

o r t Q Φ r L ິ •----σ σ ິ C o W

Cows and Fish Programming Evaluation Strategic Summary

Cows and Fish Alberta Riparian Habitat Management Program Report No. 013

 ${\boldsymbol{\upsilon}}$

T

Acknowledgements

Research funding for this project was provided by the Alberta Riparian Habitat Management Program (Cows and Fish), with support from Alberta Agriculture, Food and Rural Development and Prairie Farm Rehabilitation Administration.

About Cows and Fish

Riparian areas are those areas along rivers, streams, lakes, wetlands, springs, and ponds that are strongly influenced by water and are recognized by water-loving vegetation. Cows and Fish is striving to foster a better understanding of how riparian areas function and how improvements in management strategies in riparian areas can enhance landscape health and productivity for the benefit of livestock producers, their communities and others who value these landscapes.

Cows and Fish Partners: Producers and community groups, Alberta Beef Producers, Trout Unlimited Canada, Canadian Cattlemen's Association, Alberta Agriculture, Food and Rural Development, Alberta Sustainable Resource Development, Alberta Environment, Department of Fisheries and Oceans, Prairie Farm Rehabilitation Administration, Alberta Conservation Association

Funding Associates: Alberta Environmentally Sustainable Agriculture, Canadian Adaptation and Rural Development Fund, Canada-Alberta Beef Industry Development Fund

Working with producers and communities on riparian awareness

Cows and Fish YPM Place, 2nd Floor 530-8th Street South, Lethbridge, Alberta T1J 2J8 Canada Program Manager (403) 381-5538 E-mail: riparian@telusplanet.net

Web site: http://www.cowsandfish.org

COWS AND FISH PROGRAMMING EVALUATION STRATEGIC SUMMARY

Submitted to:

Alberta Riparian Habitat Management Program - Cows and Fish -530 Eighth Street South Lethbridge, Alberta T1J 2J8

Attention: Lorne A. Fitch, P.Biol.

Submitted by:

Nancy G. Bateman #221, 214-905 First Avenue South Lethbridge, Alberta T1J 4M7

> (403) 394-0494 nbateman@telusplanet.net

> > March 31, 2001

ACKNOWLEDGEMENTS

Funding for this Report Generously Provided by

Alberta Agriculture, Food and Rural Development - Public Lands Branch Alberta Riparian Habitat Management Program (Cows and Fish) Prairie Farm Rehabilitation Administration

Funding for the Cows and Fish Programming Evaluation Study Generously Provided by

Alberta Riparian Habitat Management Program (Cows and Fish)

- its Partners -

Alberta Cattle Commission Trout Unlimited Canada Canadian Cattlemen's Association Alberta Environment-Natural Resources Service Alberta Agriculture, Food and Rural Development Department of Fisheries and Oceans Prairie Farm Rehabilitation Administration

- and its Funding Associates -

Alberta Conservation Association Alberta Environmentally Sustainable Agriculture Canada-Alberta Beef Development Industry Fund National Soil and Water Conservation Program

and

Social Sciences and Humanities Research Council of Canada Wildlife Habitat Canada University of Lethbridge

TABLE OF CONTENTS

Page

Execut	ive Sun	nmary		. iv	
1.	Introdu 1.1 1.2 1.3	duction			
2.	Progra 2.1 2.2	Im Description			
3.	Evalua 3.1 3.2	tion Des Overvie Impleme 3.2.1 3.2.2 3.2.3	ign and Methods w entation Evaluation Questions Focus Groups Telephone Interviews	12 12 14 15 15 19	
	3.3	Limitatio	DNS	21	
4.	Results 4.1 4.2 4.3	s and Re Objectiv Key The 4.2.1 (4.2.2 (4.2.3 (Qualitat 4.3.1 (4.3.2 (4.3.2 (4.3.3 (ecommendations - Phase 1 (Focus Groups)	24 26 26 32 42 54 54 56 59	
	4.4	4.3.4 (Strategi	General Observations	61 62	
5.	Results 5.1 5.2 5.3	s and Re Overvie 5.1.1 5.1.2 F Prelimir 5.2.1 Examin	ecommendations - Phase 2 (Telephone Interviews) w Response Rate Demographic Description of Respondents hary Statistical Procedures Identifying Programming Exposure and Attitude-Behaviour Indices ing Ecological Literacy - Findings and Discussion	65 65 67 71 71 74	
		5.3.1 5.3.2 5.3.3 5.3.4 5.3.5	Knowledge Scores Knowledge and Exposure Patterns Management Strategies and Exposure Pattern Grazing Strategies and Theory Elements Supplemental Analysis - Alternate Information Sources	74 75 78 81 84	

Page

6.	Concl	lusion	88
	6.1	Cows and Fish Programming Evaluation Protocol	88
	6.2	Reflections	90
7.	Refer	ences	92

Tables

2.1	Cows and Fish Partners and Funding Associates	8
3.1	Parallels in the Theory of Planned Behaviour and the Process of Developin	ng
	Ecological Literacy	
3.2	Location of Focus Group Sessions	17
3.3	Focus Group Participants by Type and Exposure Level	17
3.4	Programming Tool Prioritized Objectives	
4.1	Tool Effectiveness Rating Summary	
5.1	Phase 2 Response Rate	66
5.2	Factors Affecting Response Rate	
5.3	Descriptive Demographic Category Tabulations	68
5.4	Management Strategy Frequencies	69
5.5	Self-Reported Exposure Level to Programming Tools	70
5.6	Summary of Exposure Domain Tools	72
5.7	Theory Indices and Reliability Values	73
5.8	Key Riparian Concepts	74
5.9	Knowledge-Exposure Domain Pearson's Correlations	76
5.10	Exposure Domain-Management Strategy Regression Model	
	(Use of Grazing Systems)	79
5.11	Exposure Domain-Management Strategy Regression Model	
	(Use of Techniques)	
5.12	Theory of Planned Behaviour-Management Strategy Regression Model	
	(Use of Grazing Systems)	
6.1	Cows and Fish Programming Evaluation Protocol	

Figures

1.1	Development of Ecological Literacy	3
2.1	Cows and Fish Process	10
3.1	Theory of Planned Behaviour	14
5.1	Alternate Management Information Sources	86

Page

Appendices

Α.	Riparian Area Management Strategies	. 96
В.	Study Area Map	. 97
C.	Characteristics of a Healthy Riparian Ecosystem and Impacts of Grazing100	
	on Riparian Zones	. 98
D.	Focus Group Tool and Probe Matrix	100
E.	Quality Control in Qualitative Data Analysis	103
F.	Content Analysis Summaries for Evaluated Programming Tools	104
G.	Telephone Interview Pre-Screening Booklet	125
Η.	Telephone Interview Questionnaire	129
Ι.	Exposure Domain Names and Component Score	136
Ι.	JCSEE Evaluation Standards	137

EXECUTIVE SUMMARY

This report summarizes the background, methods and findings of the independent Cows and Fish programming evaluation conducted in 1999-2000, and sets out strategic and operational recommendations for consideration in adapting programming to effect maximum use of sustainable riparian management in Alberta. The report also identifies a number of modification suggestions relating to specific awareness programming tools. Depending on the tool, it may be appropriate to consider adopting these suggested modifications at this time or to investigate them in greater detail during any future evaluation efforts designed to improve the impact of awareness initiatives provided by Cows and Fish.

The evaluation addressed whether Cows and Fish promotes ecological literacy, that is, the process of developing awareness that leads to use of sustainable riparian management strategies by producers. The evaluation also examined potential attitudinal influences that may promote or impede decisions by producers. The evaluation was conducted in two phases.

Phase 1 Findings

Recommendations relevant to specific design aspects of the tools are set out in the body of this report. Overview findings are described here. Phase 1 was conducted as a series of 5 focus groups across southernwestern Alberta, involving 31 producers and representatives of producer organizations and resource management agencies.

The first key finding of Phase 1 is that both the delivery process and program values assumed in program design were, for the most part, validated. The delivery process has been effective: the program is additive in nature, starting with introductory tools that build awareness through a series of more comprehensive tools, in a process leading to proper management practices. The program rationale of developing ecological literacy was supported. The values on which the program is designed, however, have been implemented with differing degrees of effectiveness. The community-based aspect of the program is very effective, the effort to reflect a producer-positive value is primarily, but not entirely, effective, and the intent of the program partners to act as a team-based partnership is ineffective in some circumstances (notwithstanding the positive aspects of the community-based program value related to partnership with producers).

These observations suggest that Cows and Fish is fundamentally sound in its design and delivery, but that some modification could increase its impact. Focus group participants identified the strength of delivery of the community-based value as fundamental to the effectiveness of Cows and Fish. This occurs because Cows and Fish provides a framework in which local individuals identify community-specific needs, control and manage local information, and determine future direction on landscape issues. The program is structured at a manageable, locally-driven pace, building knowledge and promoting action over time. It provides an initial contact and information source, but encourages increasing levels of local leadership and provides a forum to initiate dialogue between different interests. Cows and Fish is a focal point for community action, filling a niche that cannot be met by other organizations due to jurisdictional limitations. It helps individual producers learn to recognize and understand landscape change, promoting bottom-up, not top-down, decision-

making, giving individuals the flexibility of science-based choices that are communicated in a neutral manner. Cows and Fish also shares relevant management solutions with individual producers, where traditional sources of information do not, and encourages learning through personal and local interaction. It reflects producers' desire to act as stewards, and illustrates that desire and its results to others. Finally, Cows and Fish reflects producers' expertise and reputation within their communities, providing them with an opportunity to act as communicators in those communities.

These observations suggest that the community-based approach, as applied by Cows and Fish, reflect the tenets of sustainable resource management. This process is about developing people, not about developing agricultural operations. The result is more informed individuals, better able to make appropriate decisions and to organize themselves to deal with circumstances unique to their situation. It is a type of social learning, in which people are able to work together effectively because they share problems, ideas, encouragement and solutions, which together promote better land management.

The second key finding in Phase 1 is that the intended impact of programming tools is reduced when staff and/or technical resources are perceived to be unavailable from, or not applied consistently by, the program and/or the program partners. This impediment to promoting awareness is due, first, to lack of clarity in developing and maintaining the role and contribution of program partners and, to a lesser extent, profile producers. Focus group participates stated that this impediment is most likely caused by a lack of financial resources. Further, effectiveness of some of the existing programming tools is reduced because of a perceived lack of management solutions for non-foothill (southwestern Alberta) ecozones, and for various sizes and types of cattle operations, in which individual producers might otherwise express interest.

Focus group participants were close to unanimous in stating that financial and technical support from Cows and Fish partners, including industry organizations and government agencies, is both necessary and appropriate if riparian management is to be applied successfully. This support is required so that the program can maintain its activities, its reputation and its ability to help producers address riparian management issues.

The concept of partnership communicated by some tools was a very positive feature, establishing immediate interest. The collaboration between Cows and Fish representatives and producers was highly valued. When this program value is not consistently illustrated in all tools, however, a barrier of scepticism is created. If the assumption in Cows and Fish is that good information leads to good decisions, producers must also first be able to access the information. Producers become distrustful quickly if they perceive a mixed message in programming delivery, especially as it relates to government involvement. Any tools that do not clarify the identity and nature of the partnership, and its producer focus, reduce the potential of producers to become interested in the substantive content that Cows and Fish intends to deliver. Producers also need information that is relevant to their operational situation. In particular, awareness tools dealing with management options for small-size operations, and flat-land operations, were observed to be absent from the current programming tools.

