be cleaned and weed infested areas will be pre-treated. The OWNER shall submit copies of the revegetation plans approved by the County Weed Control Boards pursuant to 7-22-2152, MCA, and comply with these plans. The approved plans shall be included in Appendix K.

2.8.5 Gravel/stone ramps will be installed at access points to paved public roads, as needed, to prevent or minimize the tracking of mud, dirt, sediment, or similar materials onto the roadway. Deposits that have been tracked by vehicles or that have been transported by wind or storm run-off from the ROW will be promptly cleaned up.

2.9 RIGHT-OF-WAY CLEARING AND SITE PREPARATION

2.9.1 The STATE INSPECTOR shall be notified at least 10 days prior to any timber clearing.

2.9.2 For associated power lines, where no grading occurs during clearing of the construction ROW, shrubs shall be preserved to the greatest extent possible. Shrub removal shall be limited to crushing or cutting where necessary. Plants may be cut off at ground level, leaving roots undisturbed so that they may re-sprout.

2.9.3 Clearing on both the working side and the spoil side of the ROW shall be kept to the minimum necessary. Where clearing of trees is necessary, the ROW boundary shall be flagged to identify trees located outside the right-of-way.

2.9.4 During construction, care will be taken to avoid damage to trees and shrubs on the edge of the construction ROW that do not interfere with clearing requirements. Trees along the margin of the ROW that are of high value, as determined by the LANDOWNER or INSPECTORS, shall be wrapped with snow fence to protect them from damage.

2.9.5 Unless otherwise requested by the LANDOWNER, felling shall be directional in order to minimize damage to remaining trees. Maximum stump height shall be no more than 12 inches on the uphill side, or 1/3 the tree diameter, whichever is greater.

2.9.6 The OWNER shall prevent significant amounts of soil from being contained in the piling and windrowing of material to be burned. The OWNER shall also minimize the destruction of ground cover in the piling and windrowing of material to be burned. The OWNER shall use non-mechanized methods if necessary to minimize soil erosion and vegetation disturbance. Piles shall be located so as to minimize danger to timber and damage to ground cover when burned.

2.10 EROSION AND SEDIMENT CONTROL

2.10.1 The OWNER shall comply with the erosion control measures described in the Storm Water Pollution Prevention Plan filed with DEQ.

2.10.2 The open-cut, wet method of constructing stream crossings is not allowed if water is present at the time of construction.

2.10.3 At least 60 days prior to the start of construction at a perennial stream crossing or at the crossing of a stream containing a fish species of special concern, the OWNER shall submit a site-specific Stream Crossing Plan. At least 30 days prior to constructing the facility or associated facilities at a perennial stream crossing or stream containing a fish species of special concern, the STATE INSPECTOR shall conduct an on-site inspection of the crossing. The OWNER shall provide access to the stream crossing. The STATE INSPECTOR shall invite the OWNER, FWP, representatives of the local conservation district(s), and the LANDOWNER or land management agency to attend this inspection. The purpose of the inspection shall be to determine the final location of the crossing, the crossing method, width and depth of burial to be used and site-specific reclamation measures. The results of these inspections shall be included in Appendix L.

2.10.4 The OWNER shall install culverts or other structures in state waters in accordance with DEQ 318 permit conditions.

2.10.5 ACCESS ROADS shall cross drainage bottoms at sharp or nearly right angles, and avoid tall cut banks requiring cut and fills whenever possible. Use of temporary bridges, fords, culverts, or other structures to avoid stream bank damage is required when water is present at the crossing of streams. A one-time crossing of the stream to install temporary crossings may be allowed if no access is readily available. No stream crossings will be allowed without proper water quality permits and written authorization from DEQ.

2.10.6 Streambed materials shall not be removed for use in backfill, embankments, road surfacing, or for other construction purposes except where removed from the trench at a stream crossing.

2.10.7 Trench breakers will be installed where necessary to control the flow of ground water along the trench.

2.10.8 Blasting may be allowed in or near streams if precautions are taken to protect the stream from debris and entry of nitrates or other contaminants into the stream, after applicable permits and authorizations are obtained. The OWNER shall obtain the written approval of the STATE INSPECTOR prior to conducting any blasting near streams.

2.10.9 The OWNER shall be responsible for the stability of all embankments created during construction. Embankments and backfills shall contain no stream sediments, frozen material, large roots, sod, or other materials which may reduce their stability.

2.10.10 Culverts, arch bridges, or other stream crossing structures shall be installed at all permanent crossings of flowing or dry watercourses where fill is likely to wash out during the life of an ACCESS ROAD. On ACCESS ROADS, all temporary culverts shall be sized to pass 2-year flood requirements and shall be removed after reclamation. The STATE INSPECTOR may approve exceptions. Permanent culverts shall be sized to pass the 100-year flood requirements. Culvert size shall be determined by standard procedures which take into account the variations in vegetation and climatic zones in Montana, the amount of fill, and the drainage area above the crossing. All culverts shall be installed at the time of ACCESS ROAD construction.

2.10.11 No perennial watercourses shall be permanently blocked or diverted.

2.10.12 The OWNER shall maintain instream flow during diversion of hydrostatic test water so that instream flows do not fall below the following rates in streams where FWP holds water reservations to protect instream flows. Instream flow rates and volumes are indicated in Table 1.

TABLE 1					
Montana Fish, Wildlife and Parks Instream Reservations					
Stream	Reach	Dates	Flow		
			Cubic feet/second	Acre feet	Acre feet/year
Frenchman River	International boundary to mouth	Jan., Feb., Mar., Dec.	2.0	480	2,900
		Apr. through Nov.	5.0	2,420	
Rock Creek	International boundary to mouth	Jan., Feb., Mar., Dec.	2.0	480	4,352
		Apr. through Nov.	8.0	3,872	
Missouri River #8	Milk River to state line	Year-round	5,178		3,748,500

TABLE 1 Montana Fish, Wildlife and Parks Instream Reservations					
Stream	Reach	Dates	Flow		
			Cubic feet/second	Acre feet	Acre feet/year
Redwater River #1	Circle to East Redwater Creek	Jan., Feb., Mar., Dec.	2.0	480	1,932
		Apr. through Nov.	3.0	1,452	
Redwater River #2	East Redwater Creek to mouth	Jan., Feb., Mar., Dec.	2.0	480	2,416
		Apr. through Nov.	4.0	1,936	
Box Elder Creek	One mile west of Belltower to state line	Jan., Feb., Mar., Dec.	4.0	960	4,348
		Apr. through Nov.	7.0	3,388	
Little Beaver Creek	Russell Creek to state line	Year-round	3.0	2,171	2,171

2.10.13 The OWNER shall implement the DEQ-approved Montana Hydrostatic Test Plan (Appendix E).

2.10.14 Any accidental spills of oils, contaminants, or any other hazardous materials shall be cleaned up immediately per Appendix M. The STATE INSPECTOR shall be notified of spills of hazardous materials.

2.10.15 Point discharge of hydrostatic test water will be dispersed in a manner that prevents discharge to state waters unless appropriate permits are obtained.

2.10.16 Water used in embankment material processing, aggregate processing, concrete curing, foundation and concrete lift cleanup, and other waste water processes shall not be discharged into surface waters without a valid discharge permit from DEQ.

2.10.17 If trench dewatering is necessary, water will be discharged to the ground where adequate vegetative cover exists to prevent channeling and sediment transport, or into temporary dewatering structures constructed of silt fence and/or straw bales. No discharges to surface waters are allowed without a valid construction Dewatering General Permit authorization letter from DEQ.

2.10.18 No biocides or other chemicals shall be added to hydrostatic test water. The OWNER shall collect a sample from each hydrostatic test water source, and water samples from the pipe will be taken during discharge of the hydrostatic test water and tested. The testing will be for iron, heavy metals, total organic compounds, and any

additives. A report containing the results of this testing shall be submitted to the STATE INSPECTOR.

2.10.19 Except for water bars and other erosion controls, the final reclaimed surface shall not interrupt drainages or substantially alter overland flow patterns.

2.11 ARCHAEOLOGICAL, HISTORICAL, AND PALEONTOLOGICAL RESOURCES

2.11.1 All construction activities shall be conducted in accordance with the PA in Appendix G for Historic Properties and inadvertent discoveries. For Historic Properties where impacts cannot be avoided, a mitigation plan shall be developed per the PA in consultation with all interested parties.

2.11.2 Prior to and during construction activities, the OWNER shall handle paleontological resources in accordance with the MOU and Paleontological Treatment Plan set forth in Appendix H.

2.11.3 In the event of inadvertent discovery of paleontological materials during construction activities, the OWNER shall follow the Paleontological Treatment Plan as required in the MOU in Appendix H.

2.12 PREVENTION AND CONTROL OF FIRES

2.12.1 The OWNER shall comply with the Fire Prevention and Suppression Plan set forth in Appendix N. These plans shall meet the requirements of the managing agency and/or the fire control agencies having jurisdiction. The STATE INSPECTOR shall be invited to attend all meetings with these agencies to discuss or prepare these plans.

2.12.2 The OWNER shall not burn refuse (including but not limited to trash, rags, tires, plastics, or other debris) except as permitted by the county, town, state, or governing municipality having jurisdiction per the Burning Plan and Fire Plan in Appendix O.

2.12.3 Prior to burning any refuse, the OWNER shall obtain the approval of the LANDOWNER and a Montana Open Burning Permit.

2.13 WASTE DISPOSAL

2.13.1 The OWNER shall use licensed solid waste disposal sites. Inert materials (Group III wastes) may be disposed of at Class III landfill sites; mixed refuse (Group

II wastes) shall be disposed of at Class II landfill sites as required by ARM 17.50.504(2)(a).

2.13.2 Emptied pesticide containers or other chemical containers must be triple rinsed to render them acceptable for disposal in Class II landfills or for scrap recycling pursuant to ARM 4.10.803. Names of Class II landfills in the counties crossed are listed in Table 2. Pesticide residue and pesticide containers shall be disposed of in accordance with ARM 4.10.805 and 806. Pesticide container rinse water shall be added to batches of pesticide for application.

Table 2			
Class II Landfills in the Counties Crossed by the Project			
County	Class II Landfill	Location	Phone
Fallon	Coral Creek Landfill	Baker, MT	(406) 778-7111
Valley	Valley County Refuse District #1	Glasgow, MT	(406) 228-6241
Custer	Miles City Area Solid Waste District	Miles City, MT	(406) 233-3325
Richland	Richland County Solid Class II Landfill	Sidney, MT	(406) 433-2407

2.13.3 All waste material that is a hazardous waste, as defined in Section 75-10-403, MCA, and wastes containing any concentration of polychlorinated biphenyls must be transported to an approved designated hazardous waste management facility, as defined in ARM 17.50.504, for treatment or disposal.

2.13.4 All used oil shall be hauled away and recycled or disposed of in a licensed Class II landfill authorized to accept liquid wastes or in accordance with Sections 2.13.2 and 2.13.3. There shall be no intentional release of oil or other toxic substances into streams or soil. The OWNER shall immediately report any accidental spill into a waterway to the STATE INSPECTOR. Any spill of refined petroleum products greater than 25 gallons must be reported to the State of Montana, Department of Military Affairs, Disaster and Emergency Services Division, at (406) 841-3911. All spills shall be cleaned up in accordance with the OWNER's Emergency Spill Response Plan.

2.13.5 All hazardous wastes and materials shall be stored in appropriate secondary containment structures until disposed of.

2.13.6 Self-contained toilets shall comply with applicable federal, state, and local health laws and regulations.

2.13.7 The OWNER shall not dispose of waste in any manner that causes it to reach state waters.

3.0 CLEANUP, RECLAMATION, AND RESTORATION

3.1 BACKFILLING, GRADING, AND CLEANUP

3.1.1 Except where practicably infeasible, the trench shall be backfilled within 30 days of initial excavation at any location, and no more than 30 miles of open trench will be allowed at any time within any given construction spread. Exceptions include tie-ins, valve sites, and at pump stations where the trench shall be backfilled as soon as practicable.

3.1.2 Except where practicably infeasible, final grading, topsoil replacement, and installation of permanent erosion control structures shall be completed in non-residential areas within 20 days after backfilling the trench. In the event that seasonal or other weather conditions, extenuating circumstances, or unforeseen developments beyond the OWNER's control prevent compliance with this time frame, temporary erosion controls shall be maintained until conditions allow completion of cleanup and reclamation. In the event the OWNER cannot comply with the 20-day time frame as provided in this specification, the OWNER shall give notice of such fact to all affected LANDOWNERS, and such notice shall include an estimate of when such restoration is expected to be completed.

3.1.3 The OWNER shall remove all litter from the ROW, pipe yards, along ACCESS ROADS leading to the ROW, and all other areas affected by construction. Such litter shall be legally disposed of as soon as possible, but in no case later than within 60 days of completion of construction.

3.1.4 All signs of temporary construction facilities such as haul roads, work areas, buildings, foundations or temporary structures, stockpiles of excess or waste materials, and any other vestiges of construction shall be removed and the areas reclaimed, in consultation with the LANDOWNER.

3.1.5 If voids over the pipeline occur, they shall be reported to the STATE INSPECTOR along with a plan for repair of these areas. Repairs must be made as quickly as reasonably possible without causing undue damage, as agreed to by the STATE INSPECTOR. All material used in repairs must be from sources certified to be weed free.

3.2 RESTORATION, RECLAMATION, AND REVEGETATION

3.2.1 Restoration, reclamation, and revegetation of the ROW; ACCESS ROADS; borrow sites, gravel, fill, stone, or aggregate excavation; or any other disturbance shall be in accordance with the OWNER's Construction, Mitigation, and Reclamation Plan with the following exceptions:

- a) Seeding of affected lands shall be conducted during the first normal period for favorable planting conditions after final preparation. Final preparation will not be delayed more than 45 days after pipe is lowered into the trench. Any rills or gullies that would preclude successful establishment of vegetation shall be removed or stabilized. Only certified weed-free seed and mulch shall be used in revegetation; and
- b) The following standards for reclamation shall be used to determine compliance with the terms of the CERTIFICATE and release of the Reclamation Bond, or to determine that expenditure of the Reclamation Bond is necessary to meet the requirements of the CERTIFICATE for the Project:
 - (i) in rangeland or pasture land, coverage of desirable perennial plant species shall be 30% or more of that on adjacent rangeland or pastureland of similar slope and topography the year following seeding, and 80% or more of the coverage of adjacent rangeland or pastureland of similar slope and topography within five years following seeding;
 - (ii) The OWNER shall be responsible for restoring vegetative cover on all CRP areas, to a cover similar to adjacent undisturbed CRP lands with similar soils and topography within five years, unless the land is removed from CRP;
 - (iii) on private lands, the OWNER may contract with the LANDOWNER for revegetation or reclamation, which would release the OWNER from the reclamation bond performance on the property upon showing DEQ that the LANDOWNER wants different reclamation standards from those specified in (i) applied on his property and that not reclaiming to the standards specified in (i) would not have adverse impacts on the public and other LANDOWNERS; and
 - (iv) on public lands, the OWNER may contract with the affected land management agency for revegetation or reclamation, which would release the OWNER from the reclamation bond performance on the property upon showing DEQ that the land management agency wants different reclamation standards from those specified in (i) and that not reclaiming to the standards specified in (i) would not have adverse impacts on the public and other LANDOWNERS.

3.2.2 After construction is complete, and in cooperation with the LANDOWNER, temporary roads shall be closed, and unless specified by the LANDOWNER, revegetated as specified in (a) or (b) above. Permanent unsurfaced ACCESS ROADS not open to public use shall be revegetated as soon after use as possible, unless specified otherwise by the LANDOWNER.

3.2.3 Earth next to the pipeline or ACCESS ROADS that cross streams shall be replaced at slopes less than the normal angle of repose for the soil type involved.

3.2.4 Side-casting of waste materials from the construction of permanent ACCESS ROADS may be allowed on slopes over 40 percent after approval by the LANDOWNER. Side-casting of waste material, however, shall not be allowed within the buffer strip established for stream courses, in areas of high or extreme soil instability, or in other SENSITIVE AREAS specifically identified in Appendix A.

3.2.5 Seeding prescriptions, the seeding rate to be used in revegetation, and requirements for hydro seeding, fertilizing, and mulching (collectively referred to as the seeding methodology) shall be based on the requirements of County Weed Control Boards, and the availability of seed at the time of reclamation. The OWNER shall submit its proposed seeding methodology to DEQ at least 30 days prior to the start of construction. The county approved seeding methodology will be incorporated into the Revegetation Rehabilitation Plan set forth in Appendix I.

3.2.6 Excavated material not suitable or required for backfill shall be evenly distributed over the cleared area prior to spreading any topsoil, unless otherwise required by the LANDOWNER. The size and quantity of large (greater than 3 inches) rocks and boulders on the surface of the ROW following final clean-up shall be similar to that present on adjacent undisturbed land. All rock removed from the ROW shall be disposed of as directed by the LANDOWNER.

3.2.7 The OWNER shall use specific seed mixes and techniques that address areas having saline, sodic, or saline and sodic soil characteristics; steep slopes; sandy or clayey textures; or acid soil conditions.

3.2.8 The OWNER shall alleviate soil compaction as proposed or where requested by the LANDOWNER; compaction may be alleviated on all lands traversed by construction equipment by plowing using appropriate deep-tillage and draft equipment. Alleviation of compaction of the topsoil shall be performed during suitable weather conditions, and must not be performed when weather conditions have caused the soil to become so wet that activity to alleviate compaction would damage the future production capacity of the land.

3.2.9 If there is any dispute between the LANDOWNER and OWNER as to what areas need to be ripped or chiseled, or the depth at which compacted areas should be ripped or chiseled, a professional soil scientist shall be consulted. The OWNER shall retain a professional soil scientist or an appropriately qualified, licensed, professional engineer to conduct compaction tests. Copies of the results shall be provided to the LANDOWNER making claims for compensation for damages. If complete restoration is not possible, the OWNER shall compensate the LANDOWNER for lost productivity.

3.2.10 In the case of a claim for damages related to soil compaction, the OWNER shall retain a professional soil scientist who is also licensed by the State of Montana or an appropriately qualified licensed professional engineer to perform a soil survey for compaction using appropriate field equipment such as a soil penetrometer. Where

there are row crops, samples shall be taken in the middle of the row, but not in rows where the drive wheels of farm equipment normally travel. Copies of the results of the above-described survey shall be provided to the LANDOWNER making such claim within 45 days of completion of the soil survey.

3.2.11 The OWNER shall develop and implement an environmental complaint resolution procedure. The procedure shall provide LANDOWNERS with clear and simple directions for identifying and resolving their environmental mitigation problems/concerns during construction and operation of the Project. Prior to construction, the OWNER shall mail the environmental complaint resolution procedure to each LANDOWNER whose property would be crossed by the Project:

- a) In the complaint resolution procedure, the OWNER shall:
 - (i) Provide a local contact that LANDOWNERS shall call first with their concerns and indicate how soon to expect a response;
 - (ii) Instruct LANDOWNERS that if they are not satisfied with the response, they should call the OWNER, provide a phone number for the OWNER, and indicate how soon to expect a response; and
- b) In addition, during construction and reclamation the OWNER shall include in its weekly status report a table that contains the following information for each problem/concern:
 - (i) The identity of the caller and the date of the call;
 - (ii) The identification number from the certificated alignment sheet(s) of the affected property and appropriate location by milepost;
 - (iii) A description of the problem/concern; and
 - (iv) An explanation of how and when the problem was resolved or will be resolved, or why it has not been resolved.

3.3 MONITORING

3.3.1 Upon notice by the OWNER, the STATE INSPECTOR will schedule initial post-construction field inspections following clean up and road closure. The STATE INSPECTOR will notify the OWNER of these inspections. Follow-up visits will be scheduled as required to monitor the effectiveness of erosion controls and reseeding measures. The OWNER will contact the LANDOWNER for post-construction access and to document the LANDOWNER's satisfaction with the OWNER's restoration measures; such documentation shall be provided to the STATE INSPECTOR. The STATE INSPECTOR shall document observations for inclusion in monitoring reports regarding bond release or the success of mitigation measures.

3.3.2 Success of revegetation shall be based on criteria specified in Section 3.2.1 (i), (ii), (iii), or (iv).

3.3.3 Failure of the OWNER to adequately reclaim all disturbed areas in accordance with Section 3.2 of these specifications shall be cause for forfeiture of the bonds and/or penalties described in Section 0.7.

4.0 OPERATION AND MAINTENANCE

4.1 RIGHT-OF-WAY MANAGEMENT AND ROAD MAINTENANCE

4.1.1 Depressions, holes, cracks, uneven settling, or water drainage problems that develop over or near the trench that interfere with natural drainage or vegetation establishment, shall be repaired by the OWNER within 45 days (weather permitting) of being reported or observed. Depressions, holes, cracks, uneven settling, or water drainage problems that develop over or near the trench that interfere with land use shall be repaired as expediently as practicable but in no case more than 45 days later (weather permitting) of being reported or observed by the OWNER or, at the LANDOWNER's request.

4.1.2 Vegetation that has been saved through the construction process and which does not pose a hazard or potential hazard to the pipeline, particularly that of value to fish and wildlife, shall be allowed to grow on the ROW.

4.1.3 Vegetative cover, water bars, cross drains, and the proper slope shall be maintained on permanent ACCESS ROADS and service roads in order to prevent soil erosion.

4.1.4 All permanent above-ground facilities shall be painted or treated to blend with their natural surroundings. The color shall be selected from colors similar to the standard environmental colors (BLM Rocky Mountain Five-State Interagency Committee) in consultation with the BLM and DEQ.

4.2 MAINTENANCE INSPECTIONS

4.2.1 The OWNER shall correct soil erosion or revegetation problems on the ROW or ACCESS ROADS. The OWNER is responsible for permanent erosion controls on the facility for the life of the Project. The OWNER may correct such problems through agreement with the LANDOWNER.

4.2.2 Operation and maintenance inspections using ground vehicles shall be timed so that routine maintenance shall be done when ACCESS ROADS are firm, dry, or frozen, wherever possible. On rangeland, maintenance vegetative clearing shall be conducted in a manner that encourages growth of shrubs up to three feet tall, including sage brush, on the ROW unless otherwise requested by a LANDOWNER.

Shrubs may be removed along a 10-foot wide path within the ROW to allow for maintenance access.

4.3 CORRECTION OF LANDOWNER PROBLEMS

4.3.1 If the facility causes interference with radio, TV, or other stationary communication systems after the facility is operating, the OWNER shall correct the interference.

4.4 HERBICIDES AND WEED CONTROL

4.4.1 Weed control, including any application of herbicides in the right-of-way, will be in accordance with recommendations of the Montana Department of Agriculture and local Weed Control Boards.

4.4.2 Herbicides will not be used in certain areas identified by DEQ and FWP, as listed in Appendix P or as requested by the LANDOWNER.

4.4.3 Proper herbicide application methods will be used to keep drift and non-target damage to a minimum.

4.4.4 Herbicides must be applied according to label specifications and in accordance with Section 4.4.1, above. Only herbicides registered in compliance with applicable federal and state regulations may be applied.

4.4.5 In areas disturbed by the pipeline and associated facilities, the OWNER will cooperate with LANDOWNERS in the control of noxious weeds and provide 48 hours notification before weed treatment is completed on private land.

4.4.6 All applications of herbicides must be performed by an applicator with a valid Montana license.

4.4.7 During the second and third growing seasons following the completion of restoration and reseeded, the OWNER and STATE INSPECTOR shall inspect the ROW and ACCESS ROADS for newly established stands of noxious weeds. The OWNER shall provide access for the inspection. The County Weed Control supervisor shall be invited to attend this inspection. In the event that stands of weeds are encountered, appropriate control measures shall be taken by the OWNER.

4.5 MONITORING

4.5.1 DEQ may continue to monitor operation and maintenance activities for the life of the Project in order to ensure compliance with the specifications in this section.

4.5.2 DEQ may require the OWNER to fund additional monitoring efforts to resolve problems which develop after release of the bonds described in Section 0.7. Such efforts would be limited to compliance with these specifications and other conditions adopted by DEQ.

5.0 MITIGATION OF POSSIBLE ENVIRONMENTAL IMPACTS DUE TO DECOMMISSIONING OR ABANDONMENT

5.1 NOTICE AND RECLAMATION

5.1.1 One year prior to the anticipated date for decommissioning or abandonment of the certificated facility, the OWNER shall notify DEQ or its successor of the plans for decommissioning or abandonment.

5.1.2 If the method of decommissioning or abandonment required under federal law results in ground disturbing activities, OWNER shall be responsible to DEQ or its successor for complying with reclamation and environmental protection standards established at the time of Project certification, including applicable provisions of these specifications or standards in affect at that time. At that time, DEQ or its successor shall calculate and a hold a bond for reclamation of disturbances caused by decommissioning or abandonment activities. The OWNER shall submit the bond to DEQ prior to the start of decommissioning or abandonment activities.

