PIPELINE RECLAMATION USING NATIVE SPECIES

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ABSTRACT
One of the oil and gas industry's challenges is to reclaim disturbed native rangeland with native species. In fall 1992, TransGas (a subsidiary of SaskEnergy) constructed a natural gas transmission line across the Coalfields Prairie Farm Rehabilitation Administration (PFRA) Community Pasture. This necessitated a 10 kilometre long - 18 metre wide right of way. The right of way was successfully reclaimed using a variety of reclamation techniques with the use of a native grass cultivar seed mix that approximated the vegetation composition of the pasture. This poster provides an example of how agencies with different goals can work together at the field level so that both development and conservation objectives can be met.

KEYWORDS
Cultivar, disturbance, reclamation, native species, native rangeland.

INTRODUCTION
Until recent years, oil and gas industry disturbances were reseeded with easily established introduced forage species (such as crested wheatgrass) and topsoil conservation measures were not routinely undertaken. In recent years knowledge about the merits of topsoil conservation in maintaining forage productivity and the value of intact native rangeland ecosystems has improved. This is especially true for stewards of publicly owned lands. In fall 1992, TransGas constructed a natural gas transmission line across Coalfields community pasture which necessitated a 10 kilometre long 18 metre wide right of way. Topics of concern included: minimization of soil disturbance (especially on steep terrain), topsoil conservation across stony rough topography, crossing of the Souris River, reclamation using native grass species, management of livestock during the reclamation period, and preservation of significant archaeological sites.

METHODS
As part of the construction process, TransGas was required to undertake an environmental overview and identify potential environmental effects, provide mitigation details and identify protection procedures which would avoid or minimize adverse effects. All specific details were worked out between PFRA and TransGas staff before the construction process began on the pasture. These were outlined in a type of contract called a Right of Entry to Construct. Staff from both agencies met together as much as possible during both the construction and reclamation phases and this allowed staff to share expertise and exchange concerns.

Pipeline contractors were required to minimize disturbance and restrict travel to a pre-marked right of way. Right of way boundaries were marked every 100 metres.

Topsoil was stripped with a backhoe (on the ditch line only), and kept separate from the ditch spoil. This topsoil was subsequently replaced in early spring 1993 after the ditch spoil had subsided. This measure prevented topsoil loss in the event that ditch subsidence became a problem, necessitating ditch line recontouring. Rocks were either placed back into the ditch, scattered, or used to construct water berms on steep slopes.

A machine called a mole was used to directionally drill under the Souris River and the pipe was then pulled under the river bed. Archeological sites found around the river were thus avoided.

Steep coulees were fenced to exclude livestock for a period of 4 years. Livestock grazing on other disturbed areas was delayed until late summer 1993.

A seed mix that was compatible with native vegetation was seeded in spring 1993. Its composition is outlined in Table 1.

A variety of methods were used to seed disturbed areas. These included drill seeding across slopes (at a rate of 14 lbs/acre) and use of an all terrain vehicle and cyclone seeder to broadcast other sites (up to 56 lbs/acre, depending on site conditions). Broadcast sites were subsequently dragged with a bar and chains to cover the seed. Areas close to the Souris River did not require seeding because the directional drilling equipment eliminated disturbance of the river bed and associated vegetation.

RESULTS AND DISCUSSION
Inspections were conducted by both agencies in successive years after pipeline construction. Minimal soil erosion was noted on steep slopes.

Plants of native species are present along the old ditch line and these likely originate from both the conserved topsoil sods and the seeded cultivars. Steep slopes have a buildup of plant residue after 3 years of protection and can now be safely grazed. Livestock were initially attracted to the new growth on the unprotected parts of the old ditch line and plant growth was not as vigourous. However, reclamation is still considered successful. Full exclosure of pipeline corridors would be preferable during the entire reclamation period**.** In addition, the use of alfalfa in a native species mix is not warranted on sites that have had topsoil conserved properly.

The success of a reclamation project that uses native species is dependant on open communication and cooperation by all affected parties. Each must understand what has to be undertaken and who is doing what. Reclamation of any rangeland involves a certain amount of risk. However, our understanding of which reclamation techniques work is improving and this increases both the expectation and the probability that successful reclamation of native range can be undertaken.

Table 1
Native Grass Seed Mix for Coalfields Community Pasture.

SPECIES	CULTIVAR	PERCENT OF MIX (by weight)
Western wheatgrass	Walsh	21%
Northern wheatgrass	Elbee	21%
Slender wheatgrass	Revenue	21%
Green needlegrass	Lodorm	16%
Alfalfa Noducote	Rangelander	21%