The third key finding in Phase 1 is that the identity and purpose of Cows and Fish was not clearly stated across the suite of programming tools. Participants observed that the tools did not contain a concise description of the Cows and Fish objective or goal. This lack of clarity has led to misconceptions about Cows and Fish, including confusion about whether it is a government program. Some producers in the focus groups who believed themselves to be well-informed producers had not yet heard about Cows and Fish, which had been operating in their area for some time. This suggested both that name recognition had not been maximized and that, if it was, producers may be more likely to identify with, and pursue additional information from, Cows and Fish.

In discussing several tools, participants expressed strongly that it is important to reach nonagricultural audiences with Cows and Fish programming, including urban, recreational and youth groups, so that these people increase their knowledge about the role of grazing and the variety of other impacts on riparian zones. However, this raises the question about who the Cows and Fish primary target is or should be, given that it is, ostensibly, intended to assist cattle producers in achieving healthy riparian ecosystems through sustainable grazing management. Resources devoted to non-agricultural audiences may place greater demand on Cows and Fish, but may also promote broad-based interest in riparian issues by sharing of information in a co-operative and inclusive manner. Accordingly, while focus group participants explained that the tools were generally effective in terms of being producerpositive and partnership-based, the implementation of these values was not consistently evident across the suite of tools.

Phase 1 Recommendations

Strategic recommendations arising from the focus groups are set out below. Again, refer to the report for detailed design suggestions relating to specific tools.

- (1) <u>Clarify the Program's Future Direction</u>. This includes determining and prioritizing target audiences, incorporating additional site-relevant management strategies, and ensuring that appropriate resources are in place to maintain current programming quality and to support new initiatives.
- (2) <u>Clarify Working Relationships Within the Program Partnership</u>. Team-building is not fully developed or maintained. It is necessary, therefore, to identify, educate and maximize available staff resources within the Cows and Fish partnership.
- (3) Develop a Plan to Ensure Accurate and Positive Presentation Of Content Across All Programming Tools. It is recognized that the variety of programming tools have been developed over several years and that some have received more attention in this regard, based on demand for the tools and resources available to update them.

Phase 2 Findings

Phase 2 of the evaluation was conducted as a series of structured telephone interviews, involving 91 producers in southwestern Alberta, and examined how (a) exposure to Cows and Fish and (b) attitudes and related social influences, are associated with management decisions. Results indicate that:

- (1) programming tools that form part of direct and inter-active community-based involvement (such as presentations and workshops) contributed most to:
 - (a) riparian knowledge, specifically the role of water quality and water quantity in riparian function; and
 - (b) the use of time-controlled grazing and riparian pasturing;

and that

- (2) programming tools that are personalized or field-based (such as profile producers, site tours and the Stockmen's Range Management Course) contributed most to the use of the management technique of:
 - (a) distribution of the grazing load.

The influence of people close to a producer (e.g. other producers and personal friends) contributed the most influence to the producer's decisions pertaining to riparian management, specifically the use of rotational grazing. Further, when asked to identify the most important sources of information for learning about and practicing management, family members, other producers and self-teaching ranked high as sources relied upon by producers. Other elements of attitude, such as emotions and access to skills and resources, were not observed in this study to be associated with decision-making. Accordingly, the theoretical model used as a conceptual framework in this study did not, in this case, fully explain the role of attitudes and other influences that pertain to producers' decisions. A more detailed discussion of the use and results arising from use of this framework is provided in the body of this report.

Phase 2 Recommendations

The relationships observed in this phase of the study, in terms of influences on producer decisions, suggest that community and social indicators play a fundamental role in decision-making by producers, supplementing in part the findings of Phase 1. Further, the Cows and Fish process (and a number of its programming tools) have captured this reality within its programming tools. Cows and Fish should, with some modification to its design and delivery as described in Phase 1, continue to incorporate these features in its programming in order to effectively assist producers in achieving sustainable riparian management.

1. INTRODUCTION

1.1 Objective

This report summarizes the background, methods and findings of the independent Cows and Fish programming evaluation conducted in 1999-2000, and sets out strategic and operational recommendations for consideration in adapting programming to effect maximum use of sustainable riparian management in Alberta. The report also identifies a number of modification suggestions relating to specific awareness programming tools. Depending on the tool, it may be appropriate to consider adopting these suggested modifications at this time or to investigate them in greater detail during any future evaluation efforts designed to improve the impact of awareness initiatives provided by Cows and Fish.

1.2 Programming Rationale and Overview of Evaluation

The goal of the Alberta Riparian Habitat Management Program, *aka* Cows and Fish, is to help cattle producers gain a greater understanding of range and riparian ecology and, in so doing, provide them with the knowledge needed to manage their range and riparian landscapes in a sustainable manner. Since 1992, Cows and Fish has worked toward this objective, primarily in southern Alberta, by providing a variety of awareness programming initiatives, referred to as tools, to cattle producers. At the time this evaluation was conducted, Cows and Fish used 17 different awareness tools to build riparian knowledge and share information about managing for healthy riparian systems. These tools included workshops, presentations, field courses covering riparian ecology and riparian health monitoring techniques, brochures, videos, interactive youth activities, and key informed individuals from the cattle producer community. Programming content followed a broad landscape approach, emphasizing the ecological functions of riparian ecosystems and their relationship to landscape disturbances, such as grazing. Programming also provided information on sustainable grazing management strategies that are suitable for lotic riparian ecosystems. The 17 tools are described more fully in Section 2 of this report.

The rationale underlying Cows and Fish programming is that providing appropriate and relevant information about riparian ecology, as well as options for riparian grazing

management, assists a producer to (a) increase his or her ecological awareness by developing knowledge about riparian ecology; and (b) as a consequence, change his or her riparian grazing management, the change being signified by the producer using any of a variety of sustainable riparian grazing management strategies (Fitch, 1999, personal communication; Fitch, 2000).

This rationale is referred to within Cows and Fish as developing ecological literacy. The process of developing ecological literacy is illustrated schematically in Figure 1.1. In terms of awareness programming, ecological literacy assumes that:

- (1) the design (including specific content messages) and delivery of programming tools is such that together they *build* an individual producer's knowledge about riparian ecology; and
- (2) a change in *behaviour* occurs, assumed to indicate an *attitude* change resulting from involvement with programming. The behaviour is illustrated by the producer using *(i.e. taking action on)* any one of a number of sustainable riparian grazing management strategies.¹

Associated with the first assumption of ecological literacy is that the programming tools deliver key concepts relating to riparian ecology and human interaction with riparian ecosystems. The criterion for achieving effectiveness on this assumption of the rationale has been identified by Cows and Fish as the producer *building* awareness, exhibiting greater insight and understanding of riparian ecology and ecosystems, including expressing interest in, or seeking additional information about, riparian ecology and ecosystems. In this evaluation, meeting this criterion would be viewed as an indicator of *intermediate* programming effectiveness in developing ecological literacy.

Associated with the second assumption is that the programming tools deliver information about management strategies and monitoring techniques. The criterion for achieving effectiveness on this assumption of the rationale was identified by Cows and Fish as the

^{1.} An investigation into whether the riparian grazing management strategies suggested by Cows and Fish are ecologically or economically sustainable, lies outside the scope of this study. The grazing management strategies investigated for use in this evaluation are described in Appendix A.

producer *applying* the strategies and techniques for riparian management in his or her cattle operation. Meeting this criterion would be viewed as an indicator of *ultimate* programming effectiveness in developing ecological literacy.



Figure 1.1 Development of Ecological Literacy

A fundamental requirement of sustainable resource management is the on-going monitoring and modification of initiatives that will help ensure that local needs continue to be met (Lee, 1992; Rees, 1990; Selman, 1996; World Commission on Environment and Development, 1987). Cows and Fish has defined itself, organizationally and operationally, as part of a process that promotes sustainable management of the riparian resource by individual producers. Understanding and acting upon the practical information needs of community members, in this case producers, is essential to Cows and Fish developing the knowledge it requires to encourage those producers, as landscape stewards, to maintain healthy riparian systems.

To this end, Cows and Fish petitioned an independent, scientifically-based program evaluation to assess the effectiveness of its awareness programming in guiding cattle producers in southern Alberta toward sustainable riparian management. Although a widely-used and accepted process in many fields ranging from health to education, formal program evaluation research (Patton, 1997) has only recently begun to be used in resource management (Grumbine, 1996).² Evaluation research is the systematic investigation of the effectiveness of any program that employs an intervention, such as awareness programming, where the evaluation is adapted to the program's organizational realities, is designed to inform its improvement, and where empirically justified value judgements about programming merit are appropriate (Greene, 1998; Rossi et al., 1999). The benefits of evaluation research include helping to understand the programming and interact with the landscapes they manage), and to assist in the decision-making process required to improve programming.

This evaluation was utilization-focussed (Burnham,1995; Posavac, 1998; Weiss and Bucuvalas, 1980), meaning that it accounted for:

- utility -- ensuring usefulness to the information needs of intended users;
- feasibility -- ensuring that the evaluation design was realistic and prudent;
- propriety -- ensuring that the evaluation was conducted ethically; and

 accuracy -- ensuring that results revealed and conveyed sound, technically adequate information about programming features that determine the worth or merit of Cows and Fish (JCSEE, 1994).

The goal of any utilization-focussed evaluation is to arrive at a *reasonable* estimate of the likelihood that particular activities have contributed to desired effects. This evaluation was designed so that results could be placed within the perspectives of Cows and Fish and its partners, could be interpreted as relevant, and could be used to guide any future decisions required to be taken about program modification (Patton, 1997).

The specific objectives of the Cows and Fish programming evaluation were to:

- (a) gain a greater understanding of the manner in which community members, namely producers, have been affected by and have responded to Cows and Fish programming tools designed to develop ecological literacy, including building ecological knowledge and using sustainable riparian grazing management strategies;
- (b) illustrate the process associated with formal evaluation pertaining to sustainable resource management programs, specifically riparian grazing management programs, as an integral aspect of sustainable resource management, providing an example to professionals in other resource management fields about the applicability and value of evaluation research in self-monitoring of awareness and related management initiatives; and
- (c) assess the efficacy of the attitude-behaviour relationship, examined through the conceptual framework of the Theory of Planned Behaviour, to determine whether that relationship is related to, or forms an appropriate basis for, programming design and delivery. The Theory of Planned Behaviour is described more fully in Section 3.

The evaluation was conducted by the writer as a Master of Arts research thesis in the Department of Geography at the University of Lethbridge. The thesis will be available through the Canadian university library system effective summer, 2001.

1.3 Study Area

The study area for the Cows and Fish evaluation is illustrated in Appendix B. It represents the area of southwestern Alberta in which Cows and Fish was most active during the period 1992-1999. The area lies west of the 4th meridian, bounded on the west by the Alberta-British Columbia provincial border, on the south by Township 4, on the north by Township 22, and on the east by Range 28, except between Townships 8 and 16 where the eastern boundary is Range 26. Within these boundaries, lands denoted as Indian Reserve or Hutterrian Brethren communal operations were excluded from the evaluation.

The study area comprises several ecoregions, including the subalpine, montane and aspen parkland zones, and the fescue prairie grass association. A small portion of the mixed grass association is also represented (Strong and Leggatt, 1981). The watersheds found entirely or partially within the study area are those of the Bow River, including the Highwood River drainage, and the Oldman River, including the Castle, Crowsnest and Waterton River drainages.

2. PROGRAM DESCRIPTION

Central to program evaluation is the provision of a detailed description of the initiative under evaluation. The description articulates the program logic and provides the context in which programming impact can be understood, setting the stage for making judgements in the evaluation with regard to programming effectiveness and improvement. The background to Cows and Fish is provided here, as is a description of the riparian management process that underlies the programming awareness tools under evaluation.