5.1.3 The OWNER will be responsible for repairs and reclamation caused by erosion or subsidence of the right-of-way associated with the presence of the facility incurred after abandonment.

5.1.4 The standards listed in Section 3.2.1 for reclamation and revegetation shall be used to determine release of the Reclamation and Revegetation Bond, or to determine that expenditure of the Reclamation and Revegetation Bond is necessary to meet the requirements of the CERTIFICATE, unless otherwise determined by the DEQ.

Appendices

- Appendix A: Sensitive Areas
- Appendix B: Bonds
- Appendix C: STATE INSPECTORS and OWNER's Liaisons
- Appendix D: Monitoring Plan
- Appendix E: Variations in Approved Locations
- Appendix F: Hydrostatic Test Discharge Plan
- Appendix G: Programmatic Agreement
- Appendix H: Paleontological Memorandum of Understanding
- Appendix I: Rehabilitation Plan Erosion Control, Reclamation, and Revegetation Plan
- Appendix J: Areas Where Restrictions in the Timing of Construction Apply
- Appendix K: Noxious Weed Management Plan
- Appendix L: Requirements at Stream Crossings
- Appendix M: Hazardous Materials Management Plan for construction and Spill Prevention, Containment and Countermeasure Plan for construction
- Appendix N: Fire Prevention and Suppression Plan
- Appendix O: Burning Plan and Fire Plan
- Appendix P: Watersheds and Other Areas Where the use of Herbicides is Prohibited
- Appendix Q: Construction Inspections of Designated Access Routes on Public Roads

Appendix A: Sensitive Areas

The following provisions shall be followed to assist in the protection of biological resources during construction and operations:

- All vehicles, equipment, bridges, and matting that would be used in streams or wetlands must be washed and dried before entering the job site in order to reduce the chances of transporting aquatic nuisance species to Montana streams and wetlands. Likewise, hydrostatic test water from other states must not be discharged into Montana waters in order to reduce the chances for transporting aquatic nuisance species to Montana streams and wetlands.
- Prior to the start of construction, the OWNER shall conduct surveys to determine the locations of greater sage-grouse leks and the peak number of males in attendance at these leks within three miles of the facility, unless the facility is screened by topography. The OWNER shall use survey methods approved by DEQ, FWP, and BLM. Results of the surveys shall be presented to the STATE INSPECTOR.
- Prior to the start of construction within three miles of a greater sage-grouse lek, the OWNER shall also conduct surveys to determine the peak number of male greater sage-grouse at leks identified by FWP and BLM more than three miles from the facility, for use as a baseline in determining whether construction activities or presence of the pipeline has affected greater sage-grouse numbers.
- Pipeline construction within three miles of active greater sage-grouse leks in suitable nesting habitat not screened by topography from March 1 to June 15 is prohibited with the following exceptions:
 - a. The OWNER may pass equipment as a single group along the permitted right-of-way or approved location through a restricted lek buffer area.
 - b. Equipment would only pass through a restricted lek buffer between 10:00 am and 2:00 pm, to avoid disturbing displaying birds during critical times of the day.
 - c. If major grading is required to pass equipment along the permitted right-of-way or approved location, this grading would take place outside of the March 1 through June 15 restriction period.
 - d. As the equipment passes through the areas, if any large hummocks or rocks impede the travel lane, the lead dozer would lower its blade on the way through to move the obstruction to the side and/or smooth out any larger hummocks or rocks.
- The OWNER shall conduct surveys of sharp-tailed grouse leks prior to construction using methods approved by DEQ in consultation with FWP, to detect leks that can be seen from the construction ROW and associated power lines. Results of the surveys shall be presented to the STATE INSPECTOR.

- Construction within 0.25 mile of active sharp-tailed grouse leks that can be seen from the construction ROW is prohibited from March 1 to June 15. This same timing restriction applies to routine maintenance. It does not apply when emergency maintenance or response is required for safe operation of the Project.
- The OWNER shall contact BLM and FWP to determine what mitigation measures are needed for a lek found within the construction ROW and implement those measures.
- In sagebrush habitat, the OWNER will reduce the mound left over the trench in areas where settling would not present a path for funneling runoff down slopes. In these areas additional measures shall be taken to compact backfilled spoils to reduce settling.
- The OWNER shall establish a compensatory mitigation fund to be used by DEQ, BLM, and FWP to enhance and preserve sagebrush communities for greater sage-grouse and other sagebrush-obligate species in eastern Montana. The size of the fund will be based on the acreage of silver sagebrush and Wyoming big sagebrush habitat disturbed during pipeline construction within greater sage-grouse core habitat mapped by FWP and important habitat between approximate mileposts 96.5 to 130.5. For each acre disturbed, the OWNER shall contribute \$600 dollars to the fund.
- During operations, inspection flights shall be limited to afternoons from March 1 to June 15 as practicable in sage brush habitat designated by FWP (considering weather conditions and federal inspection requirements).
- The OWNER shall fund a study under the direction of DEQ, FWP, and BLM that would show whether the presence of the facility has affected greater sage-grouse numbers, based on the peak number of male greater sage-grouse in attendance at leks. For a period of four years, the agencies shall annually monitor, compare, and report the peak number of male greater sage-grouse at three leks within three miles of the pipeline that are not screened by topography, to the number of males in attendance at three leks more distant than three miles of the facility, before and after construction of the pipeline. At the end of this four year period, DEQ, FWP, and BLM will determine whether there has been a change in the number of male greater sage-grouse in attendance. If there is a decrease, the OWNER will be required to increase the numbers of greater sage-grouse elsewhere to offset the observed reductions. Documented greater sage-grouse population increases as a result of expenditures from the compensatory mitigation fund, above, may be used to fulfill this requirement.
- The OWNER shall implement reclamation measures (e.g., application of mulch or compaction of soil after broadcast seeding, and reduced seeding rates for non-native grasses and forbs) that favor the establishment of silver sagebrush and big sagebrush in disturbed areas, where compatible with the surrounding land use and habitats, unless otherwise requested by the affected LANDOWNER.
- Prior to construction, the OWNER shall conduct studies along the route to identify areas that support stands of big sagebrush and silver sagebrush and

incorporate these data into reclamation activities to prioritize re-establishment of sagebrush communities, as required above.

- Unless otherwise requested by the LANDOWNER, in areas supporting stands of big sagebrush and silver sagebrush, the OWNER shall monitor establishment of sagebrush on reclaimed areas annually for at least four years to ensure that sagebrush plants become established at densities similar to densities in adjacent sagebrush communities, and implement additional seeding or plantings of sagebrush if necessary. Reports of this monitoring activity shall be submitted to the DEQ annually.
- The OWNER and DEQ shall establish criteria in conjunction with FWP and BLM to determine when reclamation of sagebrush communities has been successful, based on the pre- and post construction studies described above. This shall not relieve the OWNER of its responsibility to meet the revegetation standards in Appendix B.
- Unless requested by the affected LANDOWNER, the OWNER shall use locally adapted sagebrush seed, collected within 100 miles of the areas to be reclaimed.
- To protect nesting for Sprague's pipit, a sensitive species in Montana, if construction would occur during the April 15 to July 15 grassland ground-nesting bird nesting season, nest-drag surveys must be completed by the OWNER to determine the presence or absence of nests on lands in Phillips and Valley counties, and implement timing restrictions recommended by USFWS and MFWP. Results of the surveys shall be presented to the STATE INSPECTOR.
- To minimize destruction of mountain plover nests and disturbance of breeding mountain plovers, no construction, reclamation, or other non-emergency ground disturbing activities will occur from April 10 to July 10, unless surveys conducted by the OWNER consistent with the Plover Guidelines or other methods approved by the USFWS find that no plovers are nesting in the area. Suitable mountain plover habitat in Fallon and northern and central Valley counties along the approved route must be surveyed three times between April 10 and July 10, with each survey separated by at least 14 days. The earlier date will facilitate detection of early-breeding plovers. If a nest is identified, construction activities within 0.25 mile of the nest shall be delayed for 37 days (typical fledging duration) or until fledging, whichever is sooner. If a brood of flightless chicks is identified, construction activities must be delayed for at least seven days or until fledging, whichever is sooner. Routine, non-emergency, maintenance activities shall be scheduled outside the April 10 to July 10 period in mountain plover habitat, unless surveys conducted by the OWNER indicate that no plovers are nesting in the area and that flightless chicks are not present. Results of surveys that detect mountain plovers shall be presented to the STATE INSPECTOR.
- The OWNER shall conduct pre-construction surveys for interior least tern within 0.25 mile from suitable breeding habitat at the Yellowstone River during the breeding season (April 15 to August 15 inclusive) to ensure that there are no nesting pairs within 0.25 mile of the construction area. Daily surveys for nesting

terns must be conducted during the nesting season when construction activities occur within 0.25 mile of potential nesting habitat. Construction will not be permitted within 0.25 mile from an occupied nest site during the breeding season (April 15 through August 15) or until the fledglings have left the nesting area. Results of the surveys that detect least terns shall be presented to the STATE INSPECTOR.

- In Phillips and Valley counties where swift fox occur, den surveys shall be conducted by the OWNER between February 15 and July 31 and, if dens are found, construction activities within 500 m of an active swift fox den will not occur between February 15 and July 31. Swift fox potentially occur in Prairie, Dawson, and Fallon counties along the proposed route. Den surveys shall be conducted by the OWNER between February 15 and July 31 in Prairie, Dawson, and Fallon counties and if a den is found within 500 m of a facility or associated facility, construction will not occur between February 15 and July 31. Results of the surveys that detect swift fox dens shall be presented to the STATE INSPECTOR.
- Prior to and during construction, the OWNER shall conduct surveys for active bald eagle nests and communal roost sites prior to construction. If any of these are found, the OWNER shall implement the measures in the Montana Bald Eagle Management Plan or if this plan expires, then the OWNER shall use current guidance from the US Fish and Wildlife Service¹. Results of the surveys that detect bald eagle nests or communal roost sites shall be presented to the STATE INSPECTOR.
- Prior to March 15 of each year of construction, the OWNER shall survey approved locations and nearby areas for the presence of golden eagle nests. If a golden nest is found, the OWNER shall restrict construction, reclamation, and non-emergency maintenance activities within 1000 m of the nest from March 15 until July 15, or until the young have fledged. Results of the surveys that detect golden eagle nests shall be presented to the STATE INSPECTOR.
- The OWNER will survey for the presence of ferruginous hawk nests. If an active nest is found, no construction, reclamation, or non-emergency maintenance activities will take place within 1000 m of the nest between March 15 and July 15, or until young have fledged.
- The OWNER will conduct surveys for nesting burrowing owls in Phillips, Valley, southern McCone, and southern Dawson counties during the period between April 15 and August 1. If nesting burrowing owls are found, no construction, reclamation, or non-emergency maintenance activities will occur within 500 m of an active nest until chicks have fledged. Results of surveys that detect ferruginous hawk nests shall be presented to the STATE INSPECTOR.

¹ Montana Bald Eagle Working Group. 2010. Montana Bald Eagle Management Guidelines: An Addendum to Montana Bald Eagle Management Plan, 1994, Montana Fish, Wildlife and Parks, Helena, Montana.

- The OWNER shall conduct surveys for nests of other raptor species not listed above. If an active nest is found, no construction and reclamation activities will occur within 1000 m between March 15 and July 15, or until the young have fledged. Results of the surveys shall be presented to the STATE INSPECTOR.
- Prior to each year of construction, the OWNER shall survey the approved corridor in Fallon County for black-tailed prairie dog colonies. When reasonably possible, construction within identified colonies that are large enough by themselves or in conjunction with other colonies to comprise essential Category 3 complexes should be avoided. Results of the surveys that detect raptor nests shall be presented to the STATE INSPECTOR.
- Great blue heron rookeries should be avoided by 500 feet.
- If a western hog-nosed snake or milksnake hibernaculum is found within the construction ROW during construction, then a construction timing restriction between October 1 and May 1 should be used at that site to prevent loss to a large number of individuals. The STATE INSPECTOR shall be informed of the location of any hibernacula found.
- To protect small animals from entanglement, erosion control netting shall not be composed of material with plastic netting with openings less than two inches across.
- In order to protect habitat of the Great Plains toad and plains spadefoot, no construction activity is allowed within 100 m of ephemeral wetlands from April 15 to July 15.
- Unless otherwise requested by the LANDOWNER in writing, the DEQ and the OWNER shall, for a period of five years following initial seeding, monitor cover and densities of native and non-native perennial forbs and perennial grasses exclusive of noxious weeds on reclaimed native prairie, pasture, and riparian areas. Native prairie and riparian areas must be reseeded with native forbs and grasses, while pastures must be reseeded with species approximating the existing vegetation exclusive of noxious weeds. Where densities and cover are not comparable to adjacent communities to achieve bond release per the criteria in Appendix B, the OWNER shall reseed the areas not meeting the bond release criteria in Appendix B unless specified in writing by the STATE INSPECTOR.
- The OWNER, working in conjunction with the LANDOWNER, shall appropriately manage livestock grazing of reclaimed areas until successful reclamation of sagebrush communities has been achieved, as described above.
- The OWNER shall implement measures to reduce or eliminate colonization of reclaimed areas by noxious weeds and invasive annual grasses such as cheatgrass, to the extent that these species do not exist in undisturbed areas adjacent to the right-of-way.
- During construction, when trenches are open, the OWNER shall conduct daily inspections to locate and remove animals that have been trapped in the open trench.

- Between June 1 and August 15, the OWNER shall conduct surveys in forested riparian habitat using the methods described in the Handbook of Inventory Methods and Standard Protocols for Surveying Bats in Alberta (<http://www.srd.alberta.ca/FishWildlife/WildlifeManagement/documents/Handbook-InventoryMethodsStandardProtocols-SurveyingBatsInAlberta-Dec06.pdf>) to determine the location of bat (fringed myotis, *Myotis thysanodes*, long-eared myotis, *Myotis evotis*) maternity roosts and for Townsend's big-eared bat (*Corynorhinus townsendii*) roost trees. If found, disturbance of roosts should be avoided where possible until the bats have left the area in late summer or fall, and removal of roost trees should be avoided wherever practicable. Results of the surveys shall be presented to the STATE INSPECTOR.
- Tree clearing will be minimized through a narrowing of the construction ROW and final centerline location near crossings of certain streams identified in Appendix L of these specifications.
- Pre- and post construction monitoring plans should be developed for depressional wetlands of the Prairie Potholes region in Montana, and wetlands that no longer pond water after the pipeline is installed should receive additional compaction, replacement, or at the LANDOWNER's or managing agency's discretion compensatory payments should be made for drainage of the wetland.

Land Use

The OWNER shall bore irrigation ditch and canal crossings where requested by a LANDOWNER, to reduce the potential for canal seepage following construction.

Following construction or maintenance activities, crossings of leveled irrigated fields, ditches, canals, and border dikes shall be restored to a state that existed prior to construction. Changes in leveled irrigated field, canal, and dike grade over the pipeline trench as a result of soil settling shall be repaired by the OWNER at the first reasonable opportunity after such settling is observed by the OWNER, STATE INSPECTOR, or reported by the LANDOWNER. Leakage of canals, ditches, and dikes shall be restored as closely as practicable to a state that existed prior to construction. If further settling over the trench causes leakage from canals, ditches, or dikes, this leakage shall be repaired by the OWNER at the first reasonable opportunity after it is reported by the LANDOWNER.

Prior to construction, the OWNER will select, subject to DEQ approval, and the OWNER will pay for a public liaison officer to facilitate the exchange of information between the OWNER's contractors and employees, and LANDOWNERS, local communities, and residents, and to resolve promptly any complaints or problems that may develop for LANDOWNERS, local communities, and residents as a result of the pipeline. The liaison shall report to DEQ.

If during operations, settling or piping should occur on cultivated land, then the OWNER shall consult with a professional soil scientist or an appropriately qualified, licensed,

professional engineer regarding the level of compaction and efficacy of ditch plugs. Repairs shall be made to limit the flow of water along the pipeline based on the recommendations of the soil scientist or professional engineer. Copies of the results shall be provided to the LANDOWNER. If complete restoration is not possible, the OWNER shall compensate the LANDOWNER for lost productivity. Nothing in this requirement shall limit the remedies available to a LANDOWNER under 75-20-405, MCA.

The OWNER will use existing soil survey data to locate probable areas where topsoil (i.e., the A horizon) deeper than 12 inches is likely to occur. The OWNER will confer with the NRCS and DEQ to determine if soil sampling is necessary to refine the soil characteristics in those areas, and to determine if additional soil salvage and handling procedures would be necessary to maintain equivalent productivity.

The OWNER will use existing soil survey data to locate areas where special soil handling procedures (such as triple-lift or over-stripping topsoil) would help preserve soil productivity and reclamation potential. Soil survey data will be analyzed by horizon to locate areas where lower soil horizons may contain high salt concentrations, fluvial gravels, or unconsolidated bedrock that are not present in surface or near surface horizons and thus could reduce revegetation success. The OWNER will base this analysis on criteria that are used in Canada for evaluating potential triple-lift soils. The OWNER will consult with the NRCS on the locations and characteristics of these soils, and on soil sampling procedures to refine soil mapping units where special handling procedures will be applied. The OWNER will provide the NRCS and DEQ with the results of this soils analysis and the locations where special soil handling procedures may be necessary.

If MTV-15 is selected, the OWNER shall mark and avoid the stock water tank in Township 7 North, Range 59 East, Section 35.

Appendix B: Bond

(The amount of the bonds will be determinate at the time of CERTIFICATION)

The amount of bond posted for performance during initial reclamation shall be \$_____.
The amount of bond for performance during the reclamation and revegetation period shall be \$_____.

During initial reclamation, the bond will be held to help ensure compliance with the terms of the DEQ CERTIFICATE and these Environmental Specifications. Should the OWNER fail to comply with the terms of the CERTIFICATE or the Environmental Specifications, the OWNER would be subject to penalties listed in 75-20-408 MCA and the DEQ would access and expend the initial reclamation bond for the purpose of ensuring that the conditions of the CERTIFICATE are met.

The standards listed in Section 3.2.1 for reclamation and revegetation shall be used to determine release of the Reclamation and Revegetation Bond, or to determine that expenditure of the Reclamation and Revegetation Bond is necessary to meet the requirements of the CERTIFICATE, unless otherwise determined by the DEQ.

Appendix C: Names and Addresses
of the
STATE INSPECTORS and OWNER's Liaisons

The STATE INSPECTOR:

Montana Department of Environmental Quality Fax: 406-444-1499
P.O. Box 200901, 1520 E. 6th Ave.
Helena, MT 59620-0901 E-mail address:

State Environmental Inspection Monitoring Contractors:

OWNER's Environmental Inspector's Phone List:

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Spread 3 -
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Appendix D: Monitoring Plan

The STATE INSPECTOR is responsible for implementing this Monitoring Plan required by 75-20-303(b) and (c), MCA, and for reporting whether terms of the CERTIFICATE and Environmental Specifications (including but not limited to adequacy of erosion controls, successful seed germination, and areas where weed control is necessary) are being met, along with any conditions in the MPDES General Permit for Storm Water Discharges Associated with Construction Activity. Additional mitigating measures may be identified by the STATE INSPECTOR on Federal lands in order to minimize environmental damage due to unique circumstances that arise during construction.

In addition to participating in preconstruction conferences, the INSPECTORS shall conduct on-site inspections during the period of construction. At a minimum, the INSPECTORS will be present at the start of construction and during the initiation of construction in SENSITIVE AREAS. Subsequently, INSPECTORS shall strive to conduct on-site reviews of construction activities on at least a weekly schedule. More frequent monitoring may be necessary.

INSPECTORS shall record the dates of inspection, areas inspected, and instances where construction activities are not in conformance with Environmental Specifications or terms and conditions of the CERTIFICATE for the Project. Inspection reports shall be submitted in a timely manner to the OWNER's Liaison who will see that corrections are made or that such measures are implemented in a timely manner.

When violations of the CERTIFICATE are identified, the STATE INSPECTOR shall report the violation in writing to the OWNER, who shall immediately take corrective action. If violations continue, civil penalties described in 75-20-408, MCA may be imposed.

Upon the completion of construction in an area, the INSPECTORS will determine that Environmental Specifications have been followed, and that activities described in OWNER's application have been completed and revegetation is progressing in a satisfactory manner.

DEQ may obtain the assistance of FWP to monitor impacts on wildlife between the time of certification and the completion of construction, including improper harvest of wildlife by employees, contractors, or other agents of the OWNER on the ROW, access roads, routes, and areas adjacent thereto.

In the event the DEQ determines that the OWNER is not correcting damage created during construction in a satisfactory manner or that initial revegetation is not progressing satisfactorily, DEQ may determine the amount and disposition of all or a portion of the Reclamation Bond to correct any damage that has not been corrected by the CERTIFICATE holder.

State Owned Parcels

On land owned by the state of Montana, the DEQ's environmental inspectors will help determine whether conditions contained in easements across state lands are followed. If conditions are not being met, then DEQ inspectors will notify the appropriate DNRC regional office.

Weed Control

During the second and third growing seasons following the completion of restoration and reseedling, the OWNER and INSPECTORS will inspect the ROW and ACCESS ROADS for newly established stands of noxious weeds, to identify those areas where noxious weeds were not established prior to construction. The County Weed Control supervisor will be invited to attend this inspection. In the event that stands of weeds are encountered, appropriate control measures will be taken by the OWNER.

Spills

A STATE INSPECTOR will be named to coordinate DEQ response and monitoring of spills not pre-empted by federal authority. The STATE INSPECTOR will determine that recovery and cleanup efforts are complete, that impacts to the environment have been minimized when the nature and costs of various cleanup alternatives are considered, and that affected areas are adequately reclaimed. All DEQ monitoring costs shall be paid for by the OWNER.

Groundwater Monitoring Plan

In order to protect groundwater resources, the OWNER shall conduct pre- and post-construction monitoring of any wells or springs within 100 feet of the right-of-way. After the pipeline location has been approved, the OWNER would determine whether any wells or springs are within 100 feet of the right-of-way. The survey would be conducted by checking state well records, agency records, and personal communication with private LANDOWNERS and field review. Baseline field surveys of each well or spring would include a visual estimate of flow and water clarity, and field-measured temperature, electrical conductivity, and pH. The results of required surveys would be filed with the agencies before construction commences near these wells and springs.

After construction is complete, the wells and springs would be surveyed again for the same parameters to determine if construction has caused any impacts on the groundwater. If during construction any additional wells or springs are found within 100 feet of the right-of-way, the OWNER will sample these water sources, as described above. In the unlikely event that post-construction monitoring shows that construction had an adverse effect on the groundwater, the OWNER shall provide for an emergency potable water source, if needed, and provide for the necessary repairs, replacement, and/or relocation of the affected wells and springs to restore the supply system to its former capacity. If it is determined that there has been an impact on the quantity or quality of water available

from a well or spring within 100 feet of the pipeline right-of-way as a result of pipeline construction or operation, then the OWNER will attempt to restore the well or spring to its original capacity, as determined in the pre-construction survey, using all reasonable efforts and typical well and/or spring restoration techniques.

