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**Final Year Of Testing Of Native Species And Revegetating  
Oil & Gas Disturbances In The Sandy Soils  
Of The Parkland Ecoregion Of Alberta**

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**CATEGORY**

Air  Soil & Groundwater  Ecological Integrity  Greenhouse Gas/Climate  
Change   
Other (please specify) Land reclamation

**Applicant information**

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**Background**

The major objectives were to:

1. Test key native grass, legume and forb species suitable for revegetation and evaluate the effectiveness of the seed mixes in accelerating the recovery of the plant community in the sandy soil areas of the Parkland Ecoregion.
2. Develop methodologies (seeding techniques, weed control, seed processing) to propagate and cultivate these native species under field conditions.
3. Enhance our understanding of plant community recovery in the sandy soils.
4. Release native ecotypes to the market industry, in order to facilitate revegetation projects.
5. Provide information to land managers and industries to support the creation of sustainable plant communities following resource extraction activities such as oil and gas.

In 2001, Talisman Energy Inc was interested in developing their lease holdings in the Ribstone Creek Ecological Reserve. Located in the Central Parkland Subregion of the Parkland Natural Region, the Ribstone Creek Ecological Reserve is composed of some very unique topographic features and is designated a “Protected Area” under the Wilderness Areas, Ecological Reserves and Natural Areas Act. Topographic features included are: important wetland/riparian areas, well-developed dune formations as well as stabilized or less developed dune formations, and some rare plant communities. The key concerns to regulatory agencies such as SRD, AENV and oil and gas industries, like Talisman Energy, are the disturbance or loss of native vegetation and habitat and the introduction of weedy/invasive species into native habitat (Tera Environmental Consultants, 2001). The Knowledge gained from this study will allow oil & gas industries to apply similar strategies to other areas (example, sand hills of Saskatchewan) where oil and gas activities raised concern from environmental groups and regulators. Promising plant varieties will allow resource extraction companies to reclaim environmentally sensitive areas to sound ecological function, provide important wildlife habitats and allowed for good stewardship of our land.

Past revegetation efforts were based on general adaptability of introduced grasses and their availability. Because of their competitive nature and persistence, these introduced species have out competed the native species in places where they have been seeded (Adam et al., 2003), resulting in landscape fragmentation, reduced soil quality (Dormaar et al. 1995), reduced range productivity and decreased ecosystem diversity and functioning. The importance of using native species in reclaiming disturbed sites has been emphasized by government guidelines and regulations (Environmental Protection and Enhancement Act, Native Plant Revegetation Guidelines) and by the public’s concern to protect the natural environment and conserve biodiversity. The regulations and guidelines define the expectations associated with achieving reclamation success. However, systems (know how) and tools (plant materials) are required to achieve and to

measure or determine reclamation success in these sensitive ecosystems such as the sandy soils. Achieving reclamation success requires appropriate soil treatments and reintroduction of native plant species (Bradshaw 1987). Therefore, to meet regulatory requirements, oil and gas companies must have access to native seeds indigenous to the area in which they are operating. They must also have the knowledge to use these species that will allow them to return the land to a state comparable to its pre-disturbed condition within an acceptable time period.

### **2006/07 (Final Year)**

- Continue with plot maintenance and data collection as required to support the variety releases.
- Multilocation testing of additional sandy species, such as the dryland sedges, understorey species and legumes.
- Release of additional plant varieties (registration and working with seed companies).
- Analysis and interpretation of data.
- Preparation of report.

### **Deliverables**

- Detailed year-end report. We submitted a progress report entitled “Development of native species and revegetating oil & gas disturbances in the sandy soils of the Parkland Ecoregion of Alberta” to PTAC and CAPP for distribution to their members.
- Presentation of information at workshops.
- Release of about seven reclamation varieties.

### **Communication Plan**

- Present research findings at PTAC and Canadian Land Reclamation conferences.
- Report posted on PTAC website.
- Contribute to ERAC newsletter.

### **Benefits to CAPP**

- This project provides the reclamation industry with proven and reliable seed varieties for which no locally adapted commercial seed source exists.
- Through the use of adapted varieties and information generated from the testing

of these species and seed mixes, we hope that industries will be able to comply with environmental regulations and at the same time attain substantial cost savings.

### Resource Estimates

	06/07
	(\$K)
<b>Revenues</b>	
Alberta Sustainable Resources Development	25
Alberta Research Council	25
Alberta Environment (requested)	25
Husky Energy	?
Talisman Energy	10
<b>CAPP (requested)</b>	35
<b>Total</b>	120
<b>Expenditures</b>	
Salaries – Scientist & technician	108
Materials, Supplies, leases (vehicles, growth chambers, travel to offsites and conferences, allowances)	12
<b>Total</b>	120

**SUGGESTED PEER REVIEWERS** (should be two or three)

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## **REFERENCES**

1. Bradshaw, A. 1987. The reclamation of derelict land and the ecology of ecosystems. In: Restoration ecology: a synthetic approach to ecological research. W. Jordan, M. Gilpin and J. Aber (eds.). Cambridge University Press, New York. Pp. 53-73.
2. Gerling H.S., M.G. Willoughby, A. Schoepf, K.E. Tannas and C.A. Tannas. 1996. A guide to using native plants on disturbed lands. Alberta agriculture, Food and Rural development and Alberta environmental Protection. ISBN 0-7732-6125-7 247 pages.
3. Native Plant Working Group. 2001. Native plant revegetation guidelines for Alberta. H.S. Gerling (ed.), Alberta Agriculture, food and Rural Development. Edmonton, Alberta.
4. Native Species Mixtures for Restoration in the Prairie and Parkland Ecoregions of Saskatchewan (Mixed-Grass Prairie Habitat Restoration Project, Simpson, SK, 1995).

an annual ERAC newsletter contribution; and a revised final report in hard and electronic copy at the end of the project.