A SYMPOSIUM SUMMARY

R. JOHNSON

HEAD, SOILS GROUP
ALBERTA ENVIRONMENTAL CENTRE

The jointly sponsored conference on reclamation targets for the 1990s failed in its primary objective: to outline the types of land disturbances which will need reclaiming in the 1990s. Instead, 17 speakers, including 5 panel members, concentrated on a review and analysis of past or present reclamation efforts. Only the Minister of Environment, the Hon. Ken Kowalski, addressed the central question of what his Department expects in the future. The Minister of Environment requested that this conference forward to him a summary of the proceedings and any recommendations that might emerge.

Although the original intention of the conference was not fulfilled, speakers and participants did analyze a wide spectrum of issues in land reclamation. The most novel, germane, controversial, and important of these are:

1. Alberta Environment has a new mission statement: "to achieve the protection, improvement and wise use of Alberta's environment now and in the future." Note that Alberta Environment will no longer concentrate on the balance of the economy and the environment; this Department will "improve" the environment "now and in the future." Alberta Environment will also emphasize communication with all citizens on environmental matters. The Minister of Environment suggests that an environmental tour be established that allows the public to see significant landmarks of our environmental efforts, including successful reclamation projects.

2. The linkage between reclamation research, regulation, and implementation in Alberta is second to none in the world because all three activities are coordinated through one body - the Alberta Land Conservation and Reclamation Council. Successful case histories in Alberta are numerous; specific examples include the determination of soil depths necessary to control salinity in mined land, and the establishment of reclamation criteria for "development and reclamation plans" based on research funded through the Land Conservation and Reclamation Council.

3. Historically, Alberta leads Canada and North America in regulatory policy governing land reclamation. The Land Surface Conservation and Reclamation Act, passed by the provincial legislature in 1973, was the first legislation to require reclamation planning as a part of land development approval. In 1976, the coal development policy of Alberta laid down for the first time the principle that disturbed land should be returned to a state of equal capability.

4. There is no need for more legislation governing reclamation in Alberta, but the interpretation of legislation needs to change to accommodate new situations. For example: (i) the distinction between regulated and unregulated pipelines should be dropped, land disturbance is common to both; (ii) all disturbances, including those requested by governmental agencies, should be regulated by the same rules: dams, highways, bridge crossings in the city, tile drainage installation on individual farms, etc. The government does not police itself as much as it polices industry.

5. The reclamation of disturbed lands to wildlife habitat is desirable in many areas of the province but there are two issues of immediate concern: (i) how to set goals for wildlife habitat establishment, and (ii) how to meet these goals. The goals should be specific (e.g., habitat to support a given number of a given species) but easily modified. These goals should be set even when complete certainty is lacking. Reclamation science should outline how the goals are to be met. Even though the science of habitat management is progressing rapidly, reclamation research is failing to give managers the technology they need.

6. Land degradation, comprised of soil salinization, erosion, acidification, organic matter depletion, and compaction, is one of the most urgent environmental problems in the province. Much of the damage is not immediately apparent and often the devastated land occurs in widely scattered areas, masking the extent and severity of the problem. Even though the Soil Conservation Act (1980) states that all farmers "must prevent soil degradation by wind, water, or any other cause" there is little enforcement carried out. Farmers find conservation measures time consuming and unnecessarily complex while the problem grows as a result of indifference, a bias towards very large equipment, and a deterioration of community ties. Soil conservation pressures are best implemented using: (i) educational campaigns, (ii) peer pressure, and (iii) cost-sharing programs. The major obstacle to developing better policy initiatives in soil conservation is the lack of focus on "target" groups as opposed to blanket programs covering all farmers on all kinds of land.

7. Industrial site decommissioning is a new area of reclamation requiring specific regulation. Equipment must be disposed of, clean-up criteria must be developed, and the future use of the site must be decided upon. Old plants are more expensive to decommission than new ones, and there are more than 40 major facilities requiring decommissioning in the next five years. Three levels of government, industry, and the public have roles in industrial site decommissioning: the federal government should provide leadership in developing guidelines and coordinating work between provinces; the provincial government must regulate decommissioning, approve plans submitted by industry, and certify that the site is clean; the local government sets land use restrictions and zoning regulations; industry plans the

decommissioning activities and implements them; and, finally, the public should be the "watch dog" on all activities and regulations. Industrial site decommissioning is expensive but dependent mostly on the size of the site:

Size	Estimated Cost
Small	$ 10 000 to $ 100 000
Medium	$ 100 000 to $1 000 000
Large	$1 000 000 to multimillions

Industrial site decommissioning should be a regulated activity. The technology for decommissioning is available but it can be very expensive. Future research should concentrate on the assessment of human health risk in regard to contaminants, the evaluation of cost-effective technologies for site clean-up, like bioreclamation (using genetically engineered microbes to break down pollutants), and understanding and controlling contaminant movement in soil.