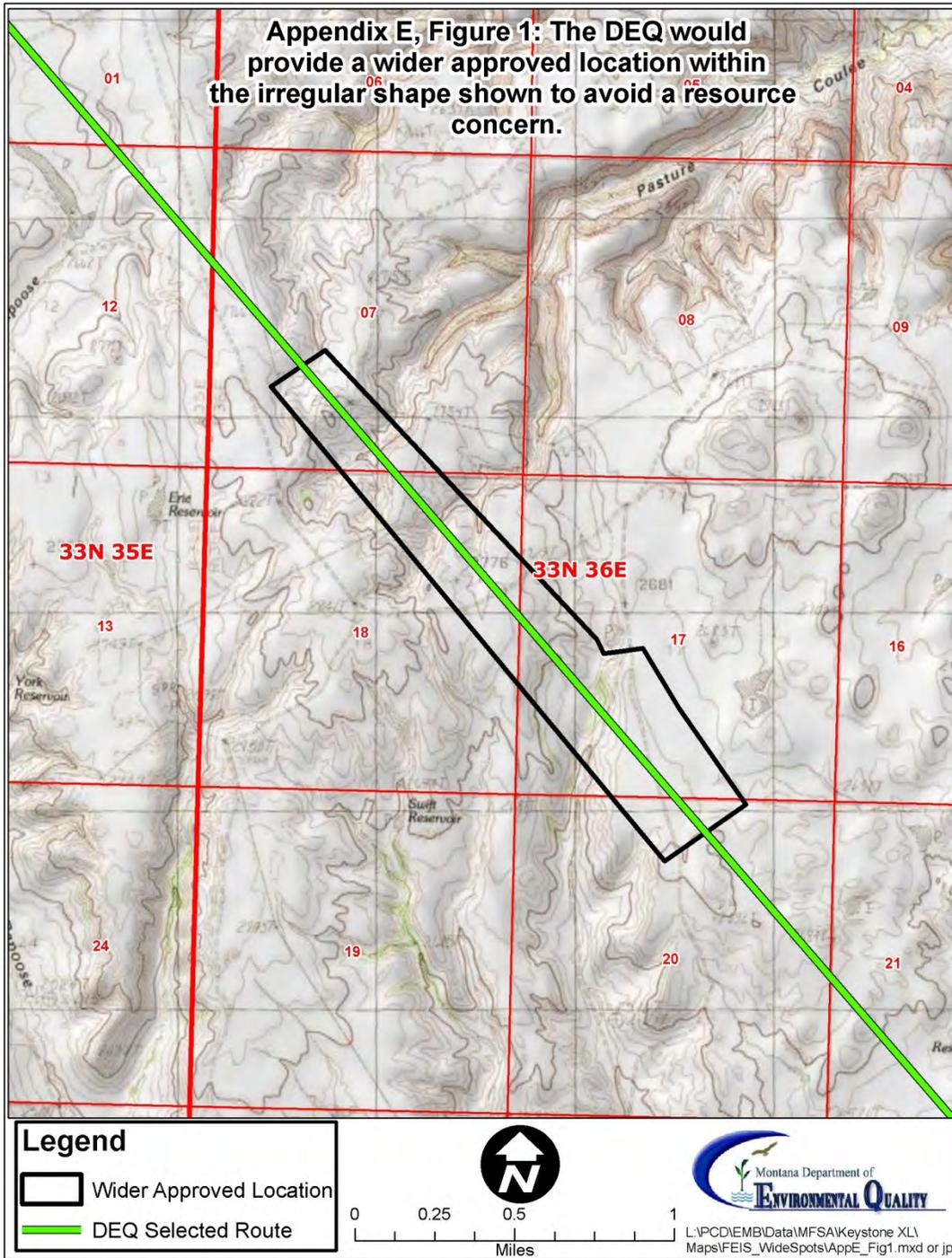
If a well cannot be returned to its original quality or capacity using all reasonable efforts and typical restoration techniques, the OWNER will install a new well to the LANDOWNER's reasonable satisfaction with characteristics similar to the well lost. If a spring cannot be returned to its original quality or capacity using all reasonable efforts and typical restoration techniques, the OWNER will install a new well to replace the spring as determined by mutual agreement between the OWNER and the LANDOWNER and/or water right holder; and negotiate with the LANDOWNER and/or water right holder appropriate damages.

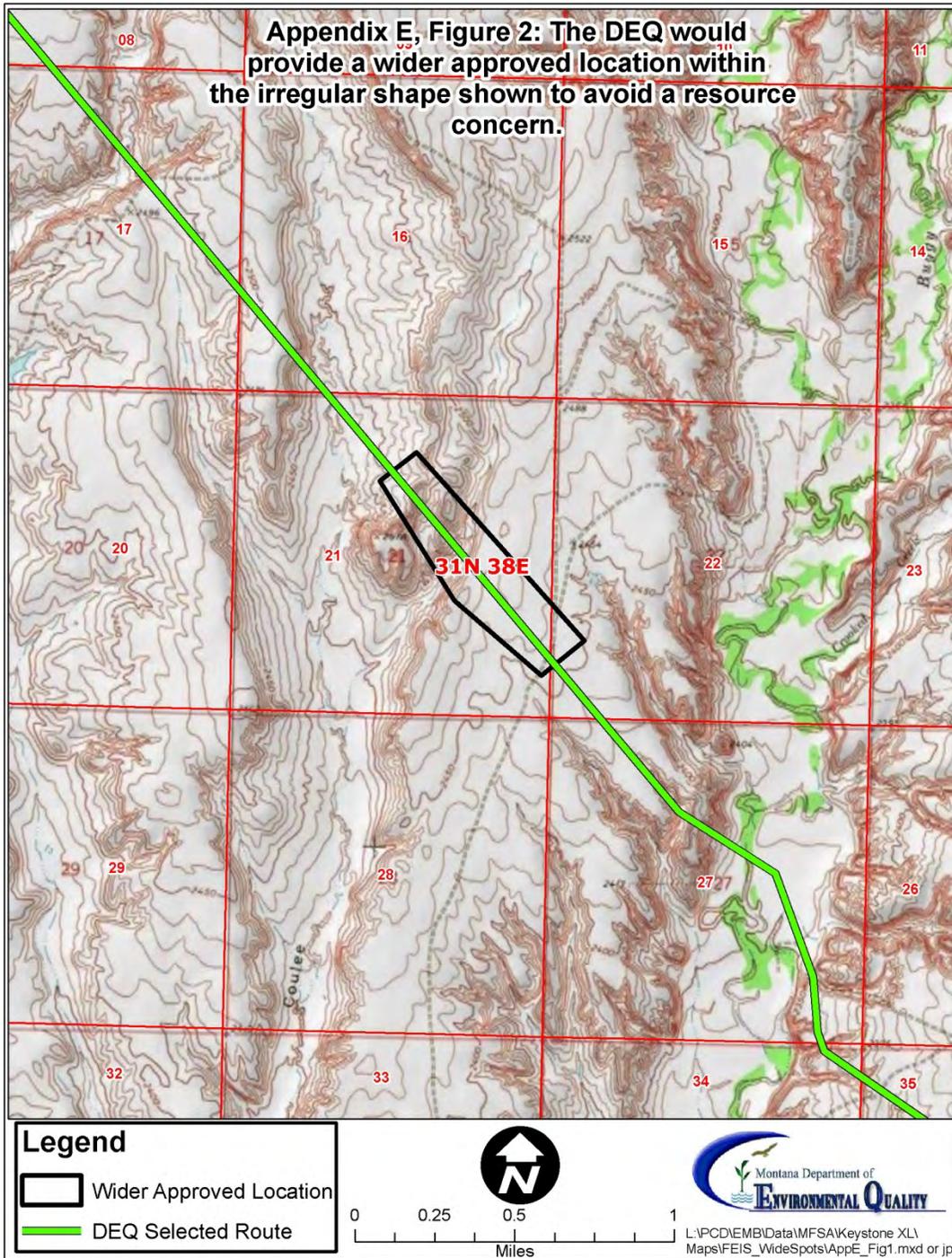
If it is not technically feasible after using all reasonable efforts to install a new well either at an existing or mutually agreeable alternate location, then the OWNER will negotiate with the LANDOWNER and/or water right holder appropriate damages to compensate for such loss.

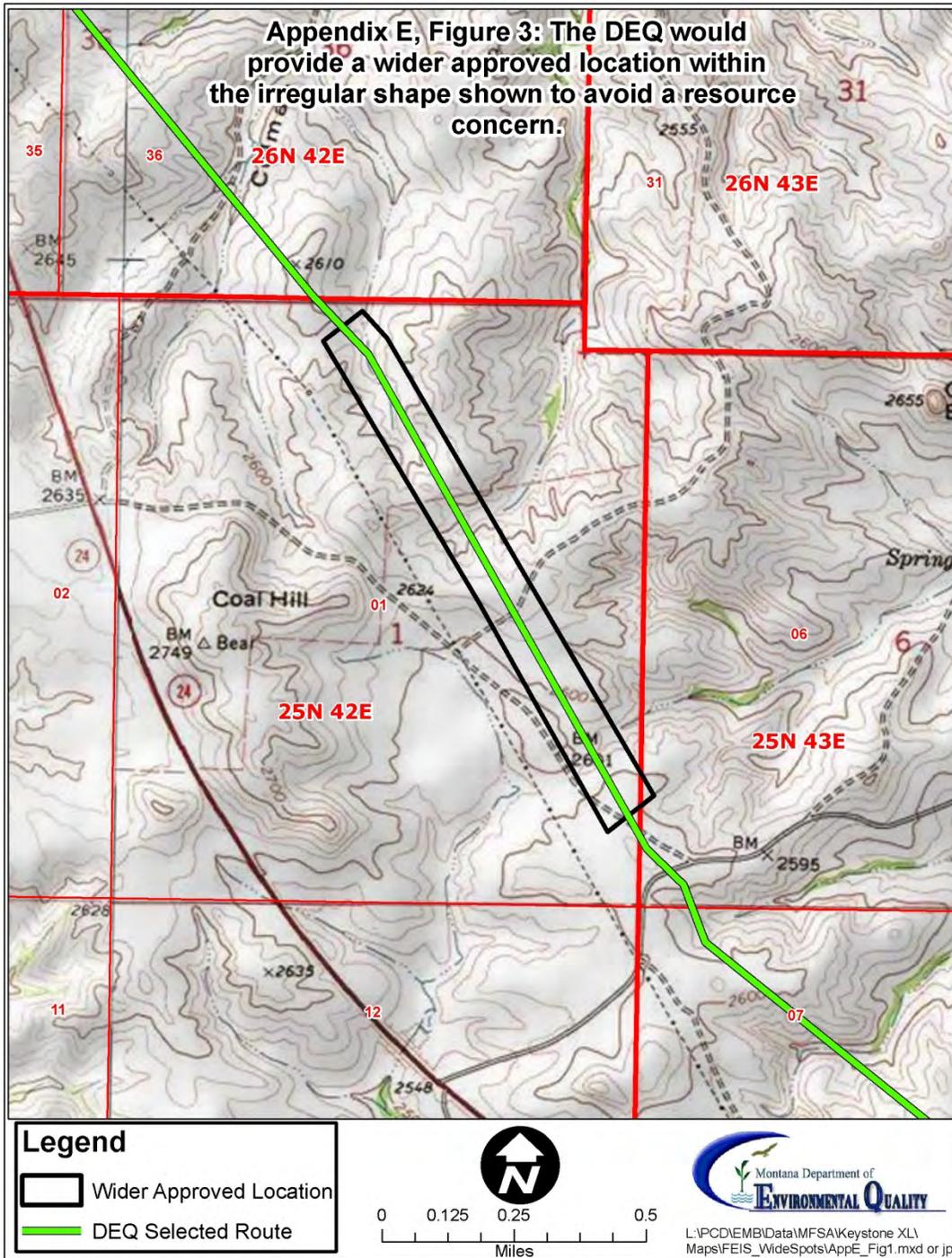
Prior to commencement of construction, the Monitoring Plan, including the Ground Water Monitoring Plan, must be approved by DEQ.

Appendix E: Variations in Approved Locations

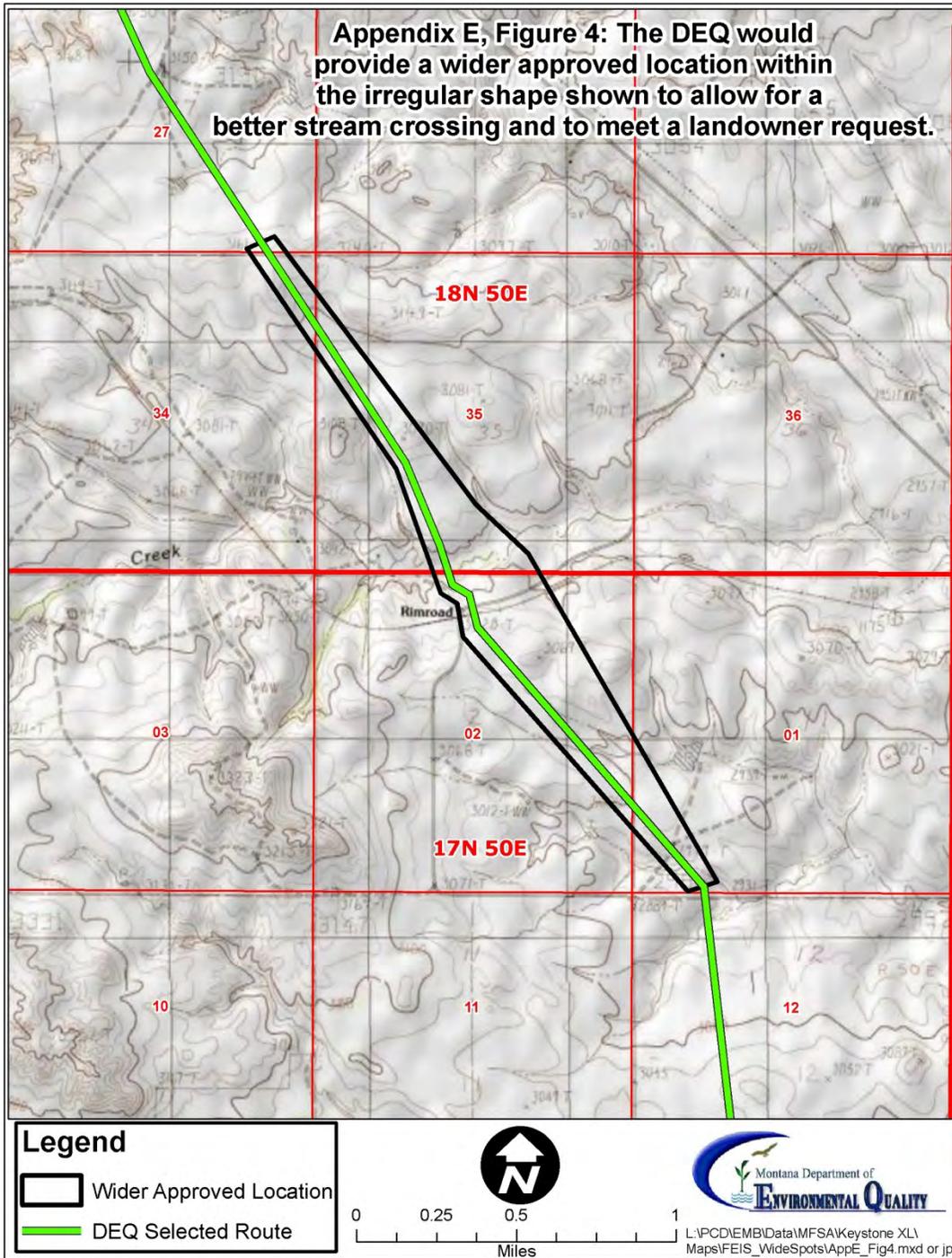
The approved locations shall be 250 feet on either side for the referenced centerline indicated on the maps included with the CERTIFICATE, except as noted below. Construction activities shall be conducted in the minimum area necessary for safe and prudent construction, in accordance with these specifications and indicated in TransCanada Keystone, L.P.'s (the OWNER) Major Facility Siting Act Application as amended prior to issuance of a Certificate of Compliance. In the areas indicated on the following maps, variations in the width of the approved location are granted to reduce impacts. Construction of the Project would occur within the areas shown on the attached maps.







Appendix E, Figure 4: The DEQ would provide a wider approved location within the irregular shape shown to allow for a better stream crossing and to meet a landowner request.



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Appendix F: Hydrostatic Test Discharge Plan

(To be approved by DEQ prior to beginning of testing.)

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APPENDIX G of ATTACHMENT 1

Information in this appendix is no longer current and has been removed.

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Appendix H: Paleontological Memorandum of Understanding

**MEMORANDUM OF UNDERSTANDING
FOR PALEONTOLOGICAL RESOURCE INVESTIGATIONS
ON THE MONTANA PORTION OF THE KEYSTONE XL PIPELINE PROJECT**

WHEREAS, in February 2010, the Montana Department of Environmental Quality (DEQ) received a complete application for a certificate of compliance from TransCanada Keystone Pipeline, LP (Keystone) for the portion of the Keystone XL Pipeline Project that is proposed to be constructed in Montana, hereinafter referred to as the Project. Keystone is required to obtain a certificate of compliance from DEQ prior to construction of the Project under the Major Facility Siting Act (MFSa); and

WHEREAS, the Area of Potential Effects (APE) for the Project includes a 300 foot-wide survey area that includes a 110-foot-wide construction corridor for the proposed pipeline as approved by DEQ. Finally, the APE includes all areas that are directly affected by construction of proposed pumping stations, stockpile yards, and other associated facilities; and

WHEREAS, the U.S. Department of State (DOS) is the lead federal agency responsible for administering the National Environmental Policy Act, the Endangered Species Act, and the National Historic Preservation Act; and

WHEREAS, the Bureau of Land Management (BLM), in accordance with the Federal Land Policy and Management Act (FLPMA 1976) is required to minimize adverse impacts on natural, environmental, scientific, cultural and other resources and values on federal land. Instruction Memorandum (IM) 2009-011 requires BLM to assess and mitigate potential impacts to paleontological resources on federal land; and

WHEREAS, DEQ is the lead state agency responsible for administering the Montana Environmental Policy Act and MFSa prior to issuance of a certificate of compliance; and

WHEREAS, the Montana Department of Natural Resources and Conservation (DNRC), in accordance with the Montana State Antiquities Act (Section 22-3-421, *et seq.*, M.C.A.), is required, in part, to assess and mitigate potential adverse effects to paleontological remains on agency managed state land; and

WHEREAS, the Montana State Historic Preservation Office (SHPO) in accordance with the Montana State Antiquities Act (Section 22-3-423(7), M.C.A.) shall cooperate and assist local, state, and federal government agencies in comprehensive planning that allows for the preservation of paleontological resources; and

WHEREAS, the Programmatic Agreement (PA) developed under Section 106 of the National Historic Preservation Act (NHPA) for the Keystone XL Project will maintain precedence over this MOU in regards to the identification and evaluation of paleontological resources that may have Traditional Cultural Property (TCP) value; and

WHEREAS, DEQ has consulted with the BLM, DOS, DNRC, SHPO and Keystone to secure concurrence with the terms of this Memorandum of Understanding; and

WHEREAS, the Bureau of Reclamation, National Park Service and the U.S. Corps of Engineers were invited to consult in the development of this Memorandum of Understanding and have declined to participate;

NOW THEREFORE, the following terms and conditions will govern the consideration of paleontological resources that may be affected by the Project.

STIPULATIONS AND METHODS OF INVESTIGATION:

- 1) Keystone has completed most of the paleontological record searches and survey work using BLM paleontological resource management guidelines (BLM Manual H-8270-1; BLM IM 2008-009; BLM IM 2009-011) using the services of a permitted and qualified paleontologist.
- 2) Keystone shall use the services of a qualified paleontologist (BLM Manual H 8270-1; IM 2009-011) to gather and evaluate information concerning the existence and location of paleontological resources within the APE as needed.
- 3) Where required, Keystone shall submit a written request under ARM 17.20.804(2) to conduct a paleontological literature and file search with the Montana SHPO for a one (1) mile wide area (0.5 mile on either side of the centerline) of the route and associated facility locations as defined by 75-20-104(3)(a), M.C.A., prior to conducting field surveys. Keystone shall conduct a concurrent file search with the appropriate field offices of the BLM and with the DNRC for state-owned lands.
- 4) Keystone's paleontological consultant shall continue to maintain a valid BLM Paleontological Resources Use Permit and any other permits required under federal or state law.
- 5) Where surveys have not been completed, Keystone shall complete a pedestrian survey prior to construction. Keystone shall conduct the pedestrian survey at an intensity required under BLM IM 2009-011.
- 6) Keystone shall monitor construction in those portions of the APE with unknown, moderate, high, and very high paleontological potential (classes 3a, 3b, 4, or 5) based on the Potential Fossil Yield Classification System (PFYC). Areas of very low to low potential (1 or 2) will not be subject to pedestrian survey. Areas of moderate potential (3a), if discovered, will be spot checked only. Areas with unknown potential (if any) (3b), and with high and very high potential (4 and 5) will be subject to a 100% pedestrian survey of bedrock exposures. Existing access roads that have been "crowned and ditched" do not need to be surveyed.
- 7) Keystone shall record and evaluate paleontological resources located in the APE on the forms and within the standards specified in the Montana SHPO

Planning Bulletin No. 21, as well as BLM Manual H-8270-1, BLM IM 2008-009, and BLM IM 2009-011.

- 8) Keystone shall evaluate paleontological resources located within the APE for scientific significance as outlined in the BLM IM 2009-011. In areas that have been previously inventoried in which the agency with jurisdiction is satisfied with the work, no additional inventory is required.
- 9) Prior to DEQ's issuance of a certificate of compliance, Keystone will draft and submit for agency review and approval, a comprehensive Paleontological Resources Mitigation Plan that describes: 1) the measures developed in consultation with the consulting parties to minimize and mitigate the adverse effects of the Project's construction activities on paleontological resources; 2) the manner in which these measures will be carried out; 3) a schedule for their implementation; and 4) how paleontological discoveries within each spread planned for Montana will be handled. The Paleontological Resources Mitigation Plan will be included within Keystone's Plan of Development and DEQ's Environmental Specifications.

- a. Keystone will make a reasonable and good faith effort to complete implementation of the Paleontological Resources Mitigation Plan approved by the cooperating agencies prior to beginning construction of any spread. If it is not possible to meet this schedule, Keystone will develop a Coordination Plan that establishes how appropriate treatment will be determined and implemented during construction of the respective spread.

- b. The Mitigation Plan will specify the precise locations within the Project APE where monitoring is required, and will describe procedures for fossil salvage and paleontological data recordation for non-extensive, isolated scientifically significant fossil discoveries. These types of discoveries are anticipated to be the most common during the course of construction as is typical during pipeline construction projects, and they can be quickly documented and collected with minimal construction delays. The Mitigation Plan will include agency or land owner notification procedures as appropriate, and procedures that construction personnel should follow in the event that an unexpected fossil discovery is made in an area that is not monitored by a paleontologist. The Mitigation Plan will also include procedures to be followed in the event of an extensive paleontological discovery as described in "c" below.

- c. Extensive paleontological discoveries are defined as discoveries that are unanticipated and cannot be quickly mitigated due to their large size and/or complexity (e.g., partial or complete associated dinosaur skeleton or extensive vertebrate microfossil accumulation). For extensive paleontological discoveries, a Locality-Specific Paleontological Mitigation Plan will be developed and approved by the pertinent agency

and SHPO. The Locality-Specific Paleontological Mitigation Plan will identify the specific research questions to be addressed with an explanation of their scientific significance, the paleontological methods to be used, and provisions for curation, public interpretation and education, subject to confidential restrictions, if any.

d. Keystone will submit the draft Locality Specific Paleontological Mitigation Plan to consulting parties for a seven (7) working day review. Keystone shall address timely comments and recommendations submitted by consulting parties in preparation of the draft Locality Specific Paleontological Mitigation Plan.

e. When it has addressed all of the comments and recommendations, Keystone will submit the Final Locality Specific Paleontological Mitigation Plan to all consulting parties and carry out the recommended mitigative measures.

- 10) BLM, DEQ, SHPO, DNRC, and DOS will provide information in their possession regarding paleontological materials to aid the other agencies in satisfaction of their respective responsibilities.
- 11) All parties to this agreement will have jurisdiction of paleontological resources identified on lands which they manage. All parties to this agreement will be invited to comment on all paleontological resources identified as a result of this agreement.

Execution of this Memorandum of Understanding by BLM, SHPO, DEQ, DNRC, DOS, and Keystone evidences that all parties have reviewed and commented upon the terms and conditions guiding the paleontological resource investigation for the Keystone XL Pipeline Project within the state of Montana.

**MEMORANDUM OF UNDERSTANDING
FOR PALEONTOLOGICAL RESOURCE INVESTIGATIONS
ON THE MONTANA PORTION OF THE KEYSTONE XL PIPELINE PROJECT**

U.S. Bureau of Land Management

Date

U.S. Department of State

Date

TransCanada Keystone XL Pipeline, L.P.

Date

Montana State Historic Preservation Office

Date

Montana Dept. of Environmental Quality

Date

Montana Dept. of Natural Resources and Conservation

Date

Appendix I: Rehabilitation Plan
Erosion Control, Reclamation, and Revegetation Plan

The erosion control, reclamation, and revegetation procedures to be followed by the OWNER are detailed in the Montana Storm Water Pollution Prevention Plan for Keystone XL Pipeline Project construction activities.

Appendix J: Areas Where Additional Restrictions in the Timing of Construction Apply

The timing of construction activities at stream crossings will not occur during spring runoff.

Within big game winter ranges shown on Figure 1, the STATE INSPECTOR may impose timing restrictions if construction activities extend beyond November 15. In these areas, the STATE INSPECTOR will determine the need for restrictions based upon the severity of winter conditions and consultation with FWP biologists.