2.1 Background to Cows and Fish

Humans interact with riparian ecosystems in numerous ways, relying on them for water, food, shelter, agriculture, resource production, recreation and aesthetic purposes. That interaction, however, has at times contributed to significant declines in ecological function (Meehan and Platts; 1978; Ohmart, 1996). Management of domestic cattle is one form of disturbance that affects the quality of function within riparian ecosystems. Cows and Fish evolved during the early 1990s as one response to growing public concern in Alberta about the environmental impacts of cattle grazing, which placed the province's cattle industry under scrutiny.³ The characteristics of healthy riparian ecosystems, the nature of grazing impacts on riparian zones, and the current health status of western North American riparian zones are summarized in Appendix C.

By 1992, agencies and groups with vested interests in riparian management joined in partnership, despite their traditionally diverse philosophies, to address the riparian issue in Alberta (Fitch, 2000). The partnership became known as the Alberta Riparian Habitat Management Project (now Program), commonly referred to as Cows and Fish. The Cows and Fish partners and funding associates active at the time of the evaluation are set out in Table 2.1.

The industry is a significant factor in the Alberta economy, accounting for approximately \$3 billion in agricultural cash receipts annually, or about 47% of total agricultural cash income. There are just over five million head of beef cattle in the province, managed by about 35,000 producers (Alberta Cattle Commission, 2000).

PARTNERS	FUNDING ASSOCIATES
Alberta Cattle Commission Trout Unlimited Canada Canadian Cattlemen's Association Alberta Environment-Natural Resources Service Alberta Agriculture, Food and Rural Development Department of Fisheries and Oceans Prairie Farm Rehabilitation Administration	Alberta Conservation Association Alberta Environmentally Sustainable Agriculture Canada Alberta Beef Development Industry Fund National Soil and Water Conservation Program

 Table 2.1

 Cows and Fish Partners and Funding Associates

2.2 Cows and Fish Process

The philosophy underlying the design and delivery of Cows and Fish awareness programming is sustainability. Sustainability involves managing resources so that they are maintained indefinitely while protecting ecological, economic and societal concerns. The societal aspect of sustainable resource management is achieved only when individuals and groups from a community, who have common interests, occupations and responsibilities, are involved actively in information exchange and decision-making relevant to resource management at the local scale (Lee, 1992; Rees, 1990; Selman, 1996; World Commission on Environment and Development, 1987).

This philosophy was manifest in the partnership's first objective: to develop a process that would help cattle producers to better understand riparian landscapes, so that they might manage both watersheds and specific riparian zones more sustainably, recognizing that cattle producers depend on these landscapes for their livelihoods. The desired outcome of the process was to achieve healthy riparian ecosystems. In developing the process, the partnership acknowledged that all riparian zone users impact the health of those landscapes, and so all users bear some responsibility for that health. By taking a neutral approach and eliminating targeted blame from the resolution of riparian issues, the partnership hoped to establish community inclusiveness as a key feature of any new riparian management approach. In addition, in contrast to the common past practices of many agricultural and environmental agency representatives, the Cows and Fish process was to be characterized by personalized, respectful and frequent interaction between community members and program representatives (Adams, 1999, personal communication; Fitch, 1999, personal communication; Fitch, 2000; Hale, 1999, personal communication).

Accordingly, from a design and delivery perspective, Cows and Fish was structured as a community-based process. It was to be implemented in a community only when requested by interested members of that community. Participation was to be voluntary and direction of program activities was to be guided by decisions made locally by community members. Moreover, the grazing management strategies communicated by the program, such as rotational grazing systems, were identified by cattle producers rather than Cows and Fish or government agency representatives, on the basis that those producers were experienced and knowledgeable, and that the strategies met the sustainability needs of individual cattle operations and their associated landscapes. This bottom-up determination of landscape practices is fundamental to the philosophy and, hence, the design of the Cows and Fish process.

A four-step riparian management process was developed and implemented by Cows and Fish during the years since 1992. Three values are central to the process: it is community-based; it presents and deals with producers and their operations in a positive manner; and it is based on partnership. The four-step Cows and Fish process, as it was articulated at the time of this evaluation, is illustrated in Figure 2.1 and is described below.

- (1) <u>Awareness-Building</u>. Awareness is addressed through a variety of programming tools. Building of awareness, or knowledge, is viewed as the first stage in the development of ecological literacy. Awareness topics focus on the processes of riparian ecology (including the functions, evolution, biodiversity and interconnectivity of watersheds), disturbance, stream velocity, vegetation and its structure, water quality and water quantity, and forage production. Other topics include human dependence and impact on riparian zones and the ability of riparian zones to regain function through appropriate management.
- (2) <u>Team-Building</u>. Team-building involves implementing a multi-disciplinary, interdisciplinary approach to riparian management. Despite traditionally opposing interests, the program includes scientists, agency representatives and cattle producers who share their particular knowledge, skill and wisdom in order to resolve landscape issues. They work within an informal structure in which awareness activities take place.



Figure 2.1 Cows and Fish Process

Source: Lorne Fitch. 2000. The Cows and Fish Process. Presentation Materials, February 29. Lethbridge, Alberta: Department of Geography, University of Lethbridge.

- (3) <u>Tool-Building</u>. Tool-building recognizes that action is required to achieve positive landscape change, and that a decision to act follows from building ecological knowledge. Cows and Fish deals with two types of tools: management strategies and programming tools. For the purposes of this evaluation, management strategies (Appendix A) include:
 - five grazing systems that can be used by cattle producers, which have been identified and recommended by producers as being suitable for riparian zones;
 - a series of related general management techniques that may be used separately or in conjunction with the grazing systems listed above to enhance grazing effectiveness and landscape health; and

 a monitoring technique, the lotic riparian health assessment, developed by the Riparian and Wetland Research Program of the School of Forestry at the University of Montana, and modified for use in Alberta.

Programming tools, the focus of this evaluation, assist program representatives in awareness activities. Generally classified, programming tools are either:

- comprehensive, including both informational materials and field activities; or
- introductory, intended to funnel individuals to pursue information provided in the comprehensive tools. The programming tools are addressed in Section 4.

(4) <u>Community-Based Action</u>. Community-based action reflects the reality that cattle producers, not program or agency representatives, are the people who manage the riparian landscapes of Alberta, and their associated natural resources. In order to identify management needs, build ecological knowledge and take advantage of relationships within a community to share information about sustainable management, deliberate and on-going interaction with cattle producers is fundamental to the process aimed at achieving riparian ecosystem health. Central to community-based action is that producers, either as individuals or as part of a community group, acknowledge, identify and determine a strategy suitable to them relating to riparian issues. Community-based action recognizes that change occurs when decisions are made *on the ground*, i.e. at the level of the individual (Fitch, 2000), suggesting that the producer is the landscape steward.

3. EVALUATION DESIGN AND METHODS

3.1 Overview

The Cows and Fish programming evaluation focussed on the impact of the design and delivery of the programming tools used to share information with cattle producers. This speaks to the first assumption of the process of developing ecological literacy. A qualitative method employing a focus group technique was chosen for this aspect of the evaluation, because it could provide descriptive, contextual meaning about how and why change occurred or did not occur with exposure to Cows and Fish programming. A further benefit of this method was that it allowed for the analysis of complex verbal data, drawn from the personal experience of programming participants, and provided a depth of nuance and interpretation necessary to arrive at a reasonable explanation about what has occurred as a result of programming participation. Lastly, this type of method was used so that programming effectiveness, doing so candidly and independently of expectations imposed by program representatives (Babbie, 1995; Creswell, 1994; Firestone, 1987; Judd et al., 1991; Patton, 1987; Patton, 1997; Shadish, 1995; Strauss, 1987).

The evaluation also examined the second assumption underlying the process of developing ecological literacy, namely the relationship between attitudes, including knowledge, and action. *Changes in attitude are not necessarily associated with changes in the desired end behaviour* (Fishbein and Ajzen, 1975; Zelensky, 1999). However, action (represented by use of sustainable riparian management practices) is the desired ultimate goal, or indicator of success, for Cows and Fish programming efforts. Accordingly, this evaluation investigated the attitude-behaviour assumption from a theoretical stance, using a decision model called the Theory of Planned Behaviour (Ajzen, 1991; Fishbein and Ajzen, 1975). The model was borrowed from the field of social psychology, the purview of the conceptual study of attitudes and behaviour. It provided a conceptual framework for the evaluation from which to examine resource management decisions by producers. The theory is illustrated schematically in Figure 3.1. This phase of the evaluation employed structured telephone interviews with producers to collect quantitative data that could be used to tabulate and explain the attitude-behaviour relationship.

Much research on the attitude-behaviour relationship indicates that end behaviours do not necessarily follow from attitudes, be they positive, negative or neutral. The Theory of Planned Behaviour is one reliable method, however, of explaining whether a behaviour is associated with related attitudes. For example: does a positive attitude about the value of a landscape determine that suitable behaviour will occur to maintain that value? The theory suggests that an individual's decision to undertake a particular behaviour is actually dependent on that individual's motivation, referred to in the theory as *intention*. Behaviour is mediated fully by intention, and requires consistency in (a) several distinct elements of an individual's control over or access to skills and resources, referred to as perceived behavioural control (Ajzen, 1991). Attitudes themselves are complex, comprising cognition (knowledge, information and beliefs); affect (emotion); and action (Eagly and Chaiken, 1993; Fishbein and Ajzen, 1975). Further, a single action does not necessarily explain a behaviour: *multiple related actions* are more likely to represent an underlying attitude and lead to the desired end behaviour.

Table 3.1 illustrates the partial parallel between the elements of the Theory of Planned Behaviour and the process of developing ecological literacy. The element of cognition in the theory is of particular use because it provides a theoretical mechanism by which to test knowledge about specific ecological concepts covered in programming tools.

Table 3.1
Parallels in the Theory of Planned Behaviour
and the Process of Developing Ecological Literacy

ELEMENTS OF THE THEORY OF PLANNED BEHAVIOUR	COWS AND FISH PROCESS OF DEVELOPING ECOLOGICAL LITERACY
Cognition	Building Ecological Knowledge
Affect, Subjective Norm, Perceived Behavioural Control	
Intention	Decision to Change
Desired Behaviour (e.g. Implementing Management Action)	Applying Ecological Knowledge

3.2 Implementation

The evaluation was implemented as two distinct research phases, associated with the qualitative (focus group) and quantitative (telephone interview) methodologies. The evaluation questions and the implementation of the two methodologies are outlined below.



Figure 3.1 Theory of Planned Behaviour

Source: Icek Ajzen. 1991. The Theory of Planned Behaviour. <u>Organizational Behaviour and Human</u> <u>Decision Processes</u> 50(1), 182 (modified). Alice H. Eagly and Shelley Chaiken. 1993. <u>The Psychology</u> <u>of Attitudes</u>. Forth Worth, Texas: Harcourt Brace Jovanovich College Publishers, 10-11.

3.2.1 Evaluation Questions

The specific evaluation questions addressed in the evaluation were as follows.

Phase 1 - Qualitative

- (1.1) What characteristics of the design and delivery of programming tools promote or impede ecological literacy, and how do they promote or impede ecological literacy?
- (1.2) How do the impacts of the tools compare to the objectives identified by program representatives for those tools?
- (1.3) What improvements, if any, are recommended to enhance the effectiveness of the tools?

Phase 2 - Quantitative

- (2.1) Does exposure by cattle producers to programming tools contribute to ecological literacy, as evidenced by:
 - (a) their knowledge of key riparian ecology concepts; and
 - (b) their application of riparian awareness, a behaviour evidenced by:
 - (i) use of any of five sustainable riparian grazing systems; and
 - (ii) use of any of eight sustainable riparian management techniques, including one monitoring technique?
- (2.2) Do attitudes, subjective norms and perceived control, the antecedent elements to intention to undertake behaviour within the Theory of Planned Behaviour, explain:
 - the application of riparian awareness by cattle producers, a behaviour evidenced by use of any of five sustainable riparian grazing systems?