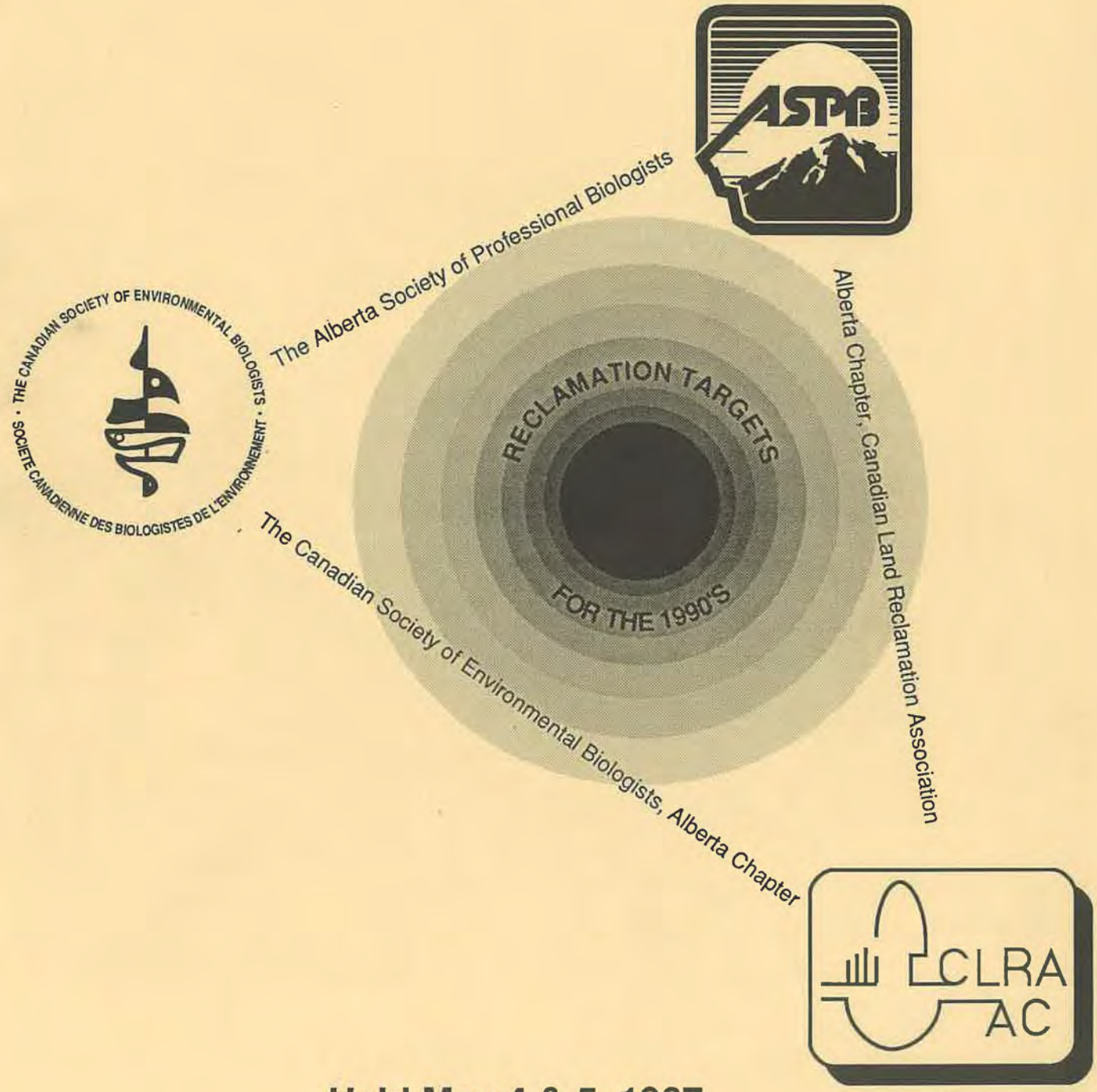
8. Landfills in Alberta are used to dispose of all solid wastes. They represent present and future problems in that there is no sorting of garbage, vermin are common, clean-up is very expensive ($30 000/acre), and future environmental problems may arise due to changes in climate or streamflow. Alberta Environment's regional landfill policy allows for a tighter control of disposal, more frequent cover of disposal pits, and separation of pesticides. The only desirable end land use for reclaimed landfill sites is parks and recreation.