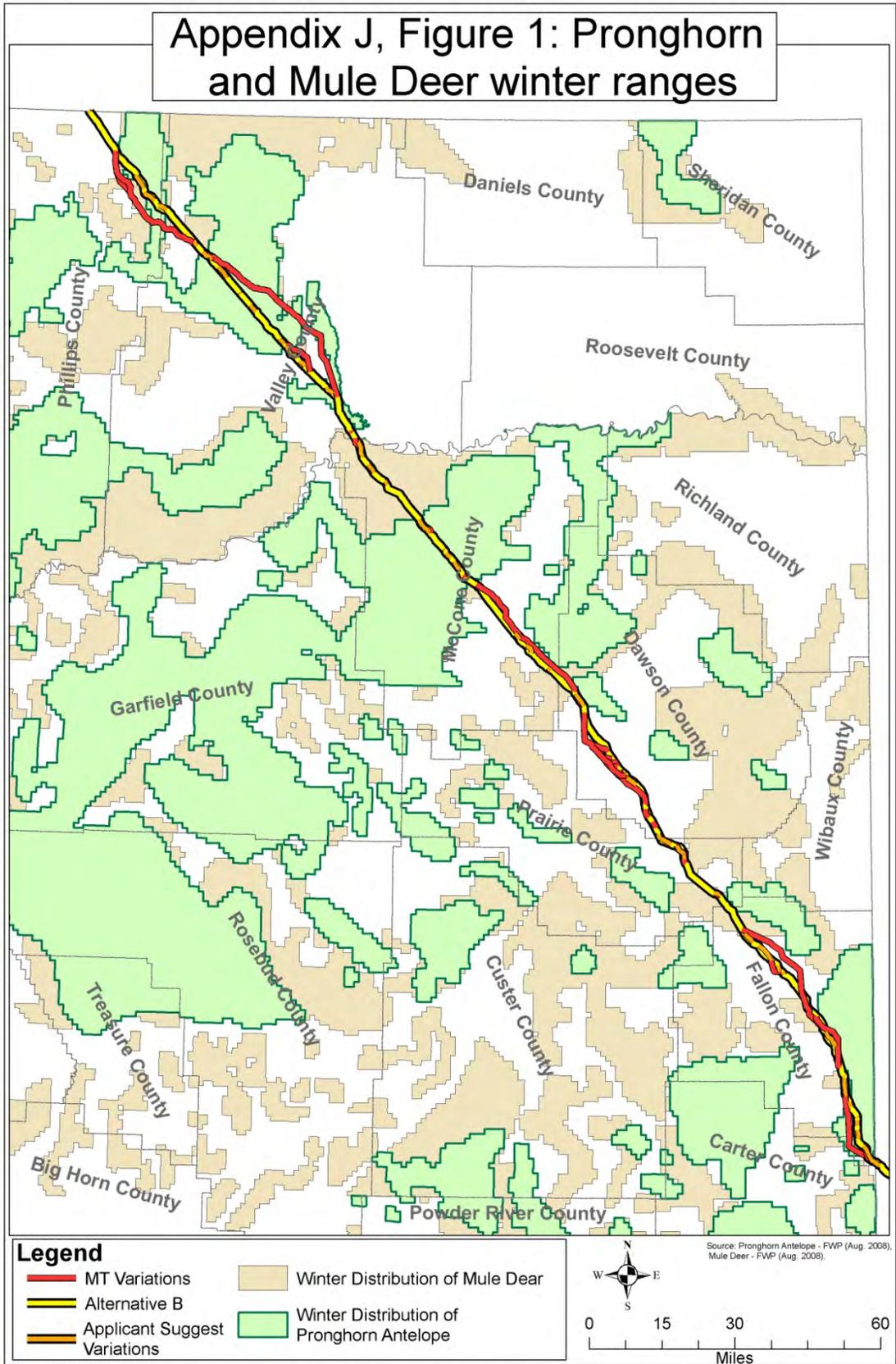
Other restrictions on the timing of construction are required in Section 2.3.2 and 2.3.3 of these specifications for excessively wet conditions.

Timing restrictions for grouse and other species are described in Appendix A.

Prior to construction, the OWNER shall submit a Winterization Plan and implement the plan if winter conditions prevent reclamation completion until spring. This plan will be updated by the OWNER as field conditions change during construction and updates will be provided to the STATE INSPECTOR. In order to insure backfilled materials are adequately compacted, construction will not occur when spoils and soils are frozen, unless otherwise permitted by the STATE INSPECTOR. If there is more than six inches of snow or ice within the trench, then that segment of trench will not be backfilled until snow or ice has been removed or melted, unless otherwise agreed in writing to by the affected LANDOWNER. This written approval will be provided to the STATE INSPECTOR.

If winter conditions are encountered during final reclamation, final reclamation may be delayed until the following spring, unless otherwise agreed to by the affected LANDOWNER in writing. A copy of such a written agreement will be provided to the STATE INSPECTOR. In either case, the standards listed in Section 3.2 shall be used to judge the success of reclamation.

Appendix J, Figure 1: Pronghorn and Mule Deer winter ranges



Appendix K: Noxious Weed Management Plan

Final locations of wash or cleaning stations will be indicated below after a route is selected by DEQ but prior to the start of construction.

Table K-1. Noxious Weed Wash or Cleaning Station Sites and Potential Water Sources for Wash or Cleaning Stations in Montana

Wash/Cleaning Station	Location	Milepost	Direction of Work	Water Sources

Appendix L: Requirements at Stream Crossings

At stream crossings the OWNER shall calculate the depth of scour based on a 100-year flood event and the size of sediment found at the crossing. The OWNER shall bury the pipeline below this calculated depth to help ensure that floods and lateral channel movement do not expose the pipeline over its lifetime. The burial depth shall be extended laterally as approved by DEQ after field inspection of the crossing site. For streams where horizontal directional drill crossings would not occur, crossings must be conducted during low flows prior to or following spring runoff.

As required in Section 2.10.3 of these Environmental Specifications, at least 30 days prior to constructing the facility or associated facilities at a perennial stream crossing or stream containing a fish species of special concern, DEQ shall conduct an on-site inspection of the crossing. The purpose of the inspection shall be to determine the final location of the crossing, the crossing method, width and depth of burial to be used, and site-specific reclamation measures. The following parties shall be invited to attend this inspection: representatives for the OWNER, FWP, representatives of the local conservation district(s), and the LANDOWNER or land management agency.

DEQ began these inspections in October of 2010 and other inspections are expected to occur in 2011 or 2012 if the Project is approved. Note that in addition to perennial streams, several intermittent streams with sizeable drainage areas above the proposed crossings were examined in October. The following notes summarize the results of the 2010 inspections. Site-specific plans must still be submitted for these streams by the OWNER's representatives.

The winter of 2010-2011 resulted in higher than normal low elevation snowpack in Eastern Montana. Rains during the spring of 2011 added to snow melt, causing flooding along many of the streams and rivers crossed by the proposed Project. Consequently DEQ and the OWNER will jointly recheck channel morphology at each crossing examined in 2010 and make adjustments necessary as determined by DEQ to minimize impacts.

In the following stream specific discussions, various burial depths are specified. These burial depths at stream crossings take into account the calculated depth of stream channel erosion and scour that may occur in a flood event. Most of these burial depths are deeper than required by federal regulations. Burying the pipeline below scour depth helps to prevent future construction activities in and near streams to rebury the pipeline should it be exposed. The burial depths described below assume that alluvial materials are encountered. If bedrock is encountered during construction, the pipeline would be buried to a minimum of two feet below the top of the bedrock surface.

Note that the mile postings described below may change based on final route selection. Similarly, final route selection may negate the need to cross certain streams and additional inspections could be necessary on other streams.

Unless otherwise noted, dam and pump or dam and flume methods will be used to construct the crossings if water is present at the time of construction.

Date: Oct. 19, 2010
Stream Name: Rock Creek
Approximate Milepost: 39.1
FWP fisheries value class: 3

Are special status fish or amphibians present? No records were found in FWP's MFISH database and no special status species were observed during the inspection, but pearl dace have been reported.

If so, timing of spawning and rearing? Not applicable (NA).

Are special timing restrictions needed? Other than to construct the crossing outside the spring runoff period, no additional timing restrictions are proposed beyond those listed in the Environmental Specifications.

What is the depth of burial based on stream channel scour calculations? Burial depth would be eight feet below the minimum thalweg elevation (the low point in the stream channel cross section).

What is the width of deep burial to avoid pipeline exposure due to stream meander? Increased burial depth should be maintained for at least 125 feet from the base of the steep bank on the north side of Rock Creek to above the low bank (beyond the cottonwood tree located downstream of the crossing) on the south side of the stream crossing.

How will streambanks be stabilized following construction? Bank hardening with riprap is not allowed. During initial reclamation following construction disturbance, erosion control blankets are to be installed on the stream on the streambanks and the stream banks are to be revegetated. If channel migration occurs in the future beyond the 125 feet deep burial, the pipeline would be lowered in place to protect it from exposure.

Should clearing of riparian or wetland vegetation be minimized? Yes, minimize the clearing of riparian and wetland vegetation to the extent reasonably possible, by reducing the ROW to 85 feet per p. 48 of the November 2008 Construction, Mitigation, and Reclamation Plan.

Should the right of way width be reduced at the approaches to the stream crossing? Yes, reduce the ROW width at the approaches to the crossing to 85 feet per p. 48 of the November 2008 Construction, Mitigation, and Reclamation Plan.

Are additional valves recommended? No.

Is equipment cleaning required before and after work in stream due to presence of exotic species? Equipment is to be cleaned and dried prior to moving to the ROW.

Will construction dewatering be necessary? Possibly.

Will hydrostatic test water be diverted from this stream or river? NA (not applicable).

Are there any site specific issues or mitigating measures? Main line equipment is to cross the creek on a temporary bridge.

Are rookeries present within 500 M of the crossing? None were observed during the inspection.

Date: Oct. 19, 2010
Stream Name: Willow Creek
Approximate Milepost: 40.5
FWP fisheries value class: 4

Are special status fish or amphibians present? No records of special status fish or amphibians were found in FWP's MFISH database for this stream and no special status species were observed during the inspection, but pearl dace have been reported.

If so, timing of spawning and rearing? NA.

Are special timing restrictions needed? Other than to construct the crossing outside the spring runoff period, no additional timing restrictions are proposed beyond those listed in the Environmental Specifications.

What is the depth of burial based on stream channel scour calculations? Burial depth would be at least eight feet below the minimum thalweg elevation.

What is the width of deep burial to avoid pipeline exposure from stream meander? This deeper burial would be maintained for approximately 100 feet from the base of the tall west bank to the southeast.

How will streambanks be stabilized following construction? No bank hardening with riprap is allowed. Erosion control blankets are to be installed during initial reclamation on stream banks. In addition, stream banks are to be planted with willow sprigs installed to just below the water table on each side of the creek. The disturbed stream banks also are to be reseeded.

Should clearing of riparian or wetland vegetation be minimized? Yes, to the extent possible, by reducing the ROW to 85 feet per p. 48 of the November 2008 Construction, Mitigation, and Reclamation Plan.

Should the right of way width be reduced at the approaches to the stream crossing? Yes, reduce to 85 feet per p. 48 of the November 2008 Construction, Mitigation, and Reclamation Plan.

Are additional valves recommended? No.

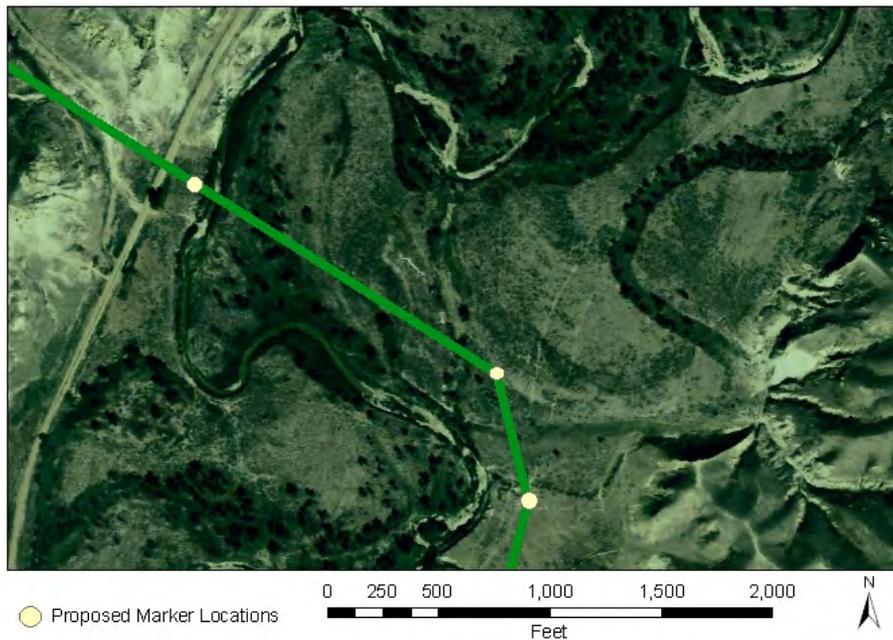
Is equipment cleaning required before and after work in stream due to presence of exotic species? Equipment is to be cleaned and dried prior to moving to the ROW.

Will construction dewatering be necessary? Possibly.

Will hydrostatic test water be diverted from this stream or river? Not applicable.

Are there any site specific issues or mitigating measures? Main line equipment is to cross the creek on a temporary railroad bridge. In the past, Willow Creek has meandered across most of the valley. In case the stream should begin to meander during the life of the pipeline, the pipeline could be exposed beyond the area slated for deep burial. To monitor this possibility, aerial markers are to be added on west bank, another about 1,500 feet east of the crossing at the turn in the pipeline, and a third about 600 feet further south, as shown on the attached figure. The location of these markers may change if MTV-3 is selected. The stream channel and pipeline location (indicated between markers) would be monitored from the air or ground to determine if stream meander is taking place that would threaten the pipeline. If monitoring indicates stream meander may encroach on the pipeline, the pipeline would be lowered in place to ensure its integrity.

Are rookeries present within 500 M of the crossing? Rookeries were not observed during the inspection.



Date: Oct. 19, 2010
Stream Name: Milk River
Approximate Milepost: 83
FWP fisheries value class: 1

Are special status fish or amphibians present? Yes.

If so, timing of spawning and rearing? Spring-early summer.

Are special timing restrictions needed? Other than to construct the crossing outside the spring runoff period, no additional timing restrictions are proposed beyond those listed in the Environmental Specifications.

What is the depth of burial based on stream channel scour calculations? Depth of scour is estimated to be six feet below the minimum thalweg elevation. Horizontal directional drills are proposed to be about 40 feet below the thalweg, well below scour depth.

What is the width of deep burial to avoid pipeline exposure from stream meander? See the drawing of the crossing. The drilled crossing would be about 1,234 feet long from about 580 feet north of the Milk River to about 600 feet south of the river.

How will streambanks be stabilized following construction? Because this crossing is proposed as a horizontal directional drill, the streambanks should not be disturbed by pipeline construction.

Should clearing of riparian or wetland vegetation be minimized? Yes, to the extent possible, recognizing that the set up for a horizontal directional drill will need more space in the riparian zone than a conventional crossing.

Should the right of way width be reduced at the approaches to the stream crossing? Yes, to the extent possible, recognizing that the set up for a horizontal directional drill will need more space in the riparian zone than a conventional crossing.

Are additional valves needed? Valves north and south of the river are proposed and located with a spacing that meet special condition requirements and provide adequate protection to the nearby downstream public water supply. No additional valves are required.

Is equipment cleaning required before and after work in stream due to presence of exotic species? Equipment is to be cleaned and dried prior to moving to the ROW. Canada thistle and leafy spurge is present so equipment must be cleaned before moving away from the drill area.

Will construction dewatering be necessary? Unlikely.

Will hydrostatic test water be diverted from this stream or river? Not applicable.

Are there any site specific issues or mitigating measures? Main line equipment is to cross the river on a temporary bridge that would span the river or use existing bridges nearby. This temporary bridge may require off ROW access. Approaches to the temporary bridge will likely require grading, and these disturbances are to be reclaimed and revegetated.

Valley County's floodplain administrator has indicated the proposed pipeline would have no adverse effects on the Milk River floodplain (Shipp 2011). If future channel migration occurs beyond the deep burial zone associated with the drilled crossing, the pipeline would be lowered in place or a new drill conducted to prevent pipeline exposure.

All drilling mud and cuttings are to be disposed of in a manner that they will not reach or be transported by runoff to state waters.

Are rookeries present within 500 M of the crossing? None were observed during the inspection.

Reference:

Shipp, Cameron. 2011. Letter dated February 16, 2011 from Cameron Shipp, Valley County Floodplain administrator, to Dan Nebel, professional geologist, Terracon Consultants, Inc. Billings.

Date: Oct. 19, 2010
Stream Name: Missouri River
Approximate Milepost: 89
FWP fisheries value class: 1

Are special status fish or amphibians present? Yes.

If so, timing of spawning and rearing? Spring-early summer.

Are special timing restrictions needed? No.

What is the depth of burial based on stream channel scour calculations? Depth of scour is estimated to be five feet below the minimum thalweg elevation. A horizontal directional drill is proposed to be about 37 feet below the thalweg, well below scour depth.

What is the width of deep burial to avoid pipeline exposure from stream meander? See the drawing of the crossing. The drilled crossing would be about 2,482 feet long, including the recommended extension of the drill another 450 feet on the south side of the river to place the pipeline well below a high water channel located there.

How will streambanks be stabilized following construction? Bank hardening with riprap is not allowed. The entry and exit points for the horizontal directionally drilled crossing should be located outside the likely stream channel meander zone.

Should clearing of riparian or wetland vegetation be minimized? Yes, clearing of trees and shrubs is to be minimized to the extent possible, recognizing that the set up for a horizontal directional drill will need more space in the riparian zone than a conventional crossing. The entry/exit point on the south side of the river should be south of the cottonwood trees associated with the high water channel, to preserve these trees.

Should the right of way width be reduced at the approaches to the stream crossing? Yes, to the extent possible, recognizing that the set up for a horizontal directional drill will need more space in the riparian zone than a conventional crossing.

Are additional valves required? Yes, an additional motor operated block valve is required on the north side of the Missouri River at either approximate milepost 87.3 or 88.6 and an additional check valve is required on the south side of the Missouri River at approximate milepost 90.1.

Is equipment cleaning required before and after work in stream due to presence of exotic species? Equipment is to be cleaned and dried prior to moving to the ROW and before leaving the drill side on the south side of the river.

Will construction dewatering be necessary? Construction dewatering is unlikely.

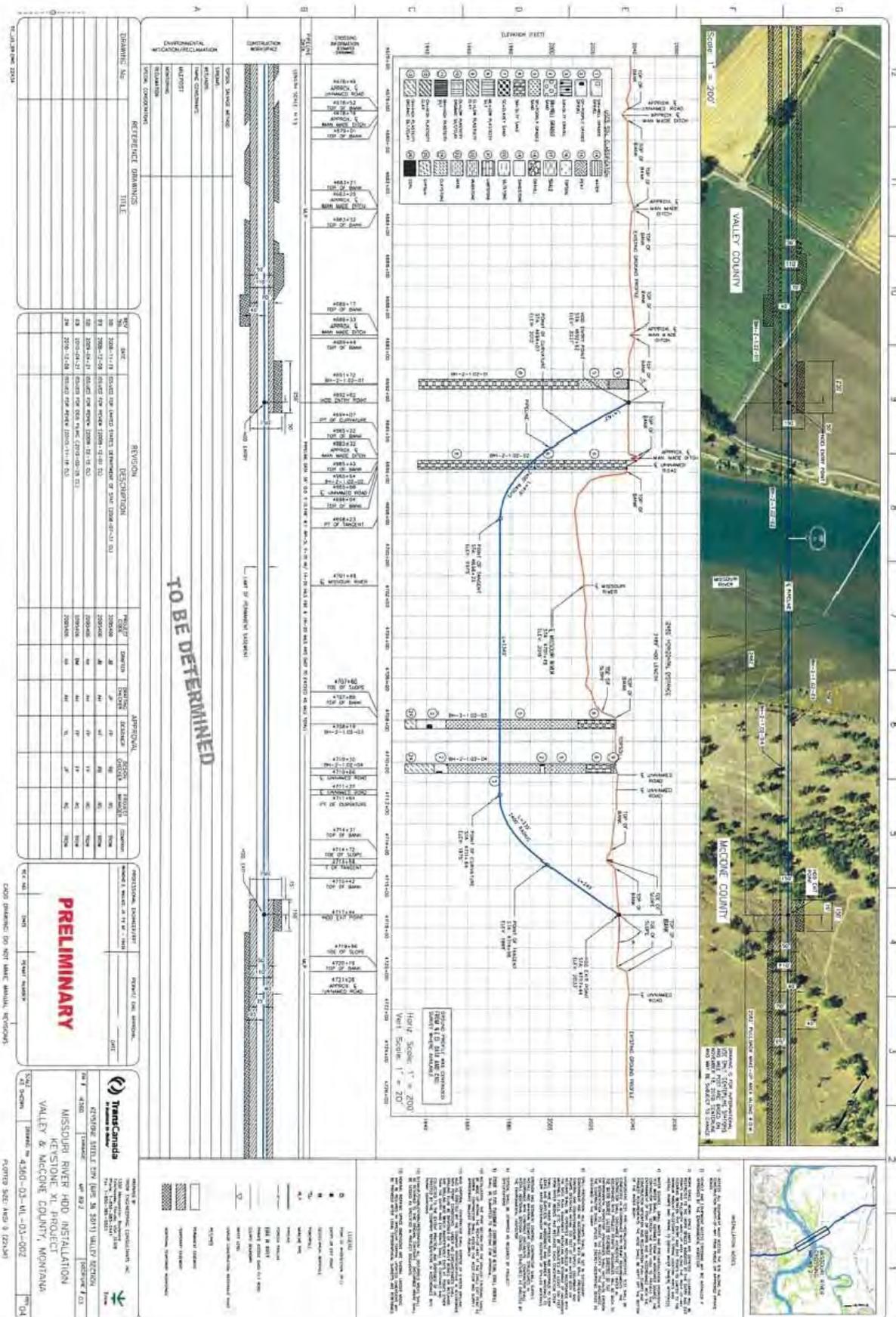
Will hydrostatic test water be diverted from this stream or river? Yes. The diversion rate for hydrostatic testing is not yet determined. Keystone will have to apply for and obtain a water use permit from the Department of Natural Resources and Conservation.

Recognize that Montana Fish, Wildlife, and Parks holds an instream flow reservation that may restrict the time and rate at which water is diverted from the Missouri River.

Are there any site specific issues or mitigating measures? Main line equipment must drive around this crossing on existing roads.

All drilling mud and cuttings are to be disposed of in a manner that they will not reach or be transported by runoff to state waters.

Are rookeries present within 500 M of the crossing? None were observed during the inspection.



ENVIRONMENTAL MITIGATION/RECLAMATION

MITIGATION	RECLAMATION

REFERENCE DRAWINGS

DRAWING No.	TITLE

REVISION

NO.	DATE	DESCRIPTION

APPROVAL

DESIGNER	CHECKED	APPROVED

PRELIMINARY

MISSOURI RIVER HOD INSTALLATION
 VALLEY & MCCONE COUNTY, MISSOURI

TransCanada
 4300-03-NL-03-002

TO BE DETERMINED

- NOTES:**
1. THE DRAWING IS FOR THE PROPOSED HOD INSTALLATION AND IS NOT TO BE CONSIDERED A FINAL DESIGN.
 2. THE HOD INSTALLATION IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE MISSOURI RIVER COMMISSION REGULATIONS.
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Date: Oct. 20, 2010

Stream Name: Strupel Coulee Tributary

Approximate Milepost: 93.9

FWP fisheries value class: The stream is not rated. This is a very small intermittent stream with almost no water flowing at the time of the inspection.

Are special status fish or amphibians present? No records were found in FWP's MFISH database and no special status species were observed during the inspection.

If so, timing of spawning and rearing? NA.

Are special timing restrictions needed? Other than to construct the crossing outside the spring runoff period, no additional timing restrictions are proposed beyond those listed in the Environmental Specifications.

What is the depth of burial based on stream channel scour calculations? A five foot burial depth below the minimum thalweg elevation is proposed to take into account head cutting observed in the drainage.

What is the width of deep burial to avoid pipeline exposure from stream meander? The five foot burial depth is to be maintained for at least 30 feet total, extending about 15 feet on each side of the stream channel.

How will streambanks be stabilized following construction? Bank hardening with riprap is not allowed. During initial reclamation following construction disturbance, erosion control blankets are to be installed on the stream banks, and the stream banks are to be reseeded and revegetated.

Should clearing of riparian or wetland vegetation be minimized? Yes, to the extent possible, by reducing the ROW to 85 feet per p. 48 of the November 2008 Construction, Mitigation, and Reclamation Plan. Save as many of the large shrubs as possible. Flag the larger trees as save trees.

Should the right of way width be reduced at the approaches to the stream crossing? Yes, reduce to 85 feet per p. 48 of the November 2008 Construction, Mitigation, and Reclamation Plan.

Are additional valves needed? No.

Is equipment cleaning required before and after work in the stream due to presence of exotic species? Equipment is to be cleaned and dried prior to moving to the ROW.

Will construction dewatering be necessary? Possibly.

Will hydrostatic test water be diverted from this stream or river? Not applicable.

Are there any site specific issues or mitigating measures? Main line equipment is to cross the creek on a temporary bridge.

Rookeries present within 500 M of the crossing? None were observed during the inspection.