3.2.2 Focus Groups

To obtain as much depth of explanation as possible about the design and delivery of programming tools, three different types of focus groups were developed based on the level of participant exposure to programming tools. Participants were drawn from the southern Alberta cattle producer community; from representatives of relevant government agencies,

from industry and conservation organizations experienced with or active in Cows and Fish delivery, all of whom were known either to the researcher or to Cows and Fish representatives, or to both. By 1999, Cows and Fish had entered a phase of expansion into other areas of the province, dealing with different types of community groups and different riparian issues. Accordingly, some stakeholders from outside the study area were invited to participate to obtain a more comprehensive coverage of experiences with the program as it evolved (Patton, 1997).

The three types of focus group categories were identified based on degree of exposure to the suite of programming tools. Those individuals with little or no exposure to any of the tools were classified into a low exposure category; these participants would examine the programming tools from a needs assessment point of view. Being unknown to Cows and Fish, potential cattle producers for the low exposure category could, fortuitously, be identified from those individuals who had concurrently participated in Phase 2 of the evaluation. Individuals were classified into the high exposure category if they had extensive experience with several tools and/or if they had been involved in some capacity with the development of Cows and Fish over a number of years. All other individuals were classified into the medium exposure category, which ultimately included those having some exposure to some of the tools, or a greater amount of exposure to a smaller number of tools. Participants in these latter two categories of exposure would examine the programming tools from a performance assessment point of view.

A standardized interview guide was followed for all sessions. It was modified slightly depending on the exposure category of the session and the extent of discussion relating to tools on the agenda for each session. All focus group sessions were audio-taped. Participants were reminded that participation was anonymous, and that their comments, the transcription and all records associated with the focus group sessions would be held permanently in the confidential possession of the researcher. It was not possible to address all 17 tools in each session, due to time constraints. Best efforts were made to obtain the highest degree of coverage for as many tools as possible. A matrix setting out the tools discussed in each of the focus group sessions is provided in Appendix D.

Five focus group sessions were held in late1999, as set out in Table 3.2.

LOCATION	EXPOSURE LEVEL
Pincher Creek	Low
Chain Lakes	Medium, High
High River	Low, Medium

Table 3.2Location of Focus Group Sessions

Two sessions (low and medium exposure) had seven participants, two sessions had six participants (low and medium exposure) and one session had five participants (high exposure), totalling 31 participants. As a result of scheduling conflicts and distances involved, there was a small amount of last-minute mixing of exposure levels within sessions.

Table 3.3Focus Group Participants by Type and Exposure Level

PARTICIPANT TYPE	# LOW EXPOSURE	# MEDIUM EXPOSURE	# HIGH EXPOSURE
Producer	12	4	4
Agency Representative *	1	2	5
Organization Representative *	2	1	0
TOTAL	15	7	9

* Representatives attended from Prairie Farm Rehabilitation Administration, Alberta Agriculture, Food and Rural Development, Alberta Environment, the Canadian Cattlemen's Association, the Alberta Cattle Commission, the Alberta Conservation Association, and the Municipal District of Ranchland.

Each focus group incorporated a simple tally procedure by which participants rated the overall effectiveness of each tool based on their experiences with it. The purpose of rating the tools was to enable Cows and Fish to compare what they believe is delivered by each tool with what community members believe is delivered by that tool. The rating step was operationalized by first identifying general delivery objectives for each of the 17 programming tools. Prior to the focus groups, these were reviewed, modified and prioritized in discussions with Cows and Fish to incorporate their experience and assumptions about the design and delivery of the tools. The master list of prioritized objectives is set out in Table 3.4.

At the conclusion of discussion pertaining to the design and delivery of each tool, the list of objectives for that tool was discussed. Participants were asked to comment on, modify,

prioritize and rate the effectiveness of the objectives. Possible rating categories were Excellent, Good, Fair and Poor. Results and discussion are provided in Section 4 and in Appendix E.

Quality control was maintained in the focus group phase of the evaluation by adhering to a structured data collection, data coding and data content analysis process. The quality control process is illustrated schematically in Appendix F.

TOOL NAME	OBJECTIVES AS RANKED BY PROGRAM REPRESENTATIVES			
Introductory Programming Tools				
Introductory Pamphlet	1. Briefly introduces history and objectives of Cows and Fish to broad audiences			
Display Booth	 Provides a general introduction about riparian zones to focus attention on role of management (using simple before/after visuals) Provides opportunity to obtain copy of booklet Provides forum to ask questions about program objectives (booth is not always staffed) 			
General Media	 Provides general introduction to program to broad audience Raises program profile Provides information on how to contact the program in order to obtain riparian or range management information 			
Website	 Provides program goal and how to contact program office Provides introductory information on hydrological function of riparian zones 			
Profile Producers	 Legitimizes program messages by presenting a producer as the messenger Spreads program messages by taking advantage of alternate sources 			
Program Representatives	 Provides credible source of information/believability Provides alternate source of information from government agencies Provides a conduit for building trust about the program Puts a face on the program Clarifies the program (what it is, what it isn't) 			
Comprehensive Progra	mming Tools			
Caring for The Green Zone: Riparian Areas and Grazing Management (booklet)	 Provides general riparian messages in print format addressing ecological function, management principles, grazing strategies, human role/impact, in order to raise awareness Introduces management strategies, to change management behaviour 			
Cows, Fish, Cattle Dogs and Kids	 Introduces basic riparian ecology concepts to young people (elementary age) Introduces link between grazing management and riparian health, including fish and wildlife, to young people Provides a tool that incorporates riparian messages into related school curriculum elements, using teachers as the messenger 			

Table 3.4Programming Tool Prioritized Objectives

Along the Water's	1.	Legitimizes riparian management message by presenting prairie
Edge (video)		producers as messengers, in video format
The Green Zone	1.	Introduces importance of riparian zone to a national audience
(Suzuki video)	2.	Builds general awareness of riparian zone function
Wind, Grass and Sky:	1.	Introduces concept of stewardship by producers, including co-existence of
A Passion for Prairie		cattle and streams
(Foster video)	2.	Illustrates real-life examples of program tools (such as the Stockmen's
		Range Management Course) and techniques (such as gravel bases and
		fencing)
	3.	Provides general range and riparian information
General	1.	Provides a general overview of key range and riparian ecology topics to
Presentations		kick-start increased awareness, introducing the idea that management
		can be effective in reducing grazing impacts
	2.	Reaches broad audiences in urban and rural areas, to raise awareness
Site Tours of	1.	Legitimizes Cows and Fish messages by presenting the producer as the
Demonstration		messenger by illustrating locally useful practices
Ranches	2.	Presents ground validation or evidence of concepts and practices being
		applied (incorporating riparian zone into range management using the
		foundation management principle of rest)
	3.	Promotes team building and community action
Riparian Workshops	1.	Delivers in-depth slide talk (function, grazing principles and strategies,
		human role/impact) to raise awareness
	2.	Encourages community-based action so people start talking the same
		language
	3.	Promotes team-building with and among agency staff and community
		representatives
Riparian Health	1.	Provides field instruction on the health assessment technique as a way to
Assessment Field	_	encourage individual monitoring practices
Days	2.	Delivers in-depth Cows and Fish slide talk (function, principles, human
		role/impact, and touching on grazing strategies) to raise awareness and
		encourage changed management behaviour
Stockmen's Range	1.	Provides Cows and Fish messages (in shared agency setting) through
Management Course		field instruction, including health assessment, plant ID, soil typing
	2.	Shares expertise (e.g. historical land use, role of fire, alternate forms of
		winter grazing, tencing, watering) from various disciplines/perspectives,
	2	Including producers
	3.	Legitimizes message by presenting the producer as the messenger,
	4	histrating enlightened use
Community Health	1.	Assists communities to assist themselves (liaise on funding, hire range
Assessment Process	2	Consumants, provide nearth data for individual of shared use)
	2.	Encourages community-based action
	3.	Fromotes team-building within the watershed, to include agency,
		municipal, producer and other interest group representatives

3.2.3 Telephone Interviews

Phase 2 of the evaluation employed a structured telephone interview as the appropriate method of data collection because it was not practical to visit all respondents in person. The volume of information required to examine the elements of the Theory of Planned Behaviour, the need to collect demographic and operational information and the need to identify respondents' exposure to 17 different programming tools dictated that data

collection be a two-step process. Names of potential respondents were randomly selected from Alberta Cattle Commission membership records for southwestern Alberta. These individuals were mailed pre-screening booklets (Appendix G) asking them to participate in the evaluation and to confirm their active involvement in cattle production, their location within the study area boundaries, the number of head in their operation and the type of operation. In addition, respondents were asked to identify an area of their choice within their operation that contained a riparian zone, the management of which they could speak about in a subsequent telephone interview. Lastly, in order to identify exposure to Cows and Fish programming tools, respondents were asked to report whether they had ever heard about or participated in any of the 17 tools being evaluated and, if so, whether that involvement occurred either once or on two or more occasions. Respondents meeting baseline criteria (e.g. 20 or more head of beef cattle in a cow-calf or yearling operation, and in possession of a riparian zone subject to their grazing management) were then contacted for the telephone interview.

A standardized guide (Appendix H) was used for all interviews. It was structured to capture discrete items that could be used to measure the elements of the Theory of Planned Behaviour, capturing the abstract elements of the theory (e.g. affect, subjective norms) by operationalizing them into practical questions associated with management decisions. For example, to measure attitudes, *cognition* questions were developed in discussion with program representatives dealing with *knowledge* of key ecological messages contained in the Cows and Fish programming tools. Examples of the topics covered included the relationship between water quality and riparian function as well as the value of different vegetation structures in a riparian zone. (Note: The cognition questions serve a dual function. They are employed in the element of attitude with regard to the Theory of Planned Behaviour, but are also used as a measure of building ecological knowledge on key concepts contained in programming messages.)

The *affect* questions dealt with concern about declines in habitat and forage, landscape productivity and potential legislative regulation. The *perceived behavioural control* element of the theory was captured by ten questions pertaining to respondent confidence in identifying range and riparian vegetation, and in implementing and controlling outcomes of management choices. *Subjective norms* were measured by nine questions pertaining to

significant others from whom the respondent might seek advice about riparian grazing management, including spouse, business partner, neighbour, etc. All of these questions used a 0-10 point response scale. Desired end behaviour was addressed in questions pertaining to recent use of five grazing systems and eight management techniques (Appendix A).

Statistical procedures were then performed to examine the attitude-behaviour relationship in terms of exposure to Cows and Fish programming. Procedures and results are detailed in Section 5.

3.3 Limitations

The Cows and Fish programming evaluation used a natural experiment framework (Rog, 1994). Natural experiments are warranted when, as in the case of this evaluation, the program being studied is already underway and control cannot be maintained over who and who has not been exposed to programming, and when that exposure occurred for measurement purposes. In particular, the quantitative phase of this evaluation involved several methodological limitations that reduced that design's contribution to evaluating programming effectiveness and assisting in programming improvement. This factor precluded use of a true experimental research design that requires random selection of participants as well as their random assignment into intervention and control groups. A quasi-experimental research design was also precluded because it requires at least a postintervention non-random comparison group (Campbell and Stanley, 1966; Cook and Campbell, 1979; Rog, 1994). Those designs provide a good basis for making valid causal inferences about outcomes arising from an intervention. The evaluation did not, therefore, completely parallel the assumption of change that is fundamental to the process of developing ecological literacy and so it was not ideally matched to the nature of Cows and Fish and, hence, to the needs of the evaluation.