9. Wetland reclamation to enhance waterfowl habitat has been a highly successful program in the 1980s. The use of artificial islands has proven to be the best means of providing nesting habitat. Wetland reclamation has concentrated on selecting adaptable plants, rather than expensive soil handling procedures. The most difficult problem is seedling establishment on rough seedbeds where soil structure and texture prevent optimal seed-soil contact. The newest work in wetland reclamation is concentrating on plant selection for highly stressed environments - saline soils, flooded areas, and low nutrient landscapes.

10. What is successful reclamation? Government and industry officials have agreed that successful reclamation is to restore land to former or equivalent capability. For agriculture or forestry this would mean equal productivity with no increase in inputs. For other areas, it means land capable of supporting self-sustaining plant communities which co-exist with natural vegetation. The real question is: How does one determine when reclamation is successful? Now, the procedures are subjective. The land reclamation officers look at topsoil replacement, erosion, vegetation performance, and soil tilth. Future procedures will request a capability plan and objective measurements to ensure compliance with the plan.

11. The existing approaches to land reclamation are acceptable for agriculture, forestry, and rangeland, but special landscapes of critical importance to tourism, wildlife protection, and maintenance of plant genetic resources are negatively affected by <u>any</u> disturbance. Some areas should never be disturbed.

Proceedings of a Symposium



Held May 4 & 5, 1987
Edmonton, Alberta

RECLAMATION TARGETS FOR THE 1990s

PROCEEDINGS OF A SYMPOSIUM SPONSORED BY

THE ALBERTA SOCIETY OF PROFESSIONAL BIOLOGISTS

THE ALBERTA CHAPTER/CANADIAN LAND RECLAMATION ASSOCIATION

AND

THE CANADIAN SOCIETY OF ENVIRONMENTAL BIOLOGISTS - ALBERTA CHAPTER

WESTIN HOTEL
EDMONTON, ALBERTA
MAY 4 & 5, 1987

C.B. POWTER, EDITOR

COPIES OF THIS DOCUMENT ARE AVAILABLE AT $ 15.00

The Secretary
Alberta Society of
Professional Biologists
P.O. Box 566
Edmonton, Alberta
T5J 2K8

Canadian Society of
Environmental Biologists
P.O. Box 12
Substation 11
Edmonton, Alberta
T6G 2EC

ACKNOWLEDGEMENTS

The Symposium was organized by Mr. David Reid (Alberta Society of Professional Biologists), Mr. Chris Powter (Alberta Chapter, Canadian Land Reclamation Association), and Mr. Brian Free (Canadian Society of Environmental Biologists - Alberta Chapter). This event marked the first time these three organizations had joined together in a common effort to address an important issue of the day. By all accounts the effort was a success and will serve as a model for future joint efforts.

The Organizing Committee would like to thank:

Mr. J. Green, Mr. B. Free, Ms. N. Ross and Mr. C. Powter: Session Chairmen

Mr. D. Reid and Ms. N. Ross: Corporate donations

Mr. P. Jalkotzy: Displays

Ms. E. Cabral and Mr. D. Walker: Audio-visual

Ms. C. Watson: Press

Ms. J. Smith, Mr. J. Rettalack, Ms. D. Egglestone: Registration

Mr. G. Ash: Accounting

Mr. C. Powter: Hotel, Brochure, Proceedings, Mailing, Registration

Ms. L. Allen: Mailing, Registration

Ms. M. Canafranca and Ms. S. Inn: Typing of the Proceedings

Mr. D. Walker: Cover design

The Organizing Committee would also like to thank the following sponsors, without whom the Symposium could not have been a success:

TRAVEL	Canadian Air Lines (PWA/Time Air)
BROCHURE PREPARATION	Alberta Environment, Research Management Division
BROCHURE DISTRIBUTION	Alberta Environment, Research Management Division Alberta Environment, Land Reclamation Division Alberta Forestry, Lands & Wildlife Alberta Society of Professional Biologists Canadian Society of Environmental Biologists
REGISTRATION PACKAGE	Alberta Agriculture Alberta Environment Alberta Forest Service Alberta Power Limited Alberta Treasury Branches