Date: Oct. 20, 2010

Stream Name: Jorgenson Coulee Tributary

Approximate Milepost: 94.9

FWP fisheries value class: Not rated. No flowing water was present at the time of the inspection.

Are special status fish or amphibians present? No records were found in FWP's MFISH database and no special status species were observed during the inspection.

If so, timing of spawning and rearing? NA.

Are special timing restrictions needed? Other than to construct the crossing outside the spring runoff period, no additional timing restrictions are proposed beyond those listed in the Environmental Specifications.

What is the depth of burial based on stream channel scour calculations? The pipeline would be buried five feet below the bottom of the scour hole on the downstream side of the construction ROW.

What is the width of deep burial to avoid pipeline exposure from stream meander? The five foot burial depth below the thalweg would be maintained across the valley bottom for about 40 feet total, beginning 15 feet from the north side of the creek and extending 25 feet on the south side.

How will streambanks be stabilized following construction? Bank hardening with riprap is not allowed. During initial reclamation following construction disturbance, erosion control blankets are to be installed on the stream banks, and the stream banks are to be reseeded and revegetated.

Should clearing of riparian or wetland vegetation be minimized? Yes, clearing is to be minimized to the extent possible by reducing the ROW to 85 feet per p. 48 of the November 2008 Construction, Mitigation, and Reclamation Plan. Flag and save as many of the green ash trees as possible.

Should the right of way width be reduced at the approaches to the stream crossing? Yes, reduce to 85 feet per p. 48 of the November 2008 Construction, Mitigation, and Reclamation Plan.

Are additional valves needed? No.

Is equipment cleaning required before and after work in stream due to presence of exotic species? Equipment is to be cleaned and dried prior to moving to the ROW.

Will construction dewatering be necessary? Possibly.

Will hydrostatic test water be diverted from this stream or river? Not applicable.

Are there any site specific issues or mitigating measures? Main line equipment is to cross the creek on temporary matting or, if flowing water is present, on a temporary bridge.

Are rookeries present within 500 M of the crossing? None were observed during the inspection.

Date: Oct. 20, 2010

Stream Name: East Fork Prairie Elk Creek (close to the original crossing location just southwest of a deep pool).

Approximate Milepost: 125

FWP fisheries value class: 5. Flowing water was not present at the time of the inspection.

Are special status fish or amphibians present? No records were found in FWP's MFISH database and no special status species were observed during the inspection.

If so, timing of spawning and rearing? NA.

Are special timing restrictions needed? Other than to construct the crossing outside the spring runoff period, no additional timing restrictions are proposed beyond those listed in the Environmental Specifications.

What is the depth of burial based on stream channel scour calculations? Burial depth would be eight feet below the minimum thalweg elevation (the low point in the stream channel cross section).

What is the width of deep burial to avoid pipeline exposure from stream meander? Increased burial depth would be extended for approximately 70 feet across the low channel bottom.

How will streambanks be stabilized following construction? Bank hardening with riprap is not allowed. During reclamation, erosion control blankets are to be installed on the stream banks, and the stream banks are to be reseeded and revegetated.

Should clearing of riparian or wetland vegetation be minimized? Yes, to the extent possible by reducing the ROW to 85 feet per p. 48 of the November 2008 Construction, Mitigation, and Reclamation Plan.

Should the right of way width be reduced at the approaches to the stream crossing? Yes, reduce to 85 feet per p. 48 of the November 2008 Construction, Mitigation, and Reclamation Plan.

Are additional valves recommended? No.

Is equipment cleaning required before and after work in stream due to presence of exotic species? Equipment is to be cleaned and dried prior to moving to the ROW.

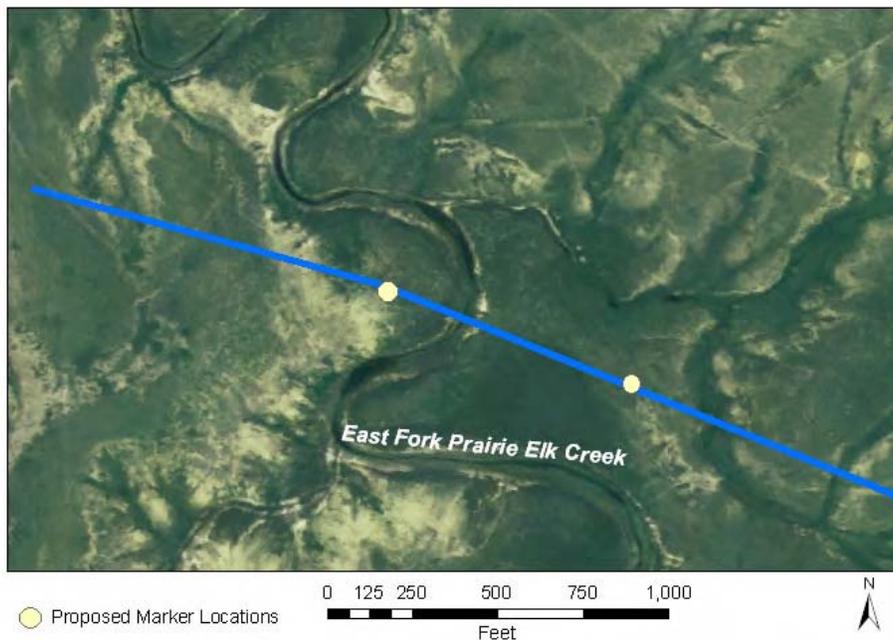
Will construction dewatering be necessary? Possibly.

Will hydrostatic test water be diverted from this stream or river? Not applicable.

Are there any site specific issues or mitigating measures? Main line equipment is to cross the creek on temporary matting if flowing water is not present. If flowing water is present, then equipment would use a temporary bridge. Do not use the MTV-5 alignment as this puts the crossing at the deepest point in the pool, making a dam and pump or dam and flume crossing more difficult.

Add aerial markers on the east and west sides of the creek, as shown on the attached figure. Using these markers, the crossing would be monitored from the air during regularly scheduled aerial inspections, or if necessary from the ground, to determine if stream meander is taking place. If monitoring indicates stream meander may encroach on the pipeline, the pipeline would be lowered in place below scour depth to ensure its integrity.

Are rookeries present within 500 M of the crossing? None were observed.



Date: Oct. 22, 2010

Stream Name: Redwater River. Note that during the field inspection the crossing alignment was adjusted, as noted on the attached figure, to avoid a tall stream bank. The new stream crossing location will be visited and surveyed in spring 2011 to establish revised burial recommendations.

Approximate Milepost: 147
FWP fisheries value class: 2

Are special status fish or amphibians present? Yes.

If so, timing of spawning and rearing? Spring/summer.

Are special timing restrictions needed? Other than to construct the crossing outside the spring runoff period, no additional timing restrictions are proposed beyond those listed in the Environmental Specifications.

What is the depth of burial based on stream channel scour calculations? Burial depth based on the original MTV-6 location was estimated to be 10 feet below the minimum thalweg elevation (the low point in the stream channel cross section). The location will be visited and surveyed in spring 2011 to establish revised burial recommendations.

What is the width of deep burial to avoid pipeline exposure from stream meander? The revised crossing site would be visited in the spring of 2011 to establish revised burial recommendations.

How will streambanks be stabilized following construction? Bank hardening with riprap is not allowed. During initial reclamation, erosion control blankets are to be installed on the stream banks, and the stream banks are to be reseeded and revegetated.

Should clearing of riparian or wetland vegetation be minimized? Yes, by reducing the ROW to 85 feet per p. 48 of the November 2008 Construction, Mitigation, and Reclamation Plan.

Should the right of way width be reduced at the approaches to the stream crossing? Yes, reduce to 85 feet per p. 48 of the November 2008 Construction, Mitigation, and Reclamation Plan.

Are additional valves recommended? No.

Is equipment cleaning necessary before and after work in stream due to presence of exotic species? Equipment is to be cleaned and dried prior to moving to the ROW.

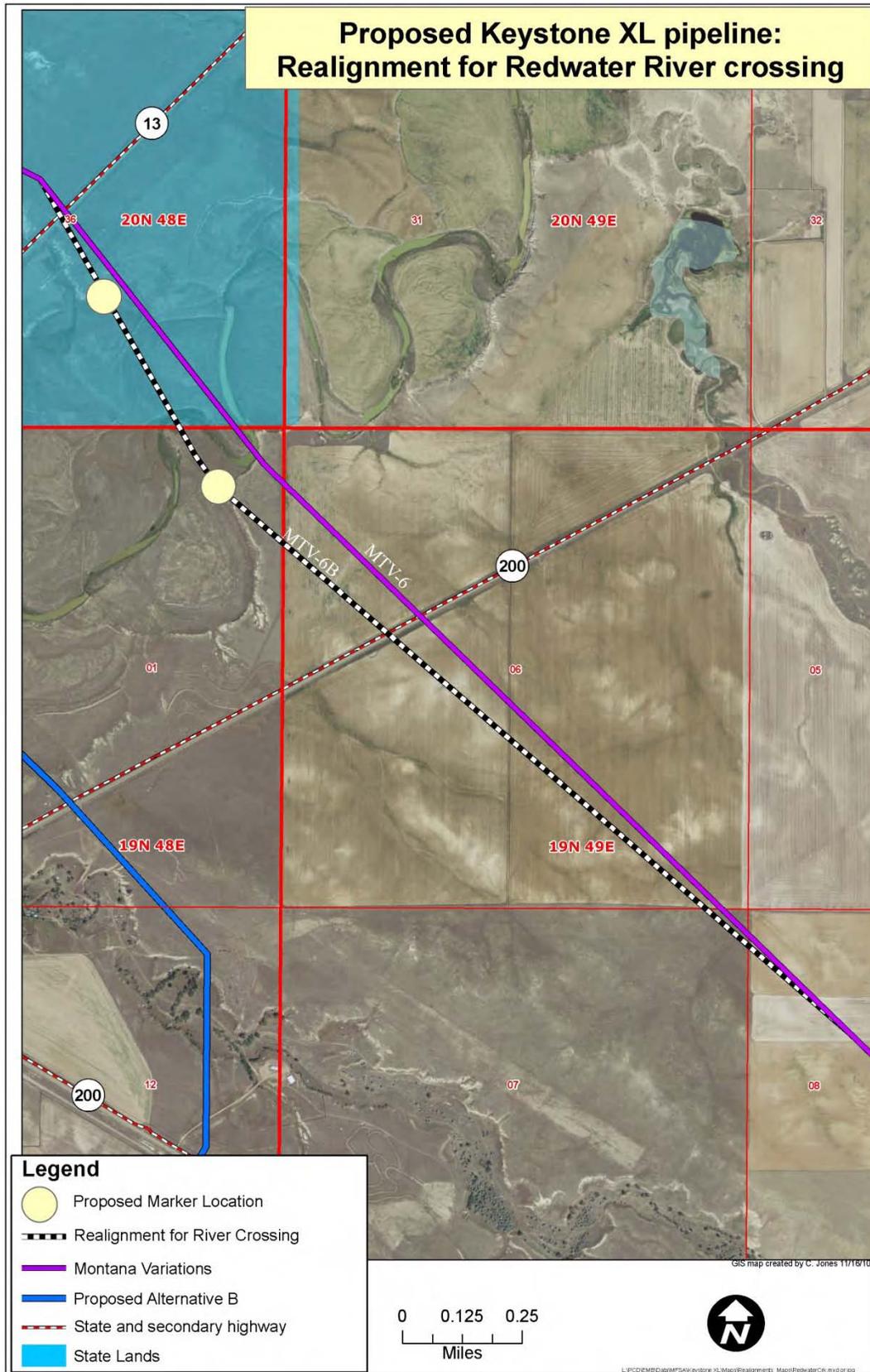
Will construction dewatering be necessary? Probably.

Will hydrostatic test water be diverted from this stream or river? Not applicable.

Site specific issues/mitigations? During the field inspection the crossing of Redwater River crossing was moved about 500 feet upstream, as shown on the attached figure, to avoid a 20 foot vertical bank on the south side of the river. Main line equipment is to cross the stream on a temporary bridge near the revised crossing location. The bridge would span the stream. To avoid crossing at a wide pool where spanning may not be possible, this equipment crossing may be outside the construction ROW.

Aerial markers are to be installed outside the stream channel meander zone so that air surveys that occur about every other week can determine whether channel movement could expose the pipeline. If channel movement looks as though it is progressing toward the pipeline, then the pipeline would be lowered below scour depth to prevent exposure.

Are rookeries present within 500 M of the stream crossing? None were observed.



Date: Oct. 21, 2010

Stream Name: Berry Creek. Note that this crossing would not be used if MTV-6 is selected.

Approximate Milepost: 159.6

FWP fisheries value class: 5. Flowing water was not present at the time of the inspection.

Are special status fish or amphibians present? No records were found in FWP's MFISH database and no special status species were observed during the inspection.

If so, timing of spawning and rearing? NA.

Are special timing restrictions needed? Other than constructing the crossing outside the spring runoff period, no additional timing restrictions are proposed beyond those listed in the Environmental Specifications.

What is the depth of burial based on stream channel scour calculations? The pipeline would be buried five feet below the minimum thalweg elevation.

What is the width of deep burial to avoid pipeline exposure due to stream meander? Increased burial depth would be extended for approximately 90 feet across the swale, from the base of the hill to the base of the opposite hill.

How will streambanks be stabilized following construction? Bank hardening with riprap is not allowed. During initial reclamation following construction disturbance, erosion control blankets are to be installed on the stream banks, and the stream banks are to be reseeded and revegetated.

Should clearing of riparian or wetland vegetation be minimized? Yes, to the extent possible, by reducing the ROW to 85 feet per p. 48 of the November 2008 Construction, Mitigation, and Reclamation Plan.

Should the right of way width be reduced at the approaches to the stream crossing? Yes, reduce to 85 feet per p. 48 of the November 2008 Construction, Mitigation, and Reclamation Plan. Try to avoid the steep, unvegetated, near-vertical bank on the north valley wall to increase the chances for successful revegetation.

Are additional valves recommended? No.

Is equipment cleaning required before and after work in the stream due to presence of exotic species? Equipment is to be cleaned and dried prior to moving to the ROW. Canada thistle is present so equipment needs to be cleaned after constructing the crossing at this unnamed tributary.

Will construction dewatering be necessary? Probably.

Will hydrostatic test water be diverted from this stream or river? Not applicable.

Are there any site specific issues or mitigating measures? Main line equipment is to cross the creek on temporary timber matting on supports. Plant trees at the base of the vertical bank on the south valley side, just upstream from the crossing site, to help stabilize the bank and help prevent bank erosion that may expose the pipeline.

Rookeries present within 500M? None were observed.

Date: Oct. 21, 2010

Stream Name: Clear Creek at realignment

Approximate Milepost: 175.6

FWP fisheries value class: 3. Flowing water was not present at the time of the inspection.

Are special status fish or amphibians present? No special status species were observed during the inspection.

If so, timing of spawning and rearing? NA.

Are special timing restrictions needed? Other than to construct the crossing outside the spring runoff period, no additional timing restrictions are proposed beyond those listed in the Environmental Specifications.

What is the depth of burial based on stream channel scour calculations? Burial depth would be six feet below the minimum thalweg elevation (the low point in the stream channel cross section).

What is the width of deep burial to avoid pipeline exposure from stream meander? Deep pipeline burial would be maintained from the base of the high bank on the south side of the creek to the field edge north of the channel for approximately 40 feet total.

How will streambanks be stabilized following construction? Bank hardening with riprap is not allowed. During initial reclamation following construction disturbance, erosion control blankets are to be installed on the stream banks, and the stream banks are to be reseeded and revegetated.

Should clearing of riparian or wetland vegetation be minimized? Yes, by reducing the ROW to 85 feet per p. 48 of the November 2008 Construction, Mitigation, and Reclamation Plan.

Should the right of way width be reduced at the approaches to the stream crossing? Yes, reduce to 85 feet per p. 48 of the November 2008 Construction, Mitigation, and Reclamation Plan.

Are additional valves needed? No.

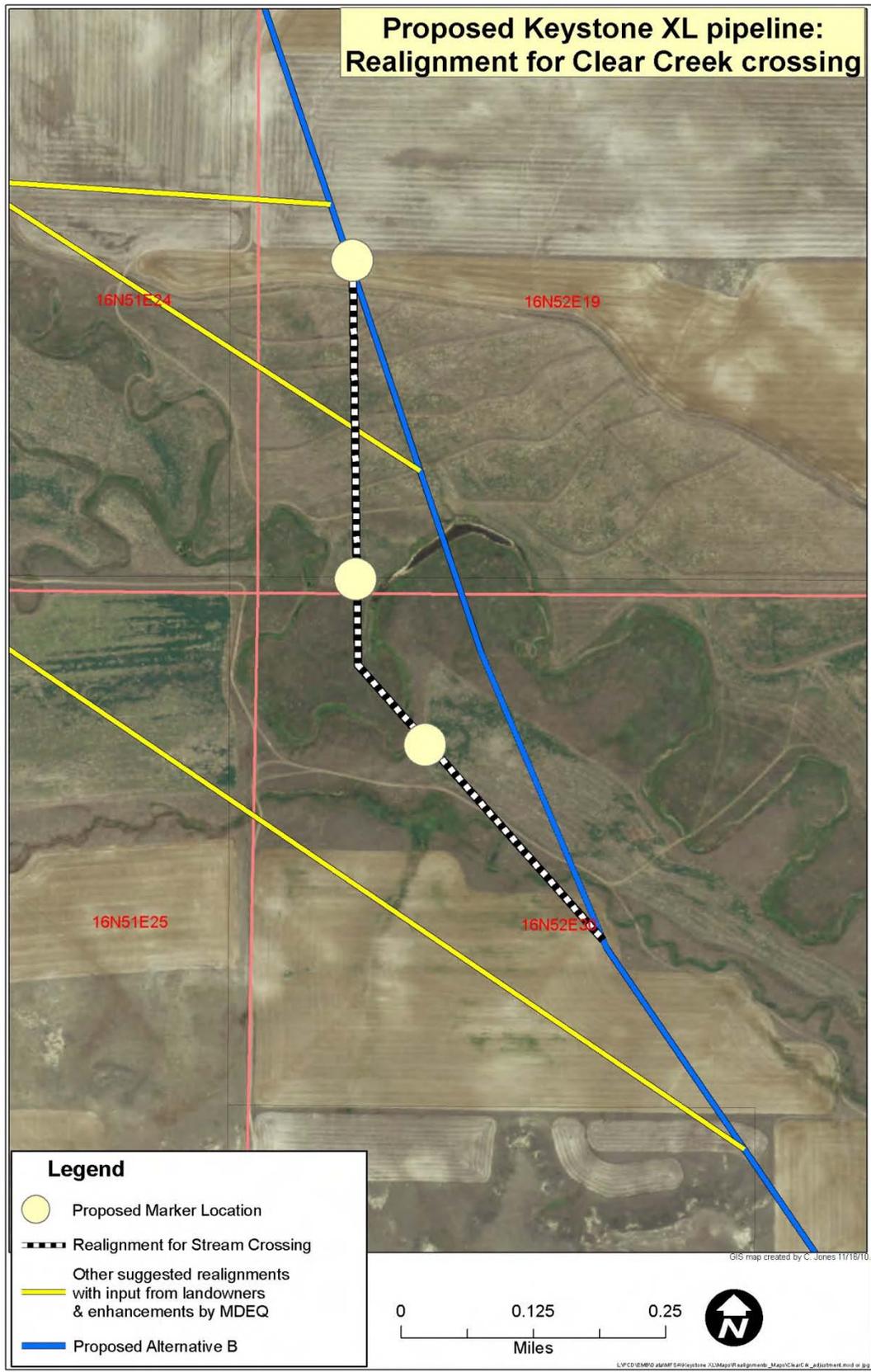
Is equipment cleaning required before and after work in the stream due to presence of exotic species? Equipment is to be cleaned and dried prior to moving to the ROW. Canada thistle is present so equipment needs to be cleaned before moving from the construction area.

Will construction dewatering be necessary? Probably.

Will hydrostatic test water be diverted from this stream or river? Not applicable.

Site specific issues/mitigations? This crossing was moved about 600 feet to the west in order to avoid a deep pool and developed spring, as shown on the attached figure. Main line equipment is to cross the creek on a temporary bridge that would span the creek. Aerial markers are to be installed over the centerline on the field boundary south of the creek and at the two fence lines north of the crossing. Using these markers, the crossing would be monitored from the air or, if necessary, from the ground to determine if stream meander is taking place. If monitoring indicates stream meander may encroach on the pipeline, the pipeline would be lowered in place below scour depth to ensure its integrity.

Are rookeries present within 500 M of the crossing? None were observed.



Date: Oct. 21, 2010
Stream Name: Yellowstone River
Approximate Milepost: 196
FWP fisheries value class: 1

Are special status fish or amphibians present? Yes.

If so, timing of spawning and rearing? Spring-early summer.

Are special timing restrictions needed? None.

What is the depth of burial based on stream channel scour calculations? Depth of scour is estimated to be five feet below the minimum thalweg elevation. A horizontal directional drill is proposed to be about 55 feet below the thalweg, well below scour depth.

What is the width of deep burial to avoid pipeline exposure from stream meander? See the drawing of the crossing. The drilled crossing would be about 3,200 feet long, extending below the high water channel on the north side of the river as well as the main channel.

How will streambanks be stabilized following construction? No bank stabilization is anticipated due to the horizontal directional drill.

Should clearing of riparian or wetland vegetation be minimized? The entry points will be outside the riparian zones.

Should the right of way width be reduced at the approaches to the stream crossing? NA.

Are additional valves required? Yes. The motor actuated block valve on the north side of the Yellowstone River must be moved from approximately milepost 195.5 to approximately milepost 196.5, as indicated on the attached figure. An additional check valve must be added on the south side of the Yellowstone River at approximate milepost 197.4, as shown on the attached figure.

Is equipment cleaning required before and after work in stream due to presence of exotic species? Equipment is to be cleaned and dried prior to moving to the ROW. Leafy spurge is present in the uncultivated area on the north side of the river so any equipment or pumps used during hydrostatic testing in this area must be cleaned before leaving.

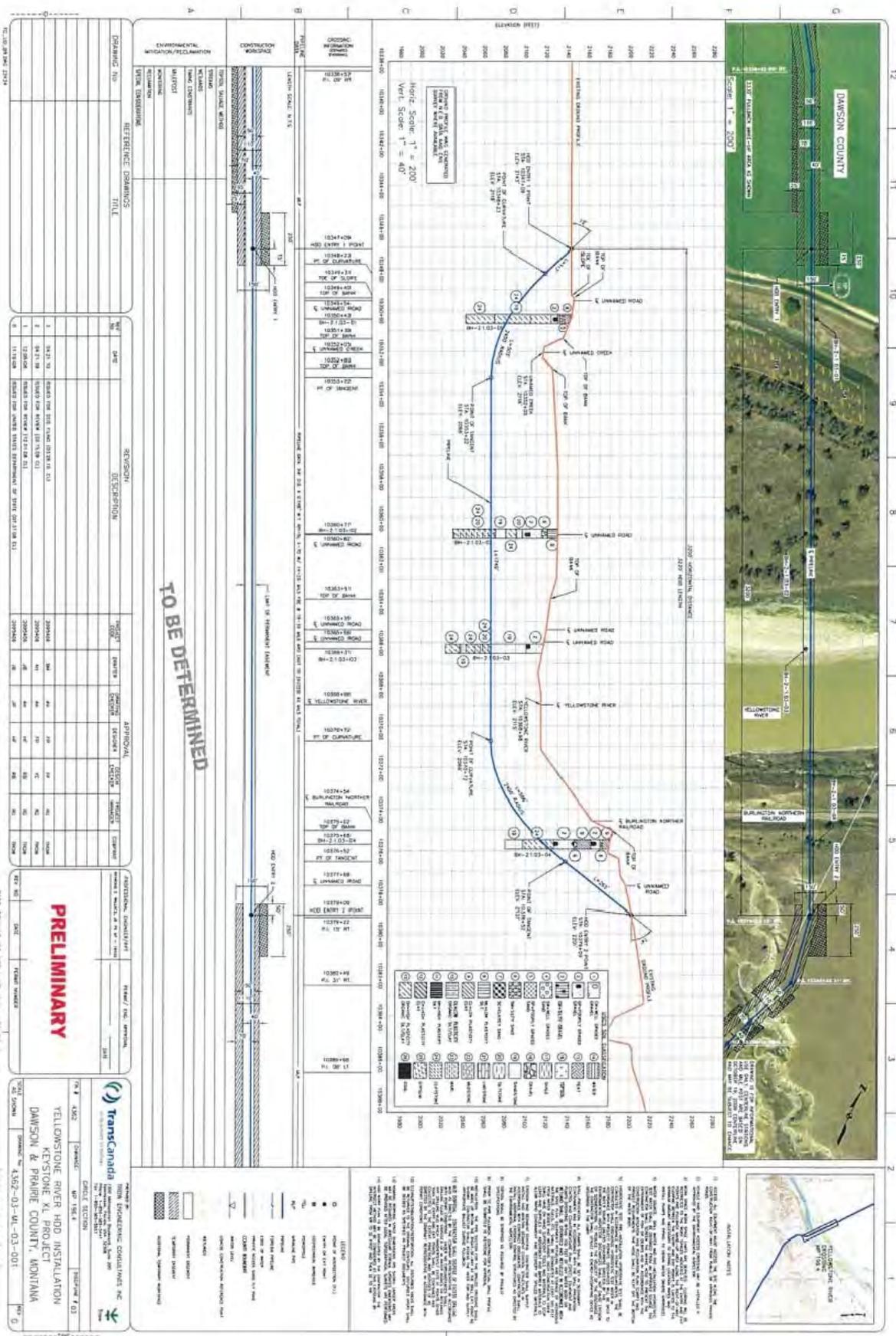
Will construction dewatering be necessary? Unlikely.