Nor was it possible to examine whether exposure to the Cows and Fish programming tools caused a *change* in behaviour between two points in time because practicalities prevented a repeat data collection procedure. It was, however, possible to examine current behavioural influences (the elements of the Theory of Planned Behaviour) as well as actual behaviours

of respondents in an attempt to provide a preliminary investigation into any potential attitude-behaviour relationship that may influence the development of ecological literacy. This evaluation can only provide some baseline information about the attitudes, knowledge and action of producers at the point in time that the evaluation was conducted.

The two-phase research design involving supplemental strategies, including focus groups, recommended for use in natural experiments, was chosen to bolster the inability to draw definitive causal conclusions in the evaluation. Focus was maintained on questions that were useful and feasible to answer in the evaluation in order to offer some reasonable explanation about the process of change (Chelimsky, 1997; Cordray, 1986 as cited in Rog, 1994: 121; Dean, 1994; Rog, 1994). Further, due to the inherently discrete lines of enquiry in this evaluation, it was appropriate to implement the two separate research designs (one qualitative and one quantitative) as distinct phases of the study (Creswell, 1994). The quantitative design alone could not address the evaluation questions pertaining to the characteristics, impacts or improvements associated with programming tools examined in Phase 1 of the evaluation. In this way, the use of separate research methodologies and strict adherence to quality control within the natural experiment framework strengthened the evaluation.

Another limitation of this evaluation relates to the use of the Theory of Planned Behaviour itself and the nature of the behaviours being measured. The goal of Cows and Fish is for cattle producers to use specific grazing systems, monitoring techniques and various management strategies. For the most part these are single, mutually exclusive behaviours. For example, the technique of installing a hardened surface to reduce erosion at a riparian crossing is not necessarily associated with the use of rotational grazing, and so use of that technique by a cattle producer cannot be assumed to be a predictor of rotational grazing. Similarly, it is unlikely that a cattle producer would use more than one, or perhaps two, types of grazing systems in the riparian areas of the operation, due to landscape or operational factors. Accordingly, the types of behaviours to represent some underlying concept key to understanding management action of producers, where that index could be correlated to indices of affect, cognition, subjective norms and perceived control to predict a particular behaviour (the usual procedure when using the Theory of Planned Behaviour). As

described earlier, multiple behaviours are more strongly associated with attitudes than single behaviours. The measurement of single and potentially mutually exclusive behaviours reduces the predictive ability of the theory in this evaluation.

4. RESULTS AND RECOMMENDATIONS - PHASE 1 (FOCUS GROUPS)

4.1 Objective

Section 4 sets out:

- a summary discussion of themes arising from the content analysis of the 17 programming tools evaluated, describing the impact of tools as described by focus group participants;
- the effectiveness ranking identified by participants for each tool's delivery objectives as identified by Cows and Fish (listed above in Table 3.4);
- (3) an effectiveness rating for each tool as identified by the participants (as summarized below in Table 4.1);
- (4) potential modifications to the tools as suggested by the participants, for consideration by Cows and Fish for implementation at this time or as ideas to be investigated further in future evaluation efforts; and
- (5) strategic and operational recommendations pertaining to the design and delivery of Cows and Fish.

Due to the high number of tools and volume of information gathered for each one, the tools are described here using two formats. First, the community health assessment process is used as a detailed illustration of the qualitative evaluation of identifying themes and developing recommendations. This detail includes thematic and descriptive statements that explain participant discussion, and is accompanied by selected participant commentary. This information is followed by a tally and the rating provided by participants with respect to the tool meeting its pre-determined delivery objectives.⁴ Then, an overall effectiveness rating for the tool itself is provided (e.g. Excellent, Good, and so on). This overall tool rating is followed first by a brief discussion of its effectiveness, based on participant input, and then by suggested modifications, if any, identified by the participants to improve the effectiveness of the tool.

^{4.} Only minor variations in the ranking of objectives were identified by participants. These are dealt with in the analysis for each tool.

Space limitations preclude the presentation of all similar detail for each programming tool. Therefore, the balance of tools are described using a shorter format that provides only the effectiveness discussion, objective ranking, overall effectiveness rating and suggested modifications. Introductory programming tools are discussed first, followed by the comprehensive tools.⁵ See Appendix F for the supporting thematic statements for all tools except the community health assessment process.

To preface the discussion about programming tool effectiveness, the tools are listed in Table 4.1 by rating category.

RATING CATEGORY	TOOL
Excellent	Riparian Health Assessment Field Days, Stockmen's Range Management Course
Very Good	Program Representatives, Profile Producers, Cows, Fish, Cattle Dogs and Kids, Caring for the Green Zone: Riparian Areas and Grazing Management
Good	Videos, General Presentations, Riparian Workshops, Site Tours of Demonstration Ranches, Community Health Assessment Process
Fair	Website, General Media
Poor	Display Booth, Introductory Pamphlet

Table 4.1Tool Effectiveness Rating Summary

Note: A category for Very Good was added during the qualitative analysis to classify those tools that received a similar number of participant votes in both the Excellent and Good categories.

^{5.} See Table 3.4 for a complete list of introductory and comprehensive programming tools, together with their delivery objectives.
4.2 Key Themes and Tool-Specific Modification Suggestions

4.2.1 Community Health Assessment Process

A multi-faceted process in which a community and the program work together with the goal of identifying the riparian health of the community's watershed. This tool amounts to a framework that incorporates several programming tools, such as workshops, site tours and field days. The community ultimately permits the Cows and Fish field crew to carry out riparian health assessments along extensive reaches of the local watershed. Assessments are mapped and classified, then reported confidentially to community members for their use in determining management strategies.

THEME 1	In areas where the process has been active for some time, the tool has provided a framework in which local individuals can identify riparian issues, control and manage their learning process, and implement locally-determined riparian management strategies.
Descriptive	Selected
ne process	PRODUCER (FIGH) • "You create the questions that the rancher needs to answer"
opportunity for	AGENCY (HIGH)
producers to initiate	"Thinking about the Cows and Fish Program as a whole, and the key would
discussion of issues	definitely be the rancher grassroots involvement without the rancher community,
relevant to their	I don't think there would be a Cows and Fish program, I think we'd be in the same
Community.	
the role of producers	"The people who you want to target, and I realize you're trying to do that, is the
as the decision-	people that are directly involved with management of those water bodies."
makers for riparian	REPRESENTATIVE (MEDIUM)
management.	• "I think that's the only way you can actually make effective use of resources, and
	really get positive long-term action happening, is at the community level. You can
	AGENCY (MEDIUM)
	• "It encourages community-based action. I think they're definitely doing a good job
The process allows	PRODUCER (HIGH)
the community to	 "It has to be a progression, if you start telling people at the start that we're going to improve for the firsh and do a pount and do the going and you just not begand
nature of their	but it's good, after a while to have the knowledge that you could come in and
involvement.	do some other testing but at the first I think it would overwhelm us."
	AGENCY (HIGH)
	• "I think Cows and Fish have been pretty proactive in trying to educate first, before
	"That's a long-drawn process, and don't underestimate the time that it takes.
	Awareness and education is probably the biggest, most important, factor."
The process is	PRODUCER (MEDIUM)
assisted by the	• "The fact that it's not trying to push anything on any producer it's like, we're
heutrality and non-	here, and it you'd like some help, we're here to help. I hat concept is the concept
the program's	
delivery.	"The one thing the Cows and Fish has done really well when they do their
	speaking engagement, is that it doesn't come across as they're blaming
	somebody."

The survey of the	
The process	(Verile sign to have a service base and you be used other and it shows a
provides an	 You re going to have a common base, and you know each other, and it changes
opportunity for a	things, once you've spent time with people like that."
variety of interests to	AGENCY (HIGH)
discuss issues of	• "[The] Cows and Fish approach gives a common language, they might not agree,
concern, breaking	at least they sit down and discuss certain issues perhaps. It's a starting point, it
down barriers and	might not necessarily be the answer to the whole big screen picture, but it's a
encouraging	
understanding	 "Just bringing everyone to the table, and you know, you may have different land
between people.	uses or whatever but it gets everybody talking."
The process	REPRESENTATIVE (MEDIUM)
contributes to a	• "Whenever you create that co-operative atmosphere, people look at it in a whole
sense of partnership	different way. Something is bepresing apopted are coming together."
and an approxim	
botwoon groups	AGENUT (IIIGI) "The next could be compared to be the title next and any thet would be lead it?"
between groups.	• "The partnership component, that it is not one group that needs to lead it."
The survey of the state	
The process builds	
on natural	 "Anytime you mix with neighbours or people around, you're going to learn
interaction and	
communication	"You do have good word of mouth. A lot of producers out there are telling
between community	everybody. I go to different meetings, and they all stand up and say they're right
members, placing	behind [the program.] It's recognized highly number one in my mind.
the community in a	Producers talk to each other so much."
leadership role and	PRODUCER (HIGH)
encouraging local	"So, work with the people who are willing, and over time, [skeptics] come on
learning and action.	stream without you having to badger them."
The process	PRODUCER (MEDIUM)
introduces credible	"The basic gain that I got seeing what did work, and able to incorporate it into
information.	my own operation. To better my place. I did lincorporatel right from the
establishing a	drasses right to the water quality to the preservation of the creek bank those are
knowledge base	the real things that I saw that's what I'm working on now"
leading producers to	"My own opproach to argain a management has abound completely you can
individual action	 Wy own approach to grazing management has changed completely you can the right direction or going healtwords "
inuiviuuai action.	
	PRODUCER (ПІСП)
	AGEINCT (ПIGR) "The tening provided a belance, and it provided an environmental measure that
	 The topic provided a balance, and it provided an environmental message that heav't been put forward probably in post ways or in that context, it was wayen in
	nash t been put forward probably in past ways or in that contextit was woven in
	and made sense and I think it was a way to now take all this information and
	apply it to a landscape issue, and then there was more science added from the
H	
The process	KEYKESENTATIVE (MEDIUM)
degisione maliere	Once the team is there, then things kind of flow out of that.
uecisions-makers,	
community-	 "I ne community process, it puts the onus on [the community] to do the work."
members work	
together to lead	
Implementation	
management.	
Confidentiality has	AGENCY (HIGH)
been fundamental in	"Another thing that makes this go over so well is that all this information is kept
obtaining	here. It's kept in the community, with the landowners, and he can utilize it if he
commitment of	wants to, if he doesn't. So nobody's going to get it."
producers to	"A lot of these ranchers wouldn't have touched it if they thought it was going to be
participate in	public information. Or they'd be very skeptical."
watershed level	
action.	

THEME 2	Where the process has been less consistently applied, the rationale and value of the process is questioned. Concerns about available resources and jurisdictional responsibilities arise in relation to partner agencies, with respect to future application of the process across the province.
Descriptive	Selected
The process is of interest, but when it is not proactively co- ordinated and maintained in a community, the process can fail, resulting in frustration and waste of the resources that were invested.	 PRODUCER (MEDIUM) "You need the leader." REPRESENTATIVE (LOW) "Keep pushing it afterwards." AGENCY (MEDIUM) "[Agency] plates are full, and the resources aren't there to carry on with the networking aspect and promoting the team building among agency staff there's no one person that can do it." "[Outside the southwest] has generally just fizzled, over the last couple of years, because we have no one person within these [government or producer] organizations who have the resources, to even arrange a general riparian presentation we tried to do one it just fell apart because there was no one there to drive it."
Resources are necessary, but are not sufficiently provided by partner agencies, and/or may not be fully taken advantage of.	 PRODUCER (HIGH) "Team-building within the watershed, and the municipalities and other group interests I don't know if the management capability has been brought out enough for them to be part of the team." "I think it's at the stage now where I think [the agency] should be putting more money in, and it should be educating more on a broader base than just agriculture, and I think that responsibility lies in [the agency]." REPRESENTATIVE (LOW) "I think the process is there, we don't have the resources." "The funding is so tenuous, from what I understand there isn't any long-term guaranteed funding." AGENCY (HIGH) "[The representatives] are obviously swamped."