REGISTRATION PACKAGE	Calgary Convention Centre Canadian Land Reclamation Association City of Edmonton Luscar Limited Northwestern Utilities Limited
CORPORATE DONATIONS	Amoco Canada Petroleum Company Ltd. Chevron Canada Resources Ltd. Delta Environmental Management Group Ltd. Dome Petroleum Limited Energy Resources Conservation Board Esso Resources Canada Limited Gulf Canada Corporation Hardy BBT Ltd. Integrated Environments Ltd. Interprovincial Pipe Line Limited Mobil Oil Canada Ltd. Monenco Consultants Limited Petro-Canada Inc. Shell Canada Limited Western Oilfield Environmental Services Ltd.
DISPLAYS	Alberta Environment Canadian Forestry Equipment Ltd. Chemex Labs (Alberta) Ltd. Ducks Unlimited Canada Environment Canada, Canadian Wildlife Service Lakeland College Norwest Soil Research Ltd. Prairie Seeds
PROCEEDINGS	Alberta Environment, Research Management Division

And a special thank you to our two guest speakers:

Dr. David Samuel, University of West Virginia who spoke on Reclamation to Wildlife Habitat in the United States

Dr. Larry Holbrook, Biotechnica International of Canada, Calgary, Alberta who spoke on Biotechnology and Biologists

- and -

to the Hon. Ken Kowalski, Minister of Environment, for delivering the opening address.

MESSAGE FROM THE ORGANIZING COMMITTEE

Reclamation practitioners and researchers have gone a long way to solving the problems posed by such disturbances as mining, drilling and pipeline construction. The future challenge for reclamation lies in applying our expertise in other areas such as industrial site decommissioning, habitat creation and restoration, and urban design.

The Symposium was designed to expose participants to a wide variety of "new" areas where reclamation science could be applied. These were the "targets" referred to in the Symposium title. The speakers did an excellent job in meeting this goal. Some of the participants felt the Symposium had not provided enough information on new methods to be employed in reclaiming these new disturbance types. While this was not the goal of the Symposium it remains a valid concern that should be addressed in a future symposium.

Finally, the Hon. Ken Kowalski, Minister of Environment, encouraged all participants to get out and preach the need for, and successes of, reclamation, and indeed all environmental programs. Telling ourselves in conferences how wonderful we are is preaching to the converted. We need to let those who benefit from our labours, that amorphous group known as the public, know what we have done for them. This, too, should be the topic of a future symposium.

The papers in this proceedings have been edited and retyped into a common format. The contents of the papers are essentially unchanged from the submitted manuscripts of the authors.

D. Reid
ASPB

C. Powter
AC/CLRA

B. Free
CSEB - Alberta Chapter

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	iii
MESSAGE FROM THE ORGANIZING COMMITTEE	v
The Evolution of Reclamation Practice - from Complex to Simple - Dr. P. Ziemkiewicz	1
Regulatory Response to Changing Reclamation Demands - Mr. D.L. Bratton	5
Reclamation and Industry in Alberta Today and Tomorrow (1990s) - Dr. A.W. Fedkenheuer	13
Successful Landscape Manipulation in the Urban Fringe - From a Gravel Pit to a Lake - Mr. G. Browning	24
Reclamation to Wildlife Habitat - Goals and Delivery - Mr. C.W.B. Stubbs	30
Emerging Issues - Land Degradation - Dr. D.S. Chanasyk	35
Industrial Site Decommissioning - Mr. M.J. Riddle, Mr. A.E. Osborne, and Mr. R.B. Geddes	46
The Reclamation and Management of Garbage Dumps and Gravel Pits in Alberta - Mr. L.M. Kryviak	55
Case Study - Greening Cities - Mr. L.R. Paterson	60
Reclamation of Ducks Unlimited Habitat Projects in Alberta - Mr. J.W. Martin	67
Buck for Wildlife's Volunteer Fisheries Habitat Enhancement Program - Mr. W.E. Griffiths	74
Soil Salinity in Alberta - Mr. L.A. Leskiw	80
PANEL DISCUSSION - What is Successful Reclamation?	
Government Perception - Mr. L.K. Brocke	97

continued ...

TABLE OF CONTENTS (CONCLUDED)

Page

Industry Perception
- Mr. P.D. Lulman 99

A Biologist's Perception
- Dr. D. Parkinson 101

A Landscape Architect's Perception
- Mr. L.R. Paterson 103

The Public's Perception
- Mr. C. Wallis 107

Symposium Summary
- Mr. R. Johnson 111

LIST OF PARTICIPANTS 115