Will hydrostatic test water be diverted from this stream or river? The source and diversion rate have not yet determined. Keystone will have to apply for and obtain a water use permit from the Department of Natural Resources and Conservation. Recognize that the Department of Fish, Wildlife, and Parks holds a sizeable instream

flow reservation that may restrict the time and rate at which water is diverted from the Yellowstone River.

Are there any site specific issues or mitigating measures? Main line equipment is to drive around this crossing on existing roads. All drilling mud and cuttings are to be disposed of in a manner such that they will not reach or be transported by runoff to state waters.

Are rookeries present within 500 M of the crossing? None were observed.



TO BE DETERMINED

NO.	DATE	REVISION	BY	APPROVAL
1	04/21/10	DESIGN FOR THE PROPOSED DAM	...	...
2	04/21/10	DESIGN FOR THE PROPOSED DAM	...	...
3	04/21/10	DESIGN FOR THE PROPOSED DAM	...	...
4	04/21/10	DESIGN FOR THE PROPOSED DAM	...	...
5	04/21/10	DESIGN FOR THE PROPOSED DAM	...	...

NO.	DATE	REVISION	BY	APPROVAL
1	04/21/10	DESIGN FOR THE PROPOSED DAM	...	...
2	04/21/10	DESIGN FOR THE PROPOSED DAM	...	...
3	04/21/10	DESIGN FOR THE PROPOSED DAM	...	...
4	04/21/10	DESIGN FOR THE PROPOSED DAM	...	...
5	04/21/10	DESIGN FOR THE PROPOSED DAM	...	...

PRELIMINARY

TransCanada
 ENERGY SERVICES, INC.
 10000 WEST 10TH AVENUE, SUITE 200
 DENVER, COLORADO 80202

Dawson & Prairie County, Montana
 PROJECT NO. 4302-03-MC-03-001
 PART 5: DAM B (22x41)

NO.	DESCRIPTION
1	Concrete
2	Grout
3	Grout (Grout Blank)
4	Grout (Grout Blank)
5	Grout (Grout Blank)
6	Grout (Grout Blank)
7	Grout (Grout Blank)
8	Grout (Grout Blank)
9	Grout (Grout Blank)
10	Grout (Grout Blank)
11	Grout (Grout Blank)
12	Grout (Grout Blank)
13	Grout (Grout Blank)
14	Grout (Grout Blank)
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45	Grout (Grout Blank)
46	Grout (Grout Blank)
47	Grout (Grout Blank)
48	Grout (Grout Blank)
49	Grout (Grout Blank)
50	Grout (Grout Blank)

1. THE DAM IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN AND CONSTRUCTION SPECIFICATIONS FOR DAMS AND RELATED STRUCTURES, 1999 EDITION, AS AMENDED, PUBLISHED BY THE AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE).

2. THE DAM IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN AND CONSTRUCTION SPECIFICATIONS FOR DAMS AND RELATED STRUCTURES, 1999 EDITION, AS AMENDED, PUBLISHED BY THE AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE).

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10. THE DAM IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN AND CONSTRUCTION SPECIFICATIONS FOR DAMS AND RELATED STRUCTURES, 1999 EDITION, AS AMENDED, PUBLISHED BY THE AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE).



Date: Oct. 22, 2010

Stream Name: Dry Fork Creek

Approximate Milepost: 227.1

FWP fisheries value class: 6. Note that at this location Dry Fork Creek is located in a relatively wide wetland.

Are special status fish or amphibians present? No records were found in FWP's MFISH database and no special status species were observed during the inspection.

If so, timing of spawning and rearing? NA.

Are special timing restrictions needed? Other than to construct the crossing outside the spring runoff period, no additional timing restrictions are proposed beyond those listed in the Environmental Specifications.

What is the depth of burial based on stream channel scour calculations? Burial depth would be six feet below the minimum thalweg elevation (the low point in the stream channel cross section).

What is the width of deep burial to avoid pipeline exposure from stream meander? The deep pipeline burial should be extended across the wetland for about 170 feet.

How will streambanks be stabilized following construction? Bank hardening with riprap is not allowed. During initial reclamation, erosion control blankets are to be installed on the stream banks, and the stream banks are to be reseeded and revegetated.

Should clearing of riparian or wetland vegetation be minimized? Yes, by moving the centerline about 50 feet east to avoid the buffalo berry shrubs and by reducing the ROW to 85 feet per page 48 of the November 2008 Construction, Mitigation, and Reclamation Plan.

Should the right of way width be reduced at the approaches to the stream crossing? Yes, reduce to 85 feet per p. 48 of the November 2008 Construction, Mitigation, and Reclamation Plan.

Are additional valves needed? No.

Is equipment cleaning required before and after work in stream due to presence of exotic species? Equipment is to be cleaned and dried prior to moving to the ROW.

Will construction dewatering be necessary? Possibly.

Will hydrostatic test water be diverted from this stream or river? Not applicable.

Site specific issues/mitigations? Move the centerline about 50 feet east to avoid the buffalo berry shrubs. Main line equipment to cross the wetland on a matted crossing.

Rookeries present within 500M? None were observed.

Date: Oct. 22, 2010

Stream Name: Unnamed tributary of Pennel Creek

Approximate Milepost: 236

FWP fisheries value class: Not rated, flowing water was not present at the time of the inspection.

Are special status fish or amphibians present? No special status species were observed during the inspection.

If so, timing of spawning and rearing? NA.

Are special timing restrictions needed? Other than to construct the crossing outside the spring runoff period, no additional timing restrictions are proposed beyond those listed in the Environmental Specifications.

What is the depth of burial based on stream channel scour calculations? Burial depth would be six feet below the minimum thalweg elevation (the low point in the stream channel cross section).

What is the width of deep burial to avoid pipeline exposure from stream meander? The six foot burial depth would be maintained for approximately 25 feet, with the understanding that the deep burial may extend further to the northwest to facilitate crossing of the pipelines located there.

How will streambanks be stabilized following construction? Bank hardening with riprap is not allowed. During initial reclamation, erosion control blankets are to be installed on the stream banks, and the stream banks are to be reseeded and revegetated.

Should clearing of riparian or wetland vegetation be minimized? Yes, by reducing the ROW to 85 feet per p. 48 of the November 2008 Construction, Mitigation, and Reclamation Plan.

Should the right of way width be reduced at the approaches to the stream crossing? Yes, reduce to 85 feet per p. 48 of the November 2008 Construction, Mitigation, and Reclamation Plan.

Are additional valves needed? No.

Is equipment cleaning required before and after work in stream due to presence of exotic species? Equipment is to be cleaned and dried prior to moving to the ROW. Canada thistle is present so equipment needs to be cleaned before moving off this site.

Will construction dewatering be necessary? Possibly.

Will hydrostatic test water be diverted from this stream or river? Not applicable.

Site specific issues/mitigations? Main line equipment is to cross the creek on a temporary bridge that would span the creek.

Are rookeries present within 500 M of the crossing? None were observed.

Date: Oct. 22, 2010
Stream Name: Little Beaver Creek
Approximate Milepost: 263
FWP fisheries value class: 5

Are special status fish or amphibians present? No special status species were noted during this inspection but frogs and turtles were observed earlier in 2010.

If so, timing of spawning and rearing? Spring and summer.

Are special timing restrictions needed? Other than to construct the crossing outside the spring runoff period, no additional timing restrictions are proposed beyond those listed in the Environmental Specifications.

What is the depth of burial based on stream channel scour calculations? Burial depth would be eight feet below the minimum thalweg elevation (the low point in the stream channel cross section).

What is the width of deep burial to avoid pipeline exposure from stream meander? Increased burial depth would be extended for approximately 180 feet across the modern floodplain, from the base of the steep bank northwest of the stream crossing to the base of the second terrace southeast of the crossing.

How will streambanks be stabilized following construction? Bank hardening with riprap is not allowed. During reclamation, erosion control blankets are to be installed on the stream banks, and the stream banks are to be reseeded and revegetated.

Should clearing of riparian or wetland vegetation be minimized? Yes, to the extent practicable given the length of the deep burial.

Should the right of way width be reduced at the approaches to the stream crossing? Yes, to the extent practicable given the length of the deep burial.

Are additional valves needed? No.

Is equipment cleaning before or after work in stream due to presence of exotic species? Equipment is to be cleaned and dried prior to moving to the ROW.

Will construction dewatering be necessary? Probably.

Will hydrostatic test water be diverted from this stream or river? Not applicable.

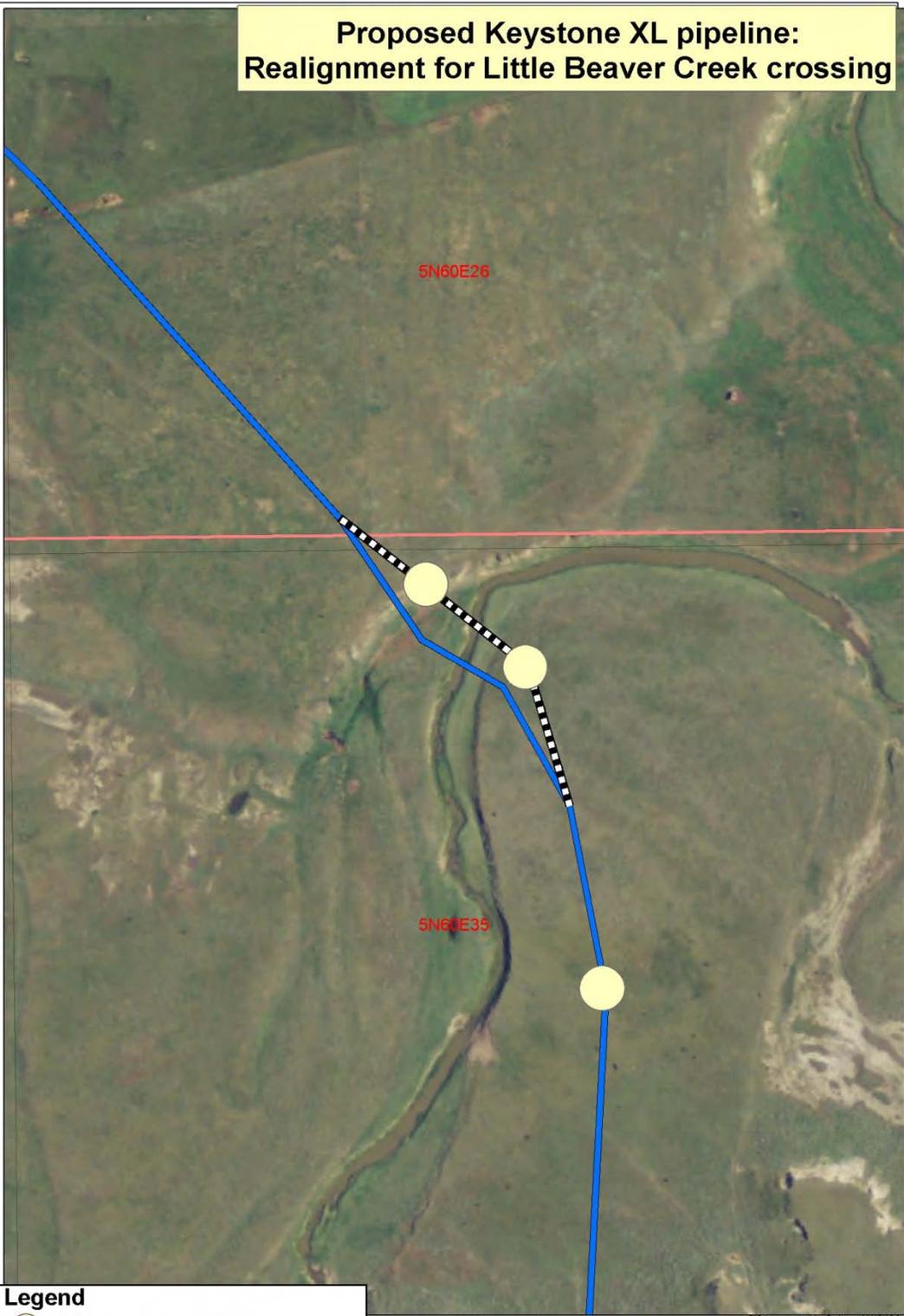
Site specific issues/mitigations? Main line equipment is to cross the creek on a temporary bridge that would span the creek. The centerline was moved about 100 feet downstream during the inspection to avoid the deepest part of a pool, making a dam and pump or dam and flume or dam and pump crossing more feasible. However, given the

width of deep burial, a horizontal directional drill also would be an acceptable method of crossing.

Aerial markers are to be added at the points shown on the attached figure.

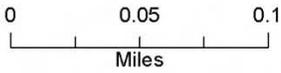
Are rookeries present within 500M of the crossing? None were observed.

**Proposed Keystone XL pipeline:
Realignment for Little Beaver Creek crossing**



Legend

-  Proposed Marker Location
-  Realignment for Stream Crossing
-  Proposed Alternative B



GIS map created by C. Jones 11/16/10

L:\PC\EMBD\46\MP\540\Keystone_XL\Map\RealignmentB_Map\LittleBeaverCk_1001.dwg

In addition to the burial depths described above, Keystone has conducted additional field investigations to determine design burial depths on other streams. If the Project is approved and alignments selected that affect these streams, many would be reviewed in the field during 2011 or 2012 before construction would begin at these streams. Table L-1 briefly describes the proposed burial depth at the crossings and the width that this deeper burial depth would be extended.

Table L-1: Additional Stream Crossing Burial Depths

Approximate Milepost	Stream Name	Depth of Burial Below the Thalweg (feet)	Width of Deep Burial (feet)
2.58	Lost Creek (MTV-6)	6	170
6.24	Lost Creek (MTV-6)	6	65
55.5	Buggy Creek	6	95
67.2	Cherry Creek	67.2	45
70.4	Spring Coulee	5	40
153.7	Buffalo Springs Creek	6	55
234.7	Pennel Creek	6	25
244.6	Sandstone Creek	8	20
276.4	North Fork Coal Bank Coulee	6	75
279.5	South Fork Coal Bank Coulee	8	65
281.5	Boxelder Creek	6	115

Appendix M: Hazardous Materials Management Plan

(To be approved by DEQ prior to beginning of operations.)

Releases and spills should be reported immediately to the state's Disaster and Emergency Services (DES) 24-hour phone number (406) 841-3911 and the STATE INSPECTOR. If no one can be reached at that number, the release or spill may be reported to the Montana Department of Environmental Quality (DEQ) duty officer at (406) 431-0014. In addition to the following reporting requirements, notification(s) may be required by permits issued by state, federal, or local government agencies. Notification to the National Response Center (NRC) may also be required. NRC can be reached at 800-424-8802. DES and DEQ are not responsible for making this notification.

The following types of spills must be reported to DES/DEQ:

- Releases or spills of hazardous substances in amounts that meet or exceed the reportable quantities in 40 CFR Part 302. Notification to DES and NRC is required.
- Spills, overfills, and suspected releases from underground storage tanks and petroleum storage tanks. ARM 17.56.501, *et seq.*
- Releases or spills of any materials that would lower the quality of groundwater below water quality standards. ARM 17.30.1045.
- Spills of twenty-five (25) gallons or more of any petroleum product such as: gasoline, diesel fuel, aviation fuel, asphalt, road oil, kerosene, fuel oil; produced water, injection water, or combination thereof; and derivatives of mineral, animal, or vegetable oils.

The following types of spills should be reported to DES/DEQ:

- Spills that enter or may enter state water or a drainage that leads directly to surface water;
- Spills that cause sludge or emulsion beneath the surface of the water, stream banks, or shorelines;
- Spills that cause a film, "sheen", or change the color of the water, stream banks, or shorelines; or
- Spills of 25 gallons or more of crude oil.

Appendix N: Fire Prevention and Suppression Plan

TABLE OF CONTENTS

- 1.0 INTRODUCTION
- 2.0 PURPOSE
- 3.0 RESPONSIBILITIES AND COORDINATION
- 4.0 PERFORMANCE REQUIREMENTS
- 5.0 PERMITS
- 6.0 FIRE PREVENTION
 - 6.1 Equipment
 - 6.2 Personnel
 - 6.3 Construction Procedures
- 7.0 FIRE SUPPRESSION
- 8.0 MONITORING

1.0 INTRODUCTION

This plan identifies measures to be taken during pipeline construction, operation, and maintenance to ensure that fire prevention and suppression techniques are carried out in accordance with federal, state, and applicable local regulations. The fire control authority contact names identified in Table N-1 will be update prior to the start of construction.

2.0 PURPOSE

The risk of fire danger during pipeline construction is related to operating vehicles and other equipment off roadways; burning slash material and other open burning; welding activities; and the use of explosive materials and flammable liquids. This plan establishes standards and practices which will minimize the risk of fire danger and, in case of fire, provide for immediate suppression.

3.0 RESPONSIBILITIES AND COORDINATION

The Fire Prevention and Suppression Plan will be implemented by the OWNER. The OWNER will be responsible for providing all necessary fire-fighting equipment on the Project site to its employees, and operating under the requirements of the plan. In addition, the OWNER will contact the following authorities prior to construction to establish communication, obtain permits (if applicable), and/or fulfill other obligations as directed by the fire control authorities:

TABLE N-1 Fire Control Authorities			
County	Authority	Fire Management Officer/ Contact	Phone Number
Phillips	BLM - Malta	Mitch Maycox	(406) 538-1986
	County		
Valley	BLM - Miles City	Scott McAvoy	(406) 233-2875
	County		
McCone	BLM - Miles City	Scott McAvoy	(406) 233-2875
	County		
Prairie	BLM - Miles City	Scott McAvoy	(406) 233-2875
	County		
Fallon	BLM - Miles City	Scott McAvoy	(406) 233-2875
	County		

In the event of an uncontrolled fire, the OWNER will immediately notify local fire control agencies by phoning 911 if pipeline personnel do not extinguish it quickly.

In the event that open-cut trenches cross a road, the OWNER will provide a schedule of road closures to all local fire control agencies. Typically, roads will be closed for at least six hours during the open-cut construction procedure. A by-pass will be constructed prior to open-cut installation of a road crossing, unless a convenient detour can be established on existing roads. By-passes will be constructed within the approved right-of-way or additional temporary work space.

4.0 PERFORMANCE REQUIREMENTS

The Fire Prevention and Suppression Measures Plan is only in effect from June 1 to October 31 each year. The STATE INSPECTOR or county fire authorities may change the dates of this period by advance written notice, if justified by unusual weather or other conditions. However, required tools and equipment will be kept in serviceable condition and be immediately available for fire suppression at all times.

5.0 PERMITS

The OWNER will notify the STATE INSPECTOR prior to conducting any burning. Burning will be conducted in accordance with the requirements and restrictions of the STATE INSPECTOR and air quality permits. In addition, no burning will be conducted on federal lands without prior written authorization from the BLM Fire Management Officer.

6.0 FIRE PREVENTION

The following discussion addresses methods and procedures which will be implemented prior to and during the construction period to minimize the risk of fire. Key areas of concern relate to equipment, personnel, and construction procedures.

In order to reduce fire hazard, small trees and brush cut during construction should be chipped, burned, and/or scattered. Slash 3 inches in diameter or greater may be scattered in quantities of up to 1.5 tons/acre unless otherwise requested by the LANDOWNER. Tops, limbs, and brush less than 3 inches in diameter and 3 feet in length may be left in quantities less than 3 tons/acre except on cropland and residential land or where otherwise specified by the LANDOWNER. In certain cases, the STATE INSPECTOR will authorize chipping and scattering of tops, limbs, and brush in excess of 3 tons/acre as an erosion control measure. Merchantable timber should be decked and removed at the direction of the LANDOWNER or managing agency.

6.1 Equipment

During construction, operation, maintenance, and termination of the right-of-way, all equipment with an internal combustion engine will be equipped with spark arresters. However, spark arresters are not required on trucks, buses, and passenger vehicles (excluding motorcycles) which are equipped with an unaltered muffler. In addition, each motorized unit will be equipped with a minimum of one fire extinguisher having an

Underwriter Laboratories (UL) rating of at least 5 B or C, one long handled shovel size “0” or larger, and one double bit axe or pulaski (three pounds or larger).

The OWNER will provide basic fire-fighting equipment at all times, including fire extinguishers, shovels, axes, and other tools in sufficient number so that each employee can assist in the event of a fire-fighting operation. One backpack pump, long handled shovel size “0” or larger, and double-bit axe or pulaski (three pounds or larger) will be required in the vicinity of welding sites. A water truck will also be available for use. All equipment will be kept in a serviceable condition and readily available.

6.2 Personnel

The OWNER will designate one person as a Fire Guard for each construction spread who is physically able, vigilant, and suitably trained to detect fires and use required fire-fighting equipment. The Fire Guard may perform other functions during pipeline construction in addition to his/her fire guard responsibilities. The Fire Guard will be identified by a decal on his/her hardhat and/or other appropriate designation. The Fire Guard will be responsible for establishing and maintaining contact with fire control agencies. He/she will be equipped with a radio or cellular telephone so immediate contact with local fire control agencies can be made. An alternate or back-up Fire Guard will be designated to assume responsibility if the primary guard becomes unable to perform his/her duties.

The OWNER will inform each construction crew member of fire dangers, locations of extinguishers and equipment, and individual responsibilities for fire prevention and suppression during regular safety briefings. All support and employee vehicles will be parked and stored in cleared, open areas within the approved work limits. No additional areas will be cleared for parking. Personnel will not be allowed to start or maintain open fires for cooking or warming.

6.3 Construction Procedures

The OWNER will restrict operations during conditions of extreme fire danger, as directed by the STATE INSPECTOR, local land management agencies or local fire control agencies. All welding activities will be curtailed during “red flag” conditions (or high burning index) as requested by federal, state, or local agencies. When red flag conditions are forecast, the Fire Guard will contact local fire control agencies and/or the BLM Fire Management Officer for a determination as to when welding activity must cease. During a red flag condition, the OWNER must obtain approval from fire control agencies or the BLM Fire Management Officer to proceed with construction if acceptable precautions are implemented.

7.0 FIRE SUPPRESSION

All available resources will be employed to ensure that uncontrolled range, forest, or structure fires are suppressed immediately with minimum property damage.

In the event of an uncontrollable fire, the local fire control agency, STATE INSPECTOR, LANDOWNER, tenant, or land management agency will be contacted immediately. The OWNER will maintain an up-to-date list of land owners/managers and agency contacts along each segment of the pipeline right-of-way.

8.0 MONITORING

The OWNER's ENVIRONMENTAL INSPECTORS and STATE INSPECTORS will inspect the job site and the OWNER's operations for compliance with all provisions of the Fire Prevention and Suppression Plan. In addition, federal, state, and local fire control agencies have the right to perform inspections in areas under their jurisdiction.

Appendix O: Burning Plan and Fire Plan

(To be approved prior to beginning of operations per conditions of the CERTIFICATE.)

Appendix P: Watersheds and Other Areas
Where the use of Herbicides are Prohibited

The DEQ has identified no areas where the use of herbicides is prohibited. Herbicides shall be applied in accordance with label instructions and County Weed Control plans.

Appendix Q: Construction Inspections of Designated Access Routes on Public Roads

Pre-Construction Phase

The OWNER shall identify county roads and state highways that will be used as designated ACCESS ROUTES to transport equipment, supplies and materials, and personnel to and from the Project. Maps showing the ACCESS ROUTES, as well as other information described in pre-construction inspection items 1 through 8 below, will be provided to the STATE INSPECTOR and MDT at least 60 days prior to the start of construction in each construction spread. This information will also be provided to counties crossed by designated ACCESS ROUTES for a given construction spread at least 60 days prior to the start of construction in that spread.

A pre-construction inspection of all designated ACCESS ROUTES on public roads shall be completed by a licensed engineer to document pre-construction condition of the roads. The licensed engineer conducting the pre-construction inspection shall be selected as follows:

1. DEQ and MDT shall prepare a list of no fewer than four (4) licensed engineers acceptable to the agencies. The OWNER may provide a list of licensed engineers for agency consideration.
2. DEQ shall provide the agency list to the OWNER.
3. The OWNER shall provide DEQ and MDT with a list of at least 50 percent of the licensed engineers from the agency list.
4. DEQ and MDT shall select the licensed engineer from the short list provided by the OWNER.