THEME 3	The process reflects producers' desire to act as and to be seen to act as good land stewards.	
Descriptive	Selected	
Statement	Commentary	
The process	PRODUCER (LOW)	
increases knowledge of producers about beneficial practices at the operational level,	 "Somehow it has to come around we as producers realizing that we're only a small part of the problem here, take responsibility for this, because we can change this kind of thing on our piece of land. Knowing that it's only one part of 	
and can potentially	AGENCY (HIGH)	
lead to managing for broader-scale ecological concerns within the watershed.	 "To be honest, you could have knocked the fish part off, when we were dealing with it at first, because [cows] was the interest and that was what was going to get people there. The fish was something that was going to be good for everybody because it was going to happen, because we looked after our cattle and our management the right way. It wasn't focused on the fish end of it, which I think age now, and we've talked about it before, and maybe we can kind of angle it a bit and start to learn about the other side now, too we were looking to see if what we've been doing is actually affecting water [quality]." "It's getting, for us anyways, to the stage where we're wanting to go to the next level. And that would be more of an environmental issue on a whole, rather than just agriculture." 	

The process provides a mechanism for the industry to understand its impacts on the environment, and to communicate it constructively to other interests.	 PRODUCER (LOW) "I think we could at least gauge ourselves and know where we do stand in a wide industry. Are we only 50% effective, are we 80% effective, are we 90% effective?"
THEME 4	The contribution and role of local governments and non-local governments, including partner agencies, is seen to vary, suggesting that there may not be, appropriately or otherwise, a template for the program. This may lead to some confusion about the function and success of team-building within the process.
Descriptive Statement The process reinforces the	Selected Commentary PRODUCER (HIGH) • "I think [future government involvement] would have to be voted in, or agreed on
producer-based nature of the program, by producers limiting and controlling any involvement of non- local government agencies, as being undesirable.	 by this community, before anybody [in government] would come in [to the process]." "I think people definitely have to have an idea of what their creek should look like before they start asking [for outside involvement] you've got to have that picture in your mind what they're aiming for, that's where the experts come in, the
Conversely, the involvement of some (perhaps local) government is desirable, and	 PRODUCER (LOW) "[The] affiliation with PFRA encourage those guys to get word out that if you wanted to fence of creeks, here's some funding available. Something to encourage the rancher or producer to take some action it's a little bit of a
pernaps necessary, in co-ordinating the program and providing funds to promote participation, suggesting the process is not or cannot be purely producer-driven.	 "For a long-term community view, and to keep Cows and Fish going, you're going to have to have some kind of [financial] incentive available for people to create habitat." REPRESENTATIVE (MEDIUM) "I think other areas would go to their municipalities, their Ag fieldmen, those kind
Sharing of information that would assist partner agencies (team members) is problematic due to the program's commitment to	 AGENCY (LOW) "We're supposed to be managing [habitat] we have to see how things are changing out there, too, so we that we can do our job." AGENCY (HIGH) "I'm mixed on that issue because we have another agency is collecting information which we, as land managers, should be privy to I don't know how to
confidentiality. While community- based control remains a priority, the point at which other groups contribute to the process as team members is debated.	 "I have a little bit of a problem to try to share information but not getting into this [Freedom of Information Policy] thing is really extremely difficult." REPRESENTATIVE (MEDIUM) "I think the first objective is to build the team." AGENCY (HIGH) "It should be the communities first." "I wouldn't bring in agencies or municipalities, maybe municipalities, certainly not special interest groups, until you have that community informed, and on side, and actually being proactive."

The current process	AGENCY (HIGH)
has provided a foundation that worked in specific circumstances, but ecological, operational or economic circumstances will play a role in how the process advances in other areas.	 "I think we've got a ways to go in delivering this [community approach]." "So I view the program as being very important, and the work that is being done in the foothills is certainly a good foundation for us. I wonder for it's applicability [in other ecozones], but nonetheless, I think a lot of the principles are still applicable across the board." "If it's not broken, don't fix it. Try it this way. And then adjust accordingly." "I know a lot of places [in the province, small parcels] would be a problem."

TOOL EFFECTIVENESS (Performance Assessment - medium-high exposure participants)				
Objective Ranking				
Priority of Objectives	# Participants	Alternate Participant Ranking	# Participants Agreeing	
(Cows and Fish Ranking)	Agreeing			
 Assists communities to 	9 / 11	Assist communities to	2 / 11	
assist themselves (liaise		assist themselves (liaise		
on funding, hire range		on funding, hire range		
consultants, provide		consultants, provide health		
health data for individual		data for individual or		
or shared use)		shared use)		
2. Encourages community-		1. Encourage community-		
based action		based action		
3. Promotes team-building		3. Promote team-building		
within the watershed, to		within the watershed, to		
include agency,		include agency, municipal,		
municipal, producer and		producer and other		
other interest group		interest group		
representatives		representatives		

Ob	iective Effectiveness Rating	#	#	#	#
	,	EXC	GOOD	FAIR	POOR
1.	Assists communities to assist themselves (liaise on funding, hire range consultants, provide health data for individual or shared use)	1	9	1	
2.	Encourages community-based action	3	5	3	
3.	Promotes team-building within the watershed, to include agency, municipal, producer and other interest group representatives		6	5	
Ad	ditional Comments				
•	it's just new, in the early stages, there's a ways to go yet, what are	the next s	teps		
•	hard to get community-based action if non-producers and agencies time needed beforehand, otherwise lose focus, should get others o	s are invite n-side afte	ed erwards		

- process should be that producers define the community to be involved, then invite others, and proceed to action
- community-based action is fine, but hard to define the community, especially in early stages
- team-building should probably be part of objective 3, add the rest of the agencies later
- process has by circumstance not involved or focussed on agencies outside their area so far

٠	in other areas you're going to be met with more resistance than yo	u're used to in the foothills
Tool Effectiveness Rating		Good

The community process was assigned an effectiveness rating of **Good**. In the southwest area of the province, where Cows and Fish has been active for some time, the fundamental community-based structure of Cows and Fish was validated by participants. The process was viewed as one of cumulative learning, driven by local priorities and decisions, leading to desirable management decisions on an individual and community-wide basis. The process has provided a framework in which producers have been able to act as good stewards of the landscape. Specific characteristics of the communities where Cows and Fish has been active, such as operation size and early identification of profile producers, have played a key role in the success participants assigned to the program. It was acknowledged that the same set of circumstances may not occur in other areas of the province.

In other areas of the province, there is interest in the Cows and Fish process, but frustration has occurred among producers and agency representatives because of a perceived lack of resources that are needed to co-ordinate and follow through on interest, when it has been expressed within a community. This has led to some disenchantment with the program. A lack of clarity on the role and contributions of partner members was also noted. This may be due to the flexible nature of the process itself, or it may indicate that, within what is ostensibly a partnership, this feature has not been yet been addressed or clarified fully.

The involvement and co-ordination of local governments was viewed as having contributed to the success of the process in some settings, leading to watershed scale action. Conversely, in other areas, participants indicated that involvement of local government was inappropriate until some local producer-driven action has occurred, at which point access to financial or technical support is desirable from the local government. This conundrum suggests that:

- there may be no template for the process that can or should be applied to all communities; and/or
- (b) the cumulative knowledge-awareness-action process of developing ecological literacy is not fully understood by some producers; and/or
- (c) the respective roles/involvement of producers and non-producers in the process are confused.

This variability is not necessarily a negative reflection on the process, because a key foundation of the process is to permit local circumstances to drive local action.

Suggested modifications for improving tool effectiveness are set out below.

- (1) Clarify the roles and responsibilities of groups or agencies that are partner members within the partnership to maximize available skills and resources and to indicate that the program is a partnership in both name and action.
- (2) Ensure a consistent quality of delivery of the process in every community by ensuring sufficient resources are in place at the start of the process to enable appropriate follow-through on any interest expressed.

4.2.2 Introductory Programming Tools

Introductory Pamphlet

Edge: Enhancing Our Naturalproviding brief testimonials by producers about different riparian management strategies.Resourcesstrategies.
--

TOOL EFFECTIVENESS		
Objective	This tool was reviewed by Needs Assessment (low exposure) participants only.	
Effectiveness		
Rating		
Tool Effectiveness	N/A	
Rating		

Participants consistently recognized a need and a role for a specific programming tool, such as a small pamphlet, to introduce the program, its objective and its activities. The current content of the pamphlet meets these needs to only a moderate degree. The pamphlet was discussed only by low-exposure participants, who did not participate in ranking or rating the tool's objectives. Based on all of the commentary about the pamphlet, the researcher assigned an effectiveness rating of **Poor**.

Participants felt that a pamphlet of this type would build recognition of the program, if it were readily accessible at agency offices, through the partnership, at producer meetings or at special events. Many producers had not yet heard of the Cows and Fish, despite

characterizing themselves as being well-informed about activities and developments within the industry. Incorporating phone numbers, and the name and/or logo, in a more prominent manner would assist in raising the Cows and Fish profile. Participants responded positively to the reference to partnership, but this was not maximized because no means to contact the partnership for more information was provided in the pamphlet.

Participants also required a greater variety of management options to be illustrated, however briefly, to assist in making the link between desirable landscapes and their own actions. Descriptions in the tool of the interactions between cattle and the landscape seemed to focus on the negative aspects of cattle, rather than the positive role of producers as proactive managers.

The format was considered to be generally unappealing. A more balanced, uncluttered visual and text presentation was stated as being desirable, as was greater clarity on basic definitions of key terminology.

Suggested modifications for improving tool effectiveness are set out below.

- (1) The pamphlet should be revised to reflect a balance of content. First, it should promote greater identity of, and access to, the program. This content should include a statement of the program's objective, a clear definition of the term riparian, and contact information for profile producers and partners. Second, illustrations, however brief, of a broader variety of management strategies are required to de-emphasize fencing and to create interest with regard to the decision-making required to achieve the desirable landscapes depicted in the visual aspects of the tool.
- (2) Producers and cattle must be presented in a consistently positive, proactive manner.
- (3) The presentation format of the pamphlet should be adjusted to make it more visually pleasing and easier to read.

Display Booth

Shown at agricultural exhibitions, conferences, shopping malls, and various producer-related and other community events.

TOOL EFFECTIVENESS		
Objective	The tool was reviewed by Needs Assessment (low exposure) participants only.	
Effectiveness		
Ranking		
Tool	N/A	
Effectiveness		
Rating		

The display booth was considered to be a very ineffective programming tool. Because it was discussed only by low-exposure participants, who did not participate in ranking or rating the objectives, an effectiveness rating of **Poor** was assigned by the researcher.

Participants agreed with a strong consensus on the following points. The conference booth is unlikely to attract and retain either agricultural or non-agricultural viewers and, therefore, achieve message delivery, in a competitive exhibition setting where this tool is usually employed. Due to participants' experience working with landscapes, the tool's images and text were seen as biased and, accordingly, failed to engender interest in or acceptance of the program. Conversely, the booth may be sending a too-narrow message about riparian management to non-agricultural audiences, which is out of step with the stated intent of Cows and Fish. Reaching non-agricultural audiences was viewed as important. The booth was not seen to be synchronized with more finely-tuned tools within the program, particularly inter-active tools such as the general presentation, which more effectively communicate the responsibility of all people in riparian management. Participants felt the booth did little to promote further enquiry or awareness, because it was not identified clearly as part of Cows and Fish or its process, and no mechanism for future contact was apparent.