The pre-construction inspection of designated ACCESS ROUTES on public roads will include:

1. Video documentation of the pre-Project condition of all designated ACCESS ROUTES on public roads.
2. Road profiling of asphalt surfaces to determine the degree of pre-construction wear. Road profiling will be completed as specified by MDT in consultation with the OWNER.
3. Documentation of pre-Project grading schedule for gravel roads by counties. Identification of segments of county road maintained for oil field access.
4. For all bridges on designated ACCESS ROUTES on public roads: documentation of weight limits, visual inspection to verify the pre-Project condition, and identification of the bridge rating if the bridge is determined to be deficient or obsolete.
5. Documentation of location, condition, and size of culverts; location and condition of cattle guards; and location and condition of any fords that would be crossed. Identification of any upgrades needed for Project access.

6. Identification of segments on county roads with short sight distance that could pose a safety hazard during construction. These segments would be manned with flaggers or signed in accordance with the Manual on Uniform Traffic Control Devices during periods of heavy construction use.
7. Identification of alternative ACCESS ROUTE(S), if designated ACCESS ROUTE(S) become unusable during construction.

Results of the pre-construction inspection will be provided to the OWNER, STATE INSPECTOR, MDT, and to counties at least 60 days prior to the start of construction for review and comment.

Construction Phase

Travel on designated ACCESS ROUTES on public roads shall be conducted so as to prevent damage to existing infrastructure, and all weight limits shall be followed. If such infrastructure is damaged by vehicular travel, the OWNER shall immediately inform the STATE INSPECTOR, MDT, and the applicable county, and immediately make temporary repairs to minimize further damage and assure continued public access and safe passage. The OWNER shall make permanent repairs at the first available opportunity to a reasonably satisfactory condition in consultation with MDT or the applicable county. See also Environmental Specification 2.3.4.

Prior to and during the use of unpaved ACCESS ROUTES for construction access, the OWNER shall apply a dust palliative to such roads that are within 0.1 mile of a residence or road intersection and other areas identified by the county where dust may pose a traffic hazard to vehicles using the roads.

The OWNER shall designate a Keystone XL Project Liaison for communication regarding Project ACCESS ROUTES and provide contact information to the STATE INSPECTOR, MDT, and counties.

Post-Construction Phase

A post-construction inspection of all ACCESS ROUTES on public roads used during Project construction shall be completed by the licensed engineer selected for pre-construction inspections. If another engineer is selected, DEQ, MDT, and the OWNER shall use the selection process specified for the pre-construction phase. The post-construction inspection shall identify damage and wear-and-tear to transportation infrastructure above that considered typical for roads used to access the Project. The inspection will be completed by a licensed engineer using the methods described above and as specified by DEQ and MDT.

Results of the post-construction inspection shall be provided to the OWNER, STATE INSPECTOR, MDT, and counties for review. Any damage or wear-and-tear to transportation infrastructure on these Project ACCESS ROUTES resulting from Project

construction beyond that considered typical, as determined by consensus of MDT, the applicable county, and the OWNER, shall be repaired to the satisfaction of the owner of the easement or right-of-way. If consensus cannot be reached, the amount of damage or wear-and-tear to transportation infrastructure resulting from Project construction beyond that considered typical shall be determined by MDT for state roads and by the applicable county for county roads.

Methodology for bridge inspections: MDT Bridge Inspection Manual
See also MDT descriptions of alligator cracks and longitudinal cracks.
Signing – see Manual on Uniform Traffic Control Devices

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ATTACHMENT 2

Montana Department of Environmental Quality

Requirements of the Short-term Narrative Water Quality Standard for Turbidity (318 Authorization) Related to Construction Activity in State Waters Pursuant to 75-5-318, Montana Code Annotated

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VALID (date) through (date).

Dear (applicant name):

The Montana Department of Environmental Quality (DEQ) Water Protection Bureau has completed our review of your project for activity on water bodies that would be crossed by the pipeline alignment shown on Figure I-2.6-1 of Appendix I in the draft Environmental Impact Statement. This activity herewith is qualified for a temporary surface water quality turbidity standard if it is carried out in accordance with the following conditions:

Project General Conditions:

- (1) Construction activities in or near the watercourse are to be limited to the minimum area necessary, and conducted so as to minimize increases in suspended solids and turbidity which may degrade water quality and damage aquatic life outside the immediate area of operation,
- (2) The use of machinery in the watercourse shall be avoided unless absolutely necessary. To prevent leaks of petroleum products into waterways, no defective equipment shall be operated in the watercourse or adjacent areas capable of contributing surface flow to the watercourse,
- (3) Precautions shall be taken to prevent spillage of any petroleum products, chemicals or other deleterious material in or near the watercourse, and no equipment shall be fueled or serviced in adjacent areas capable of contributing surface flow to the watercourse,
- (4) All disturbed areas on the streambank and adjacent areas created by the construction activity shall be protected with temporary erosion control during construction activities. These areas shall be reclaimed with appropriate erosion control measures and revegetated to provide long-term erosion control,
- (5) Any excess material generated from this project must be disposed of above the ordinary high water mark, not classified as a wetland, and in a position not to cause pollution to State waters,
- (6) Clearing of vegetation will be limited to that which is absolutely necessary for construction of the project,
- (7) The use of asphalt or petroleum-based products as riprap is strictly prohibited. Its use as fill material is also prohibited if it is placed in a location where it is likely to cause pollution of State waters,
- (8) This authorization does not authorize a point source surface water discharge. A MPDES permit is required for said discharge,
- (9) Precautions shall be taken to prevent spillage of any petroleum products, chemicals or other deleterious material in or near the watercourse, and no equipment shall be fueled or serviced in adjacent areas capable of contributing surface flow to the watercourse. A spill containment kit must be available at the work site.

Project Specific Conditions:

- (1) For each component of the facility crossing a stream (pipeline, valve, pump station, road crossing, and associated power line), a Gantt or PERT chart (or similar project scheduling diagram), and dates for:

- a. the completion of all required surveys and reports;
- b. the start of construction; and
- c. the start and completion of initial reclamation and revegetation.

Keystone will notify DEQ any changes in this schedule.

- (2) Flow in a stream course may not be permanently diverted. If temporary diversion is necessary, flow must be restored before a major runoff season or the next spawning season, as determined by the state inspector(s) in consultation with the managing agencies.
- (3) Any snow removal shall be done in a manner to preserve and protect road signs and culverts, to ensure safe and efficient transportation, and to prevent excessive erosion to roads, streams, and adjacent land.
- (4) The owner of the facility (Owner) shall comply with the erosion control measures described in the Storm Water Pollution Prevention Plan filed with DEQ.
- (5) The open-cut, wet method of constructing stream crossings is not allowed if water is present at the time of construction.
- (6) At least 60 days prior to the start of construction at a perennial stream crossing or at the crossing of a stream containing a fish species of special concern, the Owner shall submit a site-specific stream crossing plan. At least 30 days prior to constructing the facility or associated facilities at a perennial stream crossing or stream containing a fish species of special concern, the state inspector shall conduct an on-site inspection of the crossing. The Owner shall provide access to the stream crossing. The state inspector shall invite the Owner, a representative of Montana Fish, Wildlife, and Parks, representatives of the local conservation district(s), and the landowner or land management agency to attend this inspection. The purpose of the inspection shall be to determine the final location of the crossing, the crossing method, width and depth of burial to be used and site-specific reclamation measures. The results of these inspections shall be included in Appendix L of the Environmental Specifications required as part of the approval of a Certificate of Compliance for this project. Restrictions on the timing of construction activities at stream crossings will be specified following onsite inspections.
- (7) Access roads shall cross drainage bottoms at sharp or nearly right angles and level with the streambed whenever possible. Use of temporary bridges, fords, culverts, or other structures to avoid stream bank damage is required when water is present at the crossing of streams. A one-time crossing of the stream to install temporary crossings may be allowed if no access is readily available. No stream crossings will be allowed without proper water quality permits and written authorization from DEQ.
- (8) Streambed materials shall not be removed for use in backfill, embankments, road surfacing, or for other construction purposes except where removed from the trench at a stream crossing.
- (9) Trench breakers will be installed where necessary to control the flow of ground water along the trench.
- (10) Blasting may be allowed in or near streams if precautions are taken to protect the stream from debris and entry of nitrates or other contaminants into the stream, after applicable permits and authorizations are obtained. The Owner shall obtain the written approval of the state inspector prior to conducting any blasting near streams.

- (11) Culverts, arch bridges, or other stream crossing structures shall be installed at all permanent crossings of flowing or dry watercourses where fill is likely to wash out during the life of an access road. On access road(s) all temporary culverts shall be sized to pass 2-year flood requirements and shall be removed after reclamation. The state inspector may approve exceptions. Permanent culverts shall be sized to pass the 100-year flood requirements. Culvert size shall be determined by standard procedures which take into account the variations in vegetation and climatic zones in Montana, the amount of fill, and the drainage area above the crossing. All culverts shall be installed at the time of access road construction.
- (12) No perennial watercourses shall be permanently blocked or diverted.
- (13) If trench dewatering is necessary, water will be discharged to the ground where adequate vegetative cover exists to prevent channeling and sediment transport, or into temporary dewatering structures constructed of silt fence and/or straw bales. No discharges to surface waters are allowed without a valid discharge permit from DEQ.
- (14) Earth next to the pipeline or access road(s) that cross streams shall be replaced at slopes less than the normal angle of repose for the soil type involved.
- (15) No construction shall begin at each crossing of perennial streams and streams containing fish species of special concern until site-specific detailed Construction Drawings of stream crossings are submitted to DEQ and approved by DEQ prior to the start of construction.
- (16) At stream crossings the Owner shall calculate the depth of scour based on a 100-year flood event and the size of sediments and geologic materials found at the crossing. The Owner shall bury the pipeline below this calculated depth to ensure that floods and lateral channel movement do not expose the pipeline over its lifetime. The scour depth calculation method shall be approved in advance by DEQ. The burial depth shall be extended laterally as approved by DEQ after field inspection of the crossing site.

Although not a condition of this authorization, if possible, please send a digital photo or two of the pre or post project site conditions to jeryan@mt.gov.

This authorization is only valid for the period noted above. No authorization is valid for more than a one-year period of time.

Any violations of the conditions of this authorization may be subject to an enforcement action pursuant to the applicable provisions of the Montana Water Quality Act. This authorization is granted pursuant to 75-5-318, MCA, and only applies to the activity described by your application. Any modification of the activity described in your application which may result in additional turbidity in the stream must receive prior approval from the Department. You may contact me at (406) 444-4626.

Sincerely,

Jeff Ryan

Water Quality Specialist

Water Protection Bureau

e-mail jeryan@mt.gov

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ATTACHMENT 3

Draft Keystone XL Pipeline Rate Impact Study and Responses to Public Comments

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DRAFT

Keystone XL Pipeline Rate Impact Study

By

Larry Nordell

Montana Consumer Counsel

The Keystone XL pipeline is proposed to be built to carry synthetic crude oil (syncrude), produced from the heavy bitumen mined at the tar sands project in Alberta, to markets in the US Gulf Coast. The pipeline would run from Hardisty, Alberta, to Texas. The line would run about 282 miles through Montana, entering the state from Alberta at a point approximately 39 miles NNW of Saco, and crossing into South Dakota at a point roughly 27 miles east of Ekalaka. The pipeline is designed to carry about 830,000 barrels¹ a day of crude oil, requiring electrically driven pump stations spaced periodically along the route. Six pump stations are proposed to be located in Montana. Service to these pump stations would be provided by local utilities – five by rural electric cooperatives and one by Montana Dakota Utilities (MDU).

Construction of the Keystone XL pipeline requires review and permitting under the Montana Major Facilities Siting Act (MFSA), administered by the Montana Department of Environmental Quality. Montana law² also requires that any facility covered by MFSA be the subject of a study of the rate impacts to Montana electric consumers, to be performed by the Montana Consumer Counsel. This report describes the results of that study.

¹ The original design called for pumping volumes of 900,000 barrels per day. The pipeline sponsors notified the Montana DEQ on October 10, 2010, that this has been reduced to 830,000 barrels a day. It is not known whether the reduction in design capacity will affect pump station design or load but in any case a reduction in pump load will not result in increased risk of rate impacts.

² **69-2-216. Customer fiscal impact analysis – requirements.** (1) Within 10 days of receiving an application pursuant to subsection (1)(a) or (1)(b), the department of environmental quality shall notify the office of consumer counsel that it is in receipt of:

(a) a permit application pursuant to Title 75, chapter 2, 5, or 10, for a new electrical generation facility; or

(b) an application for a certificate under the Montana Major Facility Siting Act for a new facility or upgrade, as defined in 75-20-104.

(2) The office of consumer counsel shall complete an analysis outlining the fiscal impacts of the project on electricity customers in Montana. The analysis must include an estimation of how customers' rates may be impacted.

(3) (a) Except as provided in subsection (3)(b), the analysis must be completed within 30 days of receipt of the notice from the department.

(b) The department shall extend the 30-day deadline if compliance with the deadline is not necessary to comply with the requirements of subsection (4).

(4) The analysis must be provided to the department and incorporated into the department's environmental review, including draft documents released for public comment.

(5) (a) Within 5 days of the close of the public comment period for an application referred to in subsection (1)(a) or (1)(b), the department shall forward public comments related to the analysis to the consumer counsel.

(b) The consumer counsel shall respond to the comments and return the responses to the department within 30 days, and the responses must be included in the final environmental reviews.

The pipeline would serve no Montana customers other than possibly opening a new route for Montana oil producers to ship product to Gulf Coast markets. Since it would not sell electricity, there would be no direct impact on electricity consumers due to the construction and operation of the pipeline. However, service to the pump stations involves varying amounts of investment in new transmission lines and substations by the Montana electrical utilities providing service, and the electrical consumption of the pump stations may be a significant increase in the volume of electricity needed to be acquired and sold by them.

Table 1. Pump Station Locations, Electric Provider, and Transmission and Substation Construction Requirements³

Pump Station	Name	Provider	Transmission (miles)	Voltage	Transmission, substation cost
PS9	Phillips	Big Flat EC	62	115 kV	\$20.6 million
PS10	Valley	NorVal EC	50	115 kV	\$17.3 million
PS11	Fort Peck	NorVal EC	0	230 kV	\$4.5 million
PS12	Circle	McCone EC	5	115 kV	\$4.9 million
PS13	Prairie	Tongue River EC	15	115 Kv	\$7.6 million
PS14	Fallon	MDU	5	115 kV	\$4.9 million

It should be noted that Montana law exempts from the rate impact study requirement electrical transmission lines proposed by utilities that report to the Montana Public Service Commission or to FERC. If the electrical facilities required by the pipeline were simply freestanding projects to be built by the relevant utilities, no rate impact study would be required for them. Further, some or all of the transmission projects needed to serve the pump stations may be exempt from the requirements of MFSA either because of the length and voltage of the projects or because they come under a “75/75” exemption. However they are being studied here as possible sources of indirect impacts of Keystone, because they are solely or primarily intended to support the Keystone Pipeline and any impacts would be attributable to the construction of the pipeline.

The potential for impacts to the electrical customers of the utilities depends upon the costs to the utilities of providing service and the rates and other cost sharing and guarantee arrangements they negotiate with the pipeline. If the rates for service cover at least the incremental costs of service and the pipeline operates as planned, there should be no near term direct impact on rates. However, if the service is provided at current average cost of service rates while the incremental cost of power is greater than the current average cost, electric customers could see their rates go up as a result of service to the pipeline.

Further, the utilities will have to construct new facilities that will be dedicated to service to the pipeline, for example transmission lines to serve a remote pump station, or a substation to

³ Source for pump station data in Tables 1-2: letter Brian Holland to Larry Nordell, Sept 15, 2010

provide voltage transformation and switching capability. If the utilities finance the costs of these facilities and expect to recover the costs over time through a capital component embedded in monthly rates per kWh or per kW, the utility and its customers could be at risk should the pipeline not be completed, shut down prematurely, or significantly scale back its shipments. While such eventualities may seem unlikely at present, energy markets are volatile and change in unpredictable ways, and future environmental regulations that might affect the tar sands project are impossible to predict⁴. Complete insulation of existing electrical customers from such risks would probably require specific financial arrangements such as up-front financing by the pipeline or posting of long-term bonds to guarantee repayment; even then some residual risk, such the risk of default by a bonding agency, might remain.

With regard to information sources used in preparing this report, the legislation that placed responsibility for this analysis on the Montana Consumer Counsel did not provide the MCC with the ability to require parties to answer questions or to provide data. Therefore this report is primarily based upon information voluntarily provided by Keystone, the three G&T coops (Central Montana G&T serves Big Flat and NorVal, Upper Missouri G&T supplies McCone, and Southern Montana G&T supplies Tongue River) that provide wholesale supply to the four coops to serve pump station loads, WAPA, MDU, and from the coops themselves. Some limited published data, for example from the Rural Utilities Service, the EIA, and from the Montana Electric Cooperatives' Association, was also of use.

This impact study focuses on the potential risk to ratepayers, and the actions that might protect them from rate impacts. Three potential sources of risk are addressed: the acquisition and resale of power to serve the pump stations; the financial commitment required to construct transmission and substation facilities to connect the pump stations to the grid; and the long term costs of adding new electric generating facilities to serve load growth. The study evaluates the situation of each of the suppliers, and their efforts to protect themselves and their ratepayers.

1. Power supply risk

Coop customers could be at risk if the costs of serving the pump stations exceed the average costs currently faced by the coops to supply their customers and the suppliers average all costs to set rates. The coops have the benefits of an allocation of relatively low cost power from Federal Missouri River hydro projects that meets part of their needs; averaging costs to set rates to the pump stations could result in diluting those benefits for existing customers. The magnitude of the pipeline load is significant, and if the full incremental costs are not recovered from the pipeline, customers could see their rates go up noticeably. On the other hand, if rates are properly designed to pass through the incremental power costs and to pick up a share of the coop overhead, existing customers could benefit from the presence of the pump station load. The coops are not regulated, and have the flexibility to set their own rates. On the other hand, MDU does not have that flexibility as it must serve customers under rates posted with and approved by

⁴ Pump station power usage in Montana could also be reduced if large quantities of crude were to be shipped from points south of Montana to the Gulf Coast, reducing or displacing flows from Alberta.

the Montana Public Service Commission. Any modification of those existing, posted tariffs would require approval by the PSC.

Table 2. Pump size, Electrical Load, Electrical Use (all pumps 6500 hp)

Pump Station	Pumps	Peak Load	Average Load	Annual Energy ⁵
PS9	2	9.6 MW	6.7 MW	58.7 million kWh
PS10	3	13.6 MW	9.5 MW	83.2 million kWh
PS11	3	13.6 MW	9.5 MW	83.2 million kWh
PS12	3	13.6 MW	9.5 MW	83.2 million kWh
PS13	3	13.6 MW	9.5 MW	83.2 million kWh
PS14	3	13.6 MW	9.5 MW	83.2 million kWh

Table 3. Pump station load vs current supplier load

Pump Station	Provider	PS Load (million kWh/yr)	Provider MT Load ⁶	% Increase
PS9	Big Flat EC	58.7 million	27.1 million	217%
PS10,11	NorVal EC	166.4 million	54.9 million	303%
PS12	McCone EC	83.2 million	64.9 million	128%
PS13	Tongue River EC	83.2 million	86.4 million	96%
PS14	MDU	83.2 million	700.4 million	12%

a. Big Flat and NorVal Electric Cooperatives

Two of the coops, Big Flat EC and NorVal EC, serving three pump stations, are supplied by the Central Montana Electric Power Cooperative (Central Montana). The pump stations will be very significant loads for the coops. For Big Flat EC, electric consumption by pump station 9 is more than twice the current total usage of all existing customers. Table 4 below indicates the current load of Big Flat is approximately 27 million kWh/year, while PS 9 is expected to use about 59 million kWh/year⁷.

NorVal EC is about twice the size of Big Flat EC, with current sales at approximately 55 million kWh per year. The two pump stations that will be served by NorVal are larger than PS 9; PS 10 and PS 11 will each use about 83.2 million kWh per year, for a total load on NorVal of 166.4 million kWh. This is about three hundred percent of current sales.

⁵ Assumes pipeline runs 8760 hours per year; should be adjusted for down time as there are no spare pumps

⁶ Source: EIA.

⁷ Note that the projected load at PS9 is 9.6 MW, while the load at each of the other pump stations in Montana is 13.6 MW. The pump stations and electric facilities to serve them are designed for an ultimate possible buildout to 22.7 MW, however the analysis below focuses on the initial construction levels because it was not know when or whether the ultimate buildout would take place. The conclusions remain basically the same.

Central Montana gets its supply mainly from three sources: the Western Area Power Administration (WAPA), the Basin Electric Power Cooperative (Basin), and an allocation from BPA which will expire in September, 2011. WAPA provides a fixed allocation of power from the upper Missouri Basin Pick-Sloan program dams operated by the US Bureau of Reclamation. This is preference power allocated to coops, municipalities and public agencies. It is relatively low cost power because it comes from older projects built by the Federal government and it is sold at cost, although the costs include a share of the costs of power delivered to irrigation projects. No new projects are planned, so the Pick-Sloan allocation will increasingly be supplemented as loads served by Central Montana grow.

Basin Electric Power Cooperative owns thermal plants and some renewable plants. Basin is in the position of being the marginal supplier that serves load growth for its customers, and builds new generation as needed.

Central Montana has adopted a policy of melding its Pick Sloan and BPA allocations with power from Basin Electric to serve the residential and farm loads of the coops it serves. However, all large loads of 3 MW or higher are separately metered and billed, and are served solely with power from Basin Electric. For current customers of Big Flat and NorVal, this means that the benefits they receive of Pick-Sloan power (BPA power will not be available after September 2011) will not be adversely affected by service to the Keystone XL pump stations, because those pump stations will pay a rate that includes the full cost of power from Basin Electric charged to Central Montana (which will include a share of Central Montana's overhead costs) billed to the coops, and passed through to Keystone with a share of the coops' overhead costs. There should be no direct impact to existing customer rates for Big Flat and NorVal due to supplying power to the pump stations⁸.

b. McCone Electric Cooperative

McCone EC is about 20 percent larger than NorVal, with current sales of about 65 million kWh per year. Pump station 12, to be served by McCone, is the same size as PS 10 and PS 11, and will use about 83.2 million kWh per year, roughly 130 percent of current sales.

McCone EC is supplied by the Upper Missouri Generation and Transmission Electric Cooperative and the Central Montana Electric Power Cooperative. However, Central Montana serves only one delivery point for McCone, at Mosby, so power for PS 12 will come from Upper Missouri. Like Central Montana, Upper Missouri has a fixed allocation of Pick-Sloan power from WAPA, and the remainder of its needs is provided by Basin Electric⁹.

Upper Missouri does not socialize the Pick-Sloan allocations of its members; each retains the allocation it was originally given and the WAPA power is passed through to the coops at cost. Similarly, power from Basin Electric is passed through to the coops at cost, although the rates may be specific to particular end users. Upper Missouri's overheads are not billed at a kWh rate but are charged directly to the coops. Power for PS 12 will be metered directly by Upper

⁸ Personal communications from Doug Hardy, Central Montana; Jeanne Bernard, Big Flat EC; Craig Herbert, NorVal E.C., and Dave Raatz, Basin Electric Power Cooperative.

⁹ Personal communications, Mike Kays, McCone E.C., and Dave Raatz, Basin Electric.

Missouri, supplied to Upper Missouri by Basin at Basin's large pumping rate, and passed through to McCone at the same rate. McCone will pass that rate through to Keystone with appropriate overheads added. McCone's customers should see no dilution of the benefit they receive from Pick-Sloan power, and there should be no direct impact on their rates due to McCone's service to PS 12.

c. Tongue River Electric Cooperative

Tongue River EC is the largest of the four eastern Montana electric cooperatives serving the pipeline. Tongue River EC has current sales of approximately 87 million kWh per year. Pump station 13, to be served by Tongue River, is the same size as PS 10, 11 and 12, and would use about 83.2 million kWh per year, which is about 96 percent of current loads.