Suggested modifications for improving tool effectiveness are set out below.

(1) Align this tool with other tools by emphasizing all of the following: the positive role of people, including producers, in achieving change, the impacts of a variety of riparian

zone users, broader ecological function, specific management techniques, Cows and Fish and the Cows and Fish process.

- (2) Increase interaction by upgrading and using visual techniques, and ensure the tool is complemented by a Cows and Fish representative available to answer questions.
- (3) Increase content impact by reducing the amount of text, and by emphasizing and defining key terminology.

General Media

Articles about relevant program activities or riparian information, appearing in community newsletters and in national and local newspapers and magazines.

TOOL EFFECTIVENESS (Perfor	rmance Assessment	- medium-high exposure participa	ants)
Objective Ranking			
Priority of Objectives	# Participants	Alternate Participant Ranking	# Participants
(Cows and Fish Ranking)	Agreeing		Agreeing
1. Provides general	7 / 11	2. Provides general	4 / 11
introduction to program to		introduction to program to	
broad audience		broad audience	
2. Raises program profile		1. Raises program profile	
3. Provides information on		3. Provides information on	
how to contact the program		how to contact the program	
in order to obtain riparian or		in order to obtain riparian or	
range management		range management	
information		information	

Ob	Objective Effectiveness Rating		#	#	#
	-	EXC	GOOD	FAIR	POOR
1.	Provides general introduction to program to broad audience		1	7	3
2.	Raises program profile		3	8	
3.	Provides information on how to contact the program in order to obtain riparian or range management information		1	4	6
Tool Effectiveness Rating			Fa	ir	

Due to limited use of the media in the history of Cows and Fish, focus group commentary reflected its desirable future use as much as views about past use of media as a programming tool. Participants considered that use of media (such as newspapers) to be an appropriate programming tool, in terms of creating a positive profile for the Cows and Fish in the general public, so long as the message can be controlled to the extent possible. The media message should also present a consistently positive view Cows and Fish and its activities, and provide contact information. There was concern that Cows and Fish is not well enough known, or accurately understood, within the producer community and within the partnership. General media was rated as **Fair**.

Suggested modifications for improving tool effectiveness are set out below.

- (1) Develop a communications plan that addresses control and consistency of information released to the general media, and maximizes partner resources.
- (2) Develop a standard introductory tool that introduces Cows and Fish to agency representatives and to the public, setting out the Cows and Fish objectives and providing contact information to make it easier for producers to follow through on their interest.

Website

Internet site accessible (at the time of this evaluation) through *Ropin' the Web*, the website for Alberta Agriculture, Food and Rural Development.

TOOL EFFECTIVENESS (Performance Assessment - medium-high exposure participants)					
Objective Ranking					
Priority of Objectives # Participants Alternat (Cows and Fish Ranking) Agreeing Participants Ranking Ranking Ranking					
1. Provides program goal and how to contact program office	11 / 11				
2. Provides introductory information on hydrological function of riparian zones					

Ob	Objective Effectiveness Rating		#	#	#
	-	EXC	GOOD	FAIR	POOR
1.	Provides program goal and how to contact program office			11	
2.	Provides introductory information on hydrological function of			11	
	riparian zones				
Tool Effectiveness Rating			F	air	

Much of the discussion about the website centred around its potential future use, because it was recognized that the state of the tool at the time of the evaluation was being underutilized. It was assigned an effectiveness rating of **Fair**. The potential value of a website was, however, recognized by participants because of its ability to:

- (a) supplement and provide efficient access to basic contact information about Cows and Fish, its partners, tools and resources;
- (b) supplement and provide efficient access to relevant ecological information to start the awareness process; and
- (c) report on current activities that are not or cannot be communicated by other means or through other tools.

Participants stated that improving these aspects of the website would widen the sphere of influence Cows and Fish and its messages, perhaps resulting in less demand on staff resources in dealing with repetitive or generic requests from the public.

The website does not describe impacts of non-producer users of riparian areas. As described more fully in the review of <u>Caring for The Green Zone: Riparian Areas and</u> <u>Grazing Management</u>, this may offend some producers and result in missed opportunities to reach non-producer audiences. While the current format of the website did provide basic contact information, it did not include a list of producers involved or how to contact them. Participants stated that the internet location of the website, and its existing contact list, gave the (erroneous) impression of a government program. This association may create a negative response among producers and create an unnecessary barrier to awareness-building. The website was difficult to find on the internet, and was seen to be unsophisticated in terms of navigation or access to related sites or information. Its awareness content was seen as limited, primarily duplicating, but with less effect, some of the content of <u>Caring for The Green Zone: Riparian Areas and Grazing Management</u>. While basic ecological awareness content was viewed as desirable, simply duplicating portions of content available in other tools was not seen as the best use of this resource. Accordingly, both the content and format of the website were perceived to be outdated.

The website did not take advantage of the technology's ability to describe, display, print or order awareness tools, or to communicate electronically with people associated with or interested in Cows and Fish. This was seen to reduce the number of people potentially reached, and as an under-utilization of the potential features unique to the internet that are not available with other Cows and Fish tools. These features could be maximized to include communications about current activities, scientific developments, funding sources, etc., to the general public, to key members of the producer community, and to program partners who need or want to be kept informed about program activities.

The limitations of the website in reaching all audiences was recognized. Older or less affluent producers may not have access. Alternately, it was felt that new audiences may be

reached, including young people or others interested in or researching environmental issues.

There was a slightly higher preference, among those more unfamiliar with Cows and Fish, for the name of the website to be something other than Cows and Fish.

Suggested modifications for improving tool effectiveness are set out below.

- Identify key audiences and prioritize financial resources devoted to the tool accordingly. Specify that the program is a community or producer-based program.
 Balance content to reflect use of riparian zones by a variety of users.
- (2) Take advantage of the inter-active nature of this tool, not available with other tools, to communicate regularly with partners and producers; to provide current information on Cows and Fish activities; and to increase the public's access to the Cows and Fish objectives or to related tools. Improve navigation to increase access to awareness content, using a question-and-answer format and direct links to related sites.
- (3) Present the tool in a format consistent with other programming tools.

Profile Producers

Producers familiar with the program who actively share information and ideas about riparian management, either through specific program activities or informally through ongoing community contact.

ТО	OL EFFECTIVENESS (Performance Assessment - medium-high	n exposure participa	nts)
Ob	jective Ranking		
Prio (Co	ority of Objectives ows and Fish Ranking)	# Participants Agreeing	Alternate Participant Banking
1.	Legitimizes program messages by presenting a producer as the messenger	11 / 11	Kanking
2.	Spreads program messages by taking advantage of alternate sources		

Ob	jective Effectiveness Rating	#	#	#	#
		EXC	GOOD	FAIR	POOR
1.	Legitimizes program messages by presenting a producer as the messenger	5	6		
2.	Spreads program messages by taking advantage of alternate sources	5	6		
То	Tool Effectiveness Rating		Very	Good	

Profile producers were assigned an effectiveness rating of **Very Good**. Participants indicated that these producers were fundamental to the positive impact of Cows and Fish and, further, stated that their role should be protected and maintained. Profile producers are valued because they reflect and communicate appropriate management. Their expertise was viewed as providing a local, credible source of information to both producers and non-producers. With regard to local producers, familiarity with the profile producers increased the likelihood of constructive interaction. In their communications role, profile producers were seen to build trust and new partnerships. There was some concern expressed that individual producers may have fallen outside of the loop of timely communication from Cows and Fish, seemingly only contacted when something is required of them.

Suggested modifications for improving tool effectiveness are set out below.

- (1) Individuals selected as profile producers should be comfortable acting in the role, and be accessible to interested parties. In selecting individuals, it should be remembered that their impact may be more widespread if that individual's operation is typical or average in size, in relation to the majority of the province's producers. Selecting large-scale producers is not inappropriate, but producers with averagesized operations may relate less well to them.
- (2) Continue to provide opportunities for profile producers to interact with interested parties as credible messengers of good riparian management. This is particularly important with regard to non-producers, because it reduces the possibility of conflict and the ultimate loss of control by local communities over riparian issues.
- (3) Recognize the time limitations that profile producers are subject to. As with other professionals, their contribution should be recognized by, for example, providing a per diem to cover time and expenses.

- (4) Develop some mechanism to communicate regularly with individuals acting in the role of profile producers, to reinforce their commitment to Cows and Fish, and to provide them with relevant information to help them fulfil their role in the community.
- (5) Investigate with current profile producers whether some form of standardized assistance could be provided to them to assist them in preparing presentations and, if so, what form it should take.

Program Representatives

Based in Lethbridge, Alberta:

Provincial Co-ordinator

Assistant Provincial Co-ordinator

Provincial Riparian Specialist (in-kind involvement from Alberta Environment-Natural Resources Service) Range Management Specialist (in-kind involvement from Alberta Agriculture, Food and Rural Development-Public Lands Division)

Riparian Field Crew Leader, and crew staff

TOOL EFFECTIVENESS (Performance Assessment - medium-high exposure participants)					
Objective Ranking					
Priority of Ob	jectives	# Participants	Alternate		
(Cows and Fish Ranking)		Agreeing	Participant		
			Ranking		
1. Provides	s credible source of information/believability	12 / 12			
2. Provides	alternate source of information from government				
agencies	3				
3. Provides	a conduit for building trust about the program				
4. Puts a fa	ace on the program				
5. Clarifies	the program (what is it, what it isn't)				

Ob	jective Effectiveness Rating	#	#	#	#
	-	EXC	GOOD	FAIR	POOR
1.	Provides credible source of information/believability	8	4		
2.	Provides alternate source of information from government		11	1	
	agencies				
3.	Provides a conduit for building trust about the program	5	7		
4.	Puts a face on the program		12		
5.	Clarifies the program (what is it, what it isn't)		12		
То	Tool Effectiveness Rating		Very	Good	

Based on commentary provided by those who have worked with Cows and Fish representatives over a length of time, and in areas where it is in the intermediate or advanced stages of delivery, the representatives have contributed a fundamental role in effectiveness. They were viewed by participants as highly credible, approachable and trustworthy, able to establish and build rapport within the producer community upon initial contact, and to build relationships of respect and trust over time. These were seen as

necessary precursors to producers accepting the validity of Cows and Fish. Accordingly, the representatives were assigned an effectiveness rating of **Very Good**.

The role of the representatives as deliverers of the program was validated. Participants acknowledged that producers themselves are not available to deliver it, and the expertise and resources available to the representatives are necessary to effectively communicate a consistent message to the public. It was also acknowledged that the personalities of the key individuals represent a particular strength of Cows and Fish activities to date. Concern was expressed about how Cows and Fish might maintain or duplicate these strengths in a time or place where the existing representatives are not available.

Some confusion existed about the individuals' relationships with government agencies, because they have sometimes been identified verbally or in print with those agencies. Such a relationship, perceived or otherwise, may create an unnecessary barrier to program acceptance. Further, it was felt that identifying the representatives in this way, without reference to producers, tends to misrepresent the current producer-focussed value of Cows and Fish, and could exclude producers who have played a role in delivering and maintaining the program.