Tongue River EC is supplied by the Southern Montana Electric Generation and Transmission Cooperative. Southern Montana receives a fixed allocation of preference power from the Pick-Sloan projects through WAPA. Southern Montana also has a small allocation of Federal preference power from the Bonneville Power Administration that expires next year. Southern Montana does not belong to Basin Electric Power Cooperative; rather it buys power to serve the needs of its members (beyond the fixed preference power allocation) from the market, including PPL Energy Plus. Southern Montana will purchase power to serve Pump Station 13 from a market participant in the Eastern Interconnection of the national electric grid.¹⁰ The costs of this purchase, plus the associated transmission costs to deliver the power to PS 13, (plus a share of Southern Montana overhead costs) will be directly billed to Tongue River and passed through to Keystone¹¹. As with the loads served by Central Montana, this ensures that Keystone pays at least the incremental costs of service and that Southern Montana retains the full benefits of the Pick-Sloan preference power for its members' existing residential and farm load.

d. Montana Dakota Utilities

Finally, MDU would provide service to PS 14. MDU is much larger than the coops, with current sales in Montana of about 700 million kWh per year. The pump station load is only about 12 percent of current sales. Consequently, an underrecovery would have a much smaller impact on existing customers.

MDU is in a somewhat different position than the coops, since it will be selling power to Keystone XL pipeline at a tariffed rate, the Large General Electric Service Rate 30, filed with the Montana Public Service Commission¹². Following is a summary of the current rate, filed October 1, 2009:

¹⁰ The high voltage AC transmission network of the US and Canada consists of five separate grids, (the Western Interconnection, the Eastern Interconnection, Texas, Alaska, and Quebec) which are not synchronized with each other and which can only be connected for purposes of transferring power with expensive AC-DC-AC converter stations. The boundary between the Eastern and Western Interconnections passes through eastern Montana, where there is a converter station at Miles City. PS 13 is located on the eastern side of the system break and its power supply must come from the Eastern Interconnection.

¹¹ Personal communications, Alan See, Tongue River E.C., and Tim Gregori, Southern Montana E.G.&T.

¹² Personal communication, Tammy Aberle, MDU.

Base Rate:		\$25.00 per month
Primary Service:		
Demand Charge:	October-May	\$5.15 per KW
	June-September	\$6.15 per KW
Energy Charge		
	October-May	3.565¢ per KWh
	June-September	5.445¢ per KWh

These rates are subject to periodic change as MDU files new rates and the Montana PSC approves them. At the current rates, Keystone XL would pay approximately \$4.4 million per year for electric power (not counting recovery of transmission and substation investments discussed below). This is equivalent to an average rate of approximately 5.3¢ per kWh¹³. The rate can be expected to go up as MDU's costs go up in the future.

MDU indicates that this is adequate to cover the incremental cost of service to the pump station, although the Public Service Commission rate setting process focuses on just and reasonable rates based on actual and measurable costs, and is intended to cover actual average costs, not incremental costs. There is no basis for estimating a near term rate impact to MDU's existing customers on the basis of this charge (however see further discussion below on MDU's recovery of transmission and substation investments).

2. Transmission and substation investment risk

The second type of risk that could be imposed upon existing electric customers is associated with the need to construct varying amounts of new transmission lines and new substations to serve the pump stations. Table 2 summarizes the investment needed to serve each of the pump stations in Montana. The wide variation is due to the location of each substation in relation to the nearest location it can be reasonably served from on the existing transmission grid. Table 4 summarizes the new investment required for each of the electrical suppliers. For comparison purposes the current plant in service for each supplier is shown. As can be seen from Table 4, the required investment is significant, and would be a very large investment for Big Flat and NorVal, given the current size of the coops. To serve Pump Station 9, Big Flat must build 62 miles of new 115 kV line, plus a substation facility, at an estimated cost of \$20.6 million. By comparison, the value of Big Flat Electric Coop's current plant in service is approximately \$18 million. The new facilities will cost 114 percent of Big Flat's total current investment in plant. Similarly, PS10 will require a significant investment by NorVal. (PS11, also to be served by NorVal, is located adjacent to a point on the grid where it can be served from and will require only substation equipment – transformation and switching.) PS10 will require the construction of 50 miles of new 115 kV transmission line, plus substation equipment, at a cost of \$17.3 million. Total investment required for NorVal for the two pump stations it will serve is estimated at \$21.8 million. By comparison, the current plant in service for NorVal is \$29.2 million. Service to the two pump stations requires an investment of about 75 percent of NorVal's total current plant.

¹³ MCC calculation, assumes monthly usage of 6.933 million kWh; annual usage 83.2 million kWh; monthly demand of 13.6 MW.

The other suppliers do not face as big a burden relative to their current size. To serve PS 12, McCone Electric Coop will have to build 5 miles of new transmission, plus substation facilities, at a cost of \$4.9 million, about 17 percent of its current plant of \$28.7 million. To serve PS13, Tongue River EC will have to build 15 miles of new transmission, plus substation facilities, at a cost of \$7.6 million, about a quarter the size of its current plant of \$29.6 million. To serve PS14, MDU will have to build 5 miles of new transmission, plus substation facilities, at a cost of \$4.9 million (Keystone estimate; MDU estimates \$3.3 million¹⁴), under 3 percent of its current Montana plant in service total of \$189 million.

Customers could be at significant risk with these investments, particularly customers of Big Flat and Norval, but also those of McCone and Tongue River, and to a much lesser degree, MDU, if the utilities invest in the facilities and for some reason are unable to recover their costs from Keystone. For example, if cost recovery is based on a long amortization period and insufficient guarantees or security is not in place, the supplier and its existing customers could be at risk if the project is never completed, or if the project is completed but shuts down prematurely, or if recovery is predicated on the expected volume of power use and the pipeline does not run at projected levels.

The suppliers recognize this risk and are taking a variety of approaches to protect themselves and their customers.

Table 4. New Facility Investment Requirements vs. Current Supplier Plant in Service

Pump Station	Provider	New Facility Investment Need	Provider Plant in Service ¹⁵	% Increase
PS9	Big Flat EC	\$20.6	\$18.0	114%
PS10, 11	NorVal EC	\$21.8 ¹⁶	\$29.2	75%
PS12	McCone EC	\$4.9	\$28.7	17%
PS13	Tongue River EC	\$7.6	\$29.6	26%
PS14	MDU	\$4.9	\$189.0	3%

a. Big Flat

Big Flat EC’s transmission project includes shared facilities, that will be used to serve some of Big Flat’s customers as well as the pump station, for the first 33 miles, for which costs will be shared proportional to demand; the remainder of the line will be a dedicated facility billed entirely to Keystone, through a facility charge with provisions to prevent stranding. As part of the shared facility, Big Flat will also build a substation to serve existing customers who are

¹⁴ MDU provided a construction cost estimate of \$3.3 million for facilities to serve PS14 in 2008. This number should be adjusted for inflation to the date of construction, which is not known. Keystone has estimated the cost of the electrical supply facilities needed for PS14 at \$4.9 million, but the date of the estimate is not known.

¹⁵ Source: USDA Rural Utilities Service, 2008 Statistical Report, Rural Electric Borrowers

¹⁶ Total for pump stations 10 and 11.

currently served by an obsolete substation far from their load, which will be retired. Shared facilities will be prorated by load according to the maximum possible ultimate buildout of the pump station (22 MW) and the area load (4 MW). Preconstruction expenses are being paid up front by Keystone under a letter agreement. Once a construction contract is signed by Keystone, Big Flat will finance the project through National Rural Utilities Cooperative Finance Corporation. Costs will be recovered and the loan repaid through monthly capital expense charges to Keystone. Provisions in both construction and operating contracts provide for guarantees from TransCanada, the corporate parent of Keystone XL, to ensure Big Flat will recover all stranded costs due to non-completion or premature shutdown. A separate monthly capital expense charge should eliminate any risk associated with reduction of throughput¹⁷.

b. NorVal

Like Big Flat, NorVal intends to finance the investments in transmission and substation facilities required to serve PS10 and PS11 through CoBank of Colorado, and to recover the costs through monthly charges that cover the loan repayments. Security arrangements with TransCanada will ensure the loan is repaid without risk to other NorVal members, in the form of a Letter of Credit, with a provision for a balloon payment in the event of a premature shutdown of the pipeline¹⁸.

c. McCone

McCone EC has arranged to have Keystone provide quarterly contributions of construction funds as the required transmission and substation facilities are built. In this way McCone will have no funds of its own or its members invested in the facilities to serve PS 12, and will bear no risk from them.

McCone also notes that WAPA will have pump station related investment costs of \$3.14 million, which will be prorated and charged to the pipeline owners if service is discontinued within 17 years¹⁹.

d. Tongue River

Tongue River will finance the transmission and substation investments required to serve PS 13 by borrowing from either the Cooperative Finance Corporation or CoBank. They will bill Keystone with a flat monthly capital recovery charge sufficient to pay off the loan over a term yet to be determined in the range of 8 to 15 years. Keystone will also provide an irrevocable letter of credit or letter of guarantee, from a bank with a credit rating acceptable to the coop's bankers, to ensure against any risk from premature shut down of the pipeline before the loan is paid off²⁰.

e. MDU

¹⁷ Jeanne Bernard, op.cit.

¹⁸ Craig Herbert, op.cit.

¹⁹ Mike Kays, op.cit.

²⁰ Alan See, op.cit.

MDU is bound by its line extension policy (Extension Policy Rate 112), approved by the Public Service Commission, which states that “a permanent extension may be constructed without a contribution if the estimated project construction cost is equal to or less than two times the estimated annual revenue.” Projected power use by pump station 14 meets this test. MDU states that the rate for power sales to Keystone (see discussion above) includes a fixed cost margin that for a new load provides a margin which, if the test is met, is sufficient to recover the investment required to serve the load. MDU has used this methodology successfully with extensions to serve new large loads previously and is satisfied that it ensures there is no impact to other customers.

MDU will require TransCanada to carry a letter of credit for 5 years, rated at the full amount of MDU’s transmission and substation investment cost for the first three years, with a reduction by one-third for each of the remaining two years if load projections are met²¹.

3. Long Term Power Cost Impact Risk

The above discussion focuses on the near term risk to existing utility customers due to the provision of service by specific Montana electric suppliers to the Keystone XL pipeline pump stations. Over the long run, as loads grow, all power suppliers with a responsibility to serve customers eventually need to add new sources of supply to satisfy the growing loads. These new sources of supply can be new generating plants or they can be market purchases. Because inflation seems to be intrinsic to the US and world economies, it is often thought that new generating plants typically cost more than older plants, and adding new plants to a utility portfolio tends to drive up the cost of power. This would imply that load growth will tend to result in increased costs, and it has been suggested that addition of a new large block load, like the pumping load of the Keystone XL pipeline, will have a similar effect. This is a generalization, of course. If prices for the fuel to run an older plant go up sufficiently, construction of a new plant using a cheaper fuel may result in costs going down. Generating plants that burned diesel were retired after the petroleum crises of the 1970s and replaced with coal or natural gas fueled plants. In recent years most new thermal generating plants have been gas-fired, although now there is a significant push for environmental reasons to rely more on renewable generation. In the northern Great Plains, wind generation is the renewable technology of choice.

The common assumption among energy observers that new power plants are generally more expensive than old ones, is consistent with industry experience from the 1960s through the 1990s, when most new plants were nuclear or coal plants, but it has not always been the case and it may or may not be true in the future. From the earliest days of the utility industry until the 1960s, rates declined significantly as engineering improvements and higher pressures, together with increasing generating plant size, continually increased the efficiency and reduced the heat rate of coal plants, and as technology change reduced the cost of mining coal. During this period each new generation of power plant was larger, more efficient, and cheaper than the last. After about 1960 these improvements ceased to dominate the industry, and large, expensive coal plants and nuclear plants drove up power costs with each new plant. However, since the late 1980s

²¹ Tammy Aberle, op.cit.

new generation has mostly relied on natural gas, with increasing use of wind, and while power plant costs remain subject to cost inflation, they may not automatically drive up rates. Current industry expectations are that natural gas will remain in relatively plentiful supply, while wind costs, particularly the costs of regulating wind, are uncertain but potentially subject to a learning curve. Environmental costs and regulation may drive up the costs of power from existing coal plants. These factors could lead to an environment where new plant costs could reduce average costs.

An increase in load growth does advance the date at which new plants are needed, and the Keystone pump station loads, like all growth, will likely have that effect. While pricing arrangements like those used by the coops can protect against dilution of the benefits they receive from the Pick Sloan project, they cannot protect against an increase in the costs of Basin Electric Coop's portfolio if Basin has to add new plants that drive up power costs. MDU customers are in a similar position. Basin and MDU will do the best they can, within the relevant framework of environmental and RPS regulations, to ensure they pick the best resources as they expand.

On the other hand, if there is an offsetting decline in loads, either through the loss of existing large industrial loads or simply due to unfavorable economic conditions, planned new generating plants may be put on the shelf and plants with expensive operating costs may not run as often. On balance, it may not be possible to discern in advance whether, how much, and possibly even in what direction load growth will affect rates.

a. **MDU**

MDU's last resource plan, completed and filed with the Montana PSC in 2009, was predicated on a resource plan that included the projected load of PS14²². That forecast showed projected summer peak loads of about 531 MW in 2012, including 13.6 MW for PS14. Taking out that load would reduce forecasts by 13.6 MW, to something over 517 MW in 2012, 529 MW in 2013, and 542.5 MW in 2014. Thus addition of the pipeline load advances projected load growth by a little over one year. The resource plan indicates a need to add resources to meet loads and reserve requirements. The chosen resource plan called for additional capacity purchases for the period 2011 through 2014, adding around 130 MW of baseload power from a share in the planned Big Stone II plant by 2015, a 75 MW natural gas fired combustion turbine in 2015, and a second 75 MW combustion turbine in 2021. It also called for an additional 15 MW of demand side resources and interruptible load by 2015, and a wind farm, the Cedar Hills project, 19.5 MW to come on line in 2010. (The Big Stone II plant was abandoned in November 2009, and MDU indicated it would issue an RFP for capacity and energy purchases to begin in 2015.²³ These dates are likely to be subject to change as the target dates approach, due to the uncertainty over future load growth and resource availability and the normal practice in turning resource plans into decisions to begin construction. Further, MDU's need for new resources is significantly affected by its reserve requirement. Historically, the reserve requirement has been 15 percent, and this is a major driver in MDU's resource planning. The Midwest Independent System

²² Montana-Dakota Utilities Co. 2009 Integrated Resource Plan, submitted to the Montana Public Service Commission September 15, 2009. Docket N2009.9.122

²³ MDU response to PSC-001 in MPSC docket N2009.9.122.

Operator (MISO) is currently considering a change in reserve requirements that could have the effect of reducing MDU's need for reserves; this would defer the need for new resources to come on line. It is possible that the presence or absence of the Keystone load could change the dates that new resources would be added, although given the size of contracts that are expiring in 2014, as well as the uncertainty over load growth and possible loss of existing loads, it is unlikely that there would be any significant advancing of the date at which new resources come on line.

When and if PS14 is expanded to its ultimate level of 22.7 MW (an increase of 9.1 MW) a similar analysis would show the possible advancing of construction of planned resources by up to a year.

b. Basin Electric

Basin Electric will provide the power needed to serve pump stations 9, 10, 11 and 12 in Montana. Power to serve PS13 will be provided through a market purchase by Southern Montana G&T from an unknown source, and PS14 will be provided by MDU. The cumulative power requirements faced by Basin to serve the four Montana substations would be about 50 MW, and at ultimate buildout, up to 84-91 MW. However, this is not the end of Basin's responsibility for service to the Keystone XL pipeline, and there are seven pump stations in South Dakota that will be served by coops that are Basin member systems. If all these are also served with power from Basin, then Basin's initial responsibility could be as high as 145 MW, and at ultimate buildout, as high as 243-250 MW.

Basin is a large system that serves member systems in Montana, North Dakota, South Dakota, Wyoming, Colorado and Nebraska. Basin has existing fossil generation plants with capacity totaling 3,048 MW, and existing renewable generation with total nameplate capacity of 501 MW. It has committed plants under construction or permitted totaling 940 MW, including the Dry Fork Station coal plant rated at 422 MW gross, or 365 MW net (about to be completed); the Deer Creek Station gas-fired combined cycle plant rated at 300 MW (net), scheduled to come on line in 2011; the Prairie Winds SD1 project, a 151 MW wind farm recently passed environmental permitting review by the Rural Utilities Service and WAPA, currently in the financing stage; the South Dakota Wind Partners project, an additional 15 MW wind project that would connect with and share facilities with the SD1 project²⁴.

The initial loads of the Keystone pump stations served by Basin could be as high as 4.8 percent of its thermal generation capability or 4.1 percent of total generation. The presence of the pump stations could lead Basin to move up by one year the targeted online date of planned new resources; an expansion to the full buildout of the pump stations at some future date could have a similar effect. However, because of the uncertainty in load growth as well as the uncertainty in the construction time and completion date of large generating resources it may not be possible to distinguish any change in the need for and on line dates of new resources.

²⁴ Information from Basin Electric web site http://www.basinelectric.com/About_Us/Corporate/At_a_Glance/index.html , and from Dave Raatz, op.cit.

Conclusions

Service to the Keystone pump stations represents a significant increase in load, as well as a significant investment compared with current plant in service, for each of the four Montana electric coops that will serve them. However, the coops, and their suppliers, are well aware of that fact and have taken careful measures to insulate themselves and their customers from the risk of cost increases due to taking on such sizeable loads. By setting up pass-through rates for wholesale power from Basin Electric, and by security measures to ensure payment of the costs of new transmission and substation investments (and in the case of McCone, by arranging for up front payment of electric facility construction costs by Keystone) the coops appear to have done a good job of eliminating the risk of cost increases due to service to the pipeline, construction of the electrical infrastructure, or from early termination of pipeline and pump station operation.

Service to the Keystone Pump Station 14 by MDU does not represent as significant an increase in proportion to existing load as it does for the coops, rather in the order of 12 percent of Montana loads, and the required facility investment is roughly 3 percent of Montana plant in service. Nevertheless, MDU has proceeded in a way that it believes will protect its existing customers from any direct rate impacts from service to the pipeline. It will recover its infrastructure costs through the fixed cost margin on power sales, and will require an irrevocable letter of credit to ensure the revenue flow continues at least long enough to fully recover those costs. Should any unexpected risks emerge, the Montana PSC will have tools at its disposal to protect MDU's other customers, for example by directing MDU to create a separate rate class to recover costs directly from the pipeline. While it has never been done in Montana, in the event of a shutdown the PSC may be able to require a write-off of any incomplete cost recovery of special purpose facilities built to serve the pipeline.

There could be some long term impacts to the resource portfolio plans of Basin Electric and of MDU, in the form of a need to advance the dates at which new resources are planned to come on line. However, given the size of the pump station loads served relative to the resource portfolios and planned new resources of Basin and MDU, and given the normal uncertainties over load growth and the cost and completion dates of planned facilities, any such impacts should be minor and in fact may not be distinguishable.

Keystone XL Pipeline Rate Impact Study

Responses to Public Comments

by the

Montana Consumer Counsel

This document is provided in accordance with sections 69-2-216 and 217 of the Montana Code Annotated, which require the Montana Consumer Counsel to conduct an analysis of the fiscal impacts on electricity customers of a project applying for a certificate under the Major Facility Siting Act. It further requires DEQ to publish the report and allow for public comments, and requires the Consumer Counsel to respond to these comments. This document contains MCC's response to public comments on the rate impact analysis, in accordance with section of 69-2-216 5 (b), MCA.

1. Commenter: Northern Plains Resource Council

Commenter: David Barnick

Commenter: Sandy Barnick

Comment: please provide agreements between Keystone and the utilities under which Keystone will pick up all costs.

Response: This request should be addressed to the utilities; MCC does not have the agreements. Due to the utilities' confidentiality concerns, information on the contract arrangements was provided in oral communication and is included in the report.

2. Commenter: Northern Plains Resource Council

Commenter: David Barnick

Commenter: Sandy Barnick

Comment: Please provide a list of the actions MDU is taking to protect themselves and their customers from rate increases as a result of the pipeline.

Response: MDU indicates it holds an irrevocable letter of credit to ensure costs will be recovered in the event of a premature shutdown or abandonment of the pipeline. Further, see the Public Service Commission comment below.

3. Commenter: Montana Public Service Commission

Comment: The Montana Public Service Commission offers the following comments regarding the Montana Consumer Counsel's Rate Impact Study of the Keystone XL Pipeline as it pertains to the regulated electric service provided by Montana Dakota Utilities (MDU) to supply Pump Station 14.

The Commission concurs with the findings of the Montana Consumer Counsel that MDU has plans in place to ensure costs related to the project will be borne by the electric services' requester, the TransCanada Corporation (TransCanada). The Commission is accordingly satisfied that fixed costs will be recovered pursuant to MDU's line-extension policy, which has been approved previously by the Commission. Additionally, MDU holds an irrevocable letter of credit from TransCanada to recover infrastructure costs in the eventuality of the pipeline's premature discontinuation or abandonment. In this way, the Commission expects that existing customers will be protected from any direct rate impacts relating to services to the pumping station which MDU will serve.

Response: We appreciate the comment.

4. Commenter: Alan Kent and Christie Liles

Comment: The draft rate impact study notes that, under Montana law, electrical transmission lines proposed by utilities that report to the Montana Public Service Commission or to FERC are exempt from the rate impact study requirement. Is this because TransCanada Keystone Pipeline,LP. was designated a Regulated Common Carrier on August 16th 2010?

Response: No. This reference in the rate impact study explains why a rate impact study is being done despite the exemption for transmission lines proposed by utilities reporting to the PSC (MDU) or to FERC (the coops).

5. Commenter: Alan Kent and Christie Liles

Comment: I as a landowner have been wondering how we can comment on the common carrier issue that became a significant role player in the Keystone XL Pipeline Project after the public comment period ended in July, 2010. Does it make no difference if there is never an on-ramp constructed; or is there a projected timeframe or schedule for the on-ramp facility? I as a landowner question that because they hold out to be a common carrier; with the understanding of offering a possibly on-ramp with the proper application process; then we as landowners impacted just have to accept this concept? Since they have been given designation as a common carrier because of the on-ramp; what happens if the on-ramp is never constructed in Montana? If this happens what is our recourse of action as landowners who would have been condemned by TransCanada Keystone Pipeline,LP.?

Response: These questions are beyond the scope of the rate impact study.

6. Commenter: Alan Kent and Christie Liles

Comment: This paragraph also has a statement that states “Further, some or all of the transmission projects needed to serve the pump stations maybe exempt from the requirements of MFSA either because of the length and voltage of the projects or because they come under a “75/75” exemption.” Could you please explain this statement (especially the “75/75” exemption)?

Response: Title 75, Part 20, MCA, the Montana Major Facility Siting Act, requires a certificate of Environmental Compatibility for transmission lines as follows:

75-20-104(8) "Facility" means:

(a) each electric transmission line and associated facilities of a design capacity of more than 69 kilovolts, except that the term:

(i) does not include an electric transmission line and associated facilities of a design capacity of 230 kilovolts or less and 10 miles or less in length;

(ii) does not include an electric transmission line with a design capacity of more than 69 kilovolts but less than 230 kilovolts for which the person planning to construct the line has obtained right-of-way agreements or options for a right-of-way from more than 75% of the owners who collectively own more than 75% of the property along the centerline;

....

For transmission lines serving the pump stations that are greater than 10 miles in length , DEQ has been advised that the cooperatives will be seeking exemption from review under MFSA as provided for in 75-20-104(8)(ii). If the cooperatives are unable to obtain the requisite easements or options for these lines longer than 10 miles, they would have to apply for a certificate of compliance under MFSA. Transmission lines shorter than 10 miles in length that would serve pump stations are being considered as “associated facilities,” because they are “devices of equipment associated with the delivery of the energy from a facility” as part of the Keystone XL pipeline application.

The effect of the 75/75 rule is to encourage finding routes that satisfy landowner concerns, but to ensure that most landowners along a route, as well as the owners of the land traversed by most of the line, are in agreement. This presumably would prevent a favorable deal with a few large landowners (for example, the BLM) that ignores the rest, and it would also preclude negotiating only with the smallest landowners and ignoring the large ones.

According to DEQ, negotiations are still underway and are not expected to be concluded until after the Final EIS is released.

7. Commenter: David Barnick

Commenter: Sandy Barnick

Comment: For McCone Electric Cooperative, there also needs to be an assurance that the added expenses for power is paid by Trans Canada for their use. The members should not be expected to pay for the power for the pipeline to run for their own profit.

Response: As discussed in the report, all of the coops have recognized this risk and dealt with it by delivering power directly from the wholesale supplier. McCone will supply pump station 12 with power delivered by Upper Missouri G&T from the Basin Electric Power Cooperative, at Basin's large pumping rate. McCone's members should be insulated by this arrangement from any added expenses for power associated with service to Keystone. If any additional assurances are deemed to be required they would have to be negotiated between McCone Electric Cooperative and TransCanada.

8. Commenter: Irene Moffet

Comment: The rate impact analysis should address the generation needed to supply the pumping stations, not only in Montana, but also those in South Dakota that will be served by Basin. What will Basin Electric need to do to provide power to serve the pump stations in Montana? How will building a new plant affect the costs of power charged to the coops? Will all members be charged if rates go up?

Response: This was addressed in section 3b of the paper.

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