Some potential disenchantment with Cows and Fish was expressed because the representatives were perceived to be somewhat unavailable, both for initial contact and necessary follow-up. It was acknowledged that this has likely been a result of limited resources available to support the high demand placed on the individual representatives. It was suggested that support from partner agencies was under-utilized. Further concern was expressed that lack of frequent communication between Cows and Fish representatives and profile producers raises the possibility that Cows and Fish may lose its producer focus.

Suggested modifications for improving tool effectiveness are set out below.

(1) While no recommendations are provided with respect to the specific representatives, because they were all rated very highly, there may be a potential role for Cows and Fish field crew to become more actively involved in communicating the results of their field work with relevant producers.

- (2) The relationship of the individual representatives with government should be articulated, and all verbal and print references to representatives must reflect that relationship accurately.
- (3) Technical and financial resources are required to permit the representatives to provide a consistently high quality of programming delivery, both on a continuing basis where Cows and Fish is already established, and as it expands into other areas of the province. In particular, resources available from within the partnership should be identified, utilized, and communicated to the public, to reflect the philosophy of partnership that Cows and Fish promotes.
- (4) A mechanism to communicate with profile producers is required so that Cows and Fish, through the representatives, continues to acknowledge the contribution of those producers, and to reflect the needs and goals of producers generally, on whose behalf the representatives are acting.
- 4.2.3 Comprehensive Programming Tools

Caring for The Green Zone: Riparian Areas and Grazing Management

A 40-page booklet describing riparian zone ecological functions, human use of riparian zones, and principles of rangeland and riparian management. The booklet also introduces riparian grazing management strategies.

TOOL EFFECTIVENESS (Performance Assessment - medium-high exposure participants)						
Objective Ranking						
Priority of Objectives # Participants Alternate						
(Cows and Fish Ranking)	Agreeing	Participant				
		Ranking				
 Provides general riparian messages in print format addressing ecological function, management principles, grazing strategies. 	17 / 17					
human role/impact [to raise awareness]						
 Introduces management strategies [to change management behaviour] 						

Ob	jective Effectiveness Rating	#	#	#	#
		EXC	GOOD	FAIR	POOR
1.	Provides general riparian messages in print format addressing ecological function, management principles, grazing strategies, human role/impact [to raise awareness]	6	11		
2.	Introduces management strategies [to change management behaviour]	6	11		
То	ol Effectiveness Rating		Very C	Good	

The <u>Caring for The Green Zone: Riparian Areas and Grazing Management</u> tool was assigned an effectiveness rating of **Very Good**. Participants indicated that content is accessible and relevant, providing a solid starting point in the process of building awareness and engaging further interest. While the tool has been well received in the southwest area of the province, its content was seen to not be as relevant to other regions of the province, reducing the tool's potential use and impact. The core design of the tool was believed to be effective, but must be adjusted to provide ecological information and management practices suitable for those regions, based on local input. Participants expressed the need for a *how to* print-format tool, providing technical information, as a follow-up to <u>Caring for The Green</u> <u>Zone: Riparian Areas and Grazing Management</u>. Given that it is an introductory awareness tool, it was considered appropriate by most participants to identify it more clearly as a Cows and Fish document, and to include the Cows and Fish objective.

Suggested modifications for improving tool effectiveness are set out below.

- (1) Redesign the tool to meet the needs of interested new target audiences. The revision should retain ecological and management fundamentals in a core document and include locally relevant management strategies/issues, as well as Cows and Fish objective.
- (2) Develop supplemental tools for non-foothill landscape issues.
- (3) Consider supplementary print-format tools that provide more technical information relating to specific management techniques, including the cost benefits associated with use of the management strategies.
- (4) Develop strategies to enhance the role of Cows and Fish partners in promoting the tool and its information.
- (5) A number of small design adjustments could increase the tool's ease of use and value in leading producers to the next step. Consideration should be given to, e.g., adding a table of contents and delineating different sections of the booklet by colourcoding page borders or corners, making it easier for the area to identify and locate sections of interest.

Cows, Fish, Cattle Dogs and Kids

An interactive youth game show modelled on TV's Jeopardy, presented at elementary schools, agricultural fairs, park interpretive programs and community events. Themes include riparian biodiversity and the interaction between riparian zone health and cattle management.

ТО	OL EFFECTIVENESS (Per	formance Assessme	ent - medium-high exposure par	ticipants)
Ob	jective Ranking			
Priority of Objectives # Participants		Alternate Participant	# Participants	
(Co	ows and Fish Ranking)	Agreeing	Ranking	Agreeing
1.	Introduces basic riparian ecology concepts to young people (elementary age) Introduces link between grazing management and riparian health, including fish and wildlife, to young people	1/6	 Introduces basic riparian ecology concepts to young people (elementary age) Introduces link between grazing management and riparian health, including fish and wildlife, to young people 	5/6
3. Provides a tool that incorporates riparian messages into related school curriculum elements, using teachers as the messenger		2. Provide a tool that incorporates riparian messages into related school curriculum elements, using teachers as the messenger		

Ob	jective Effectiveness Rating	#	#	#	#
		EXC	GOOD	FAIR	POOR
1. 2. 3.	Introduces basic riparian ecology concepts to young people (elementary age) Introduces link between grazing management and riparian health, including fish and wildlife, to young people Provides a tool that incorporates riparian message into related school curriculum elements, using teachers as the messenger	4	2		
Tool Effectiveness Rating			Very (Good	

The importance of reaching a youth audience was raised consistently by participants, both with regard to *Cows, Fish, Cattle Dogs and Kids* and to Cows and Fish generally. Reaching non-agricultural and recreational youth audiences was also identified as a priority. For elementary age groups, the tool was rated as very successful in terms of effectiveness, with no major concerns raised about its current format or content. Accordingly, an effectiveness rating of **Very Good** was assigned to the tool. However, the modification to the ranking of this tool's objectives indicated that reduced emphasis on management strategies was considered appropriate insofar as youth audiences are concerned and, in particular, in reaching urban audiences. Difficulties outside the control of those delivering the tool were acknowledged to limit its access to some school settings, but it was felt to be important to continue working within existing school programs.

Suggested modifications for improving tool effectiveness are set out below.

- (1) Continue focusing efforts with this tool to reach youth through schools, particularly urban schools, taking advantage of existing accessible avenues of contact such as FINS [Fish in Schools] and CAP [Classroom Agriculture Program]. The tool could be modified slightly to provide a more generalized riparian message incorporating nonagricultural impacts. This may ease entry into curriculum structures not now accessible. In doing so, determine the extent to which ecozone-specific messages may be required.
- (2) A similar tool directed to teenage youth may be called for, to address the impacts they can make as recreationalists now active in riparian zones, for presentation to relevant recreational groups.

Along the Water's Edge	A 20-minute video produced by the Department of Fisheries and Oceans that includes testimonials by cattle producers in all three prairie provinces. They talk about their experiences and decisions pertaining to managing cattle in their riparian zones.
The Green Zone	A one-hour CBC documentary produced by David Suzuki for his program, The Nature of Things. The program focuses on riparian management and ecology in various regions of Canada, including southwestern Alberta rangeland.
Wind, Grass and Sky: A Passion for Prairie	A one-hour Discovery Channel documentary produced by John and Janet Foster, showcasing grassland ecology and sustainable rangeland/riparian management, filmed on the McIntyre Ranch in southern Alberta.

۷	ïd	le	0	S

TOOL EFFECTIVENESS (Performance Assessment - medium-high exposure participants)						
Objective Ranking						
Priority of Objectives	# Participants	Alternate				
(Cows and Fish Ranking)	Agreeing	Participant				
		Ranking				
Along the Water's Edge	7/7					
1. Legitimizes riparian management message by presenting						
producers as messengers, in video format						
Suzuki	7/7					
1. Introduces importance of riparian zone to a national audience						
2. Builds general awareness of riparian zone function						
Foster (This video was not reviewed by medium-high exposure						
participants, only low exposure participants.)						
1. Introduces concept of stewardship by producers, including co-						
existence of cows and streams						
2. Introduces program tools (such as SC) and techniques (such						
as gravel bases and fencing)						
3. Provides general range and riparian management						

Objective Effectiveness Rating	#	#	#	#
	EXC	GOOD	FAIR	POOR
Along the Water's Edge				
1. Legitimizes riparian management message by presenting		7		
prairie producers as messengers, in video format				
Suzuki				
1. Introduces importance of riparian zone to a national audience		7		
2. Builds general awareness of riparian zone function				
Foster (This video was not reviewed by medium-high exposure				
participants, only low exposure participants.)				
1. Introduces concept of stewardship by producers, including co-				
existence of cows and streams				
2. Introduces program tools (such as SC) and techniques (such				
as gravel bases and fencing)				
3. Provides general range and riparian management				
Tool Effectiveness Rating		Go	bod	

Together, the video tools are assigned an effectiveness rating of **Good**. They provide a reasonable introduction to ecological information that is of interest to producers. Participants stated that the Suzuki and Foster videos provided a more comprehensive approach to landscape processes, and that specific messages could be identified within the videos (e.g. role of rootmass). The Suzuki and Foster videos also illustrated how landscape goals can be achieved by identifying specific management strategies, although concern was raised about the apparent emphasis on fencing-related options and the absence of other management strategies. This concern was particularly apparent with producers with no or low exposure to the program.

Placing the producer in the role of messenger was felt to be very appropriate, because it created a personalized link to the viewer, illustrating that a producer, even on a small operation, can take specific actions to achieve landscape goals that meet both cattle and habitat requirements. *Along the Water's Edge*, while communicating a similar stewardship message and showing producers to be decision-makers for the landscape, did not illustrate the action viewers needed to know about to meet the end goal of healthy riparian zones.

The producer shown in the videos who participants believed to have the greatest impact on viewers was the small operator, because he was most like the majority of producers in the province in terms of operational attributes. Participants indicated that, generally, producers are more likely to relate to him as a messenger of management information. Due to

limitations of space and money, producers with average-size operations have difficulty relating their operations to the larger-scale operations exhibited in the videos.

Because the Suzuki and Foster videos are available to a national audience, concern was expressed that non-cattle related impacts were not addressed. The tools sent a misleading message to non-agricultural audiences, namely that cattle represent an inappropriate use of the landscape, and are the only cause of riparian zone damage. This was a particular concern with the Suzuki video, due in part to perceptions about David Suzuki's reputation as an extreme environmentalist.

Suggested modifications for improving tool effectiveness are set out below.

- (1) Video content needs to be controlled (to the extent possible) and targeted carefully to send consistent producer-positive messages. Messengers should be carefully chosen in order to create a common bond with the majority of producers. Nonagricultural impacts need to be included, even minimally, to reduce producer anxiety about being targeted, and to illustrate that cattle are an appropriate part of the landscape.
- (2) Even in sound-bite format, some mention of management strategy is needed to link the ecological information to desired ecological and operational goals.

General Presentations

Slide presentations of approximately one to two hours in length, describing riparian zones and some strategies for riparian zone management. Ecological function and human interaction are key themes.

TOOL EFFECTIVENESS (Performance Assessment - medium-high exposure participants)					
Objective Ranking					
Priority of Objectives	# Participants	Alternate			
(Cows and Fish Ranking)	Agreeing	Participant			
		Ranking			
 Provides general overview of key range and riparian ecology topics to kick-start increased awareness, introducing the idea that management can be effective in reducing grazing impacts 	11 / 11				
2. Reaches broad audiences in urban and rural areas, to raise					
awareness					
Notes					
Number of participants: 13					
Number of votes: 11 (two individuals not familiar with tool)					

Ob	jective Effectiveness Rating	# EXC	# GOOD	# FAIR	# POOR
1.	Provides general overview of key range and riparian ecology topics to kick-start increased awareness, introducing the idea that management can be effective in reducing grazing impacts	2	8	1	
2.	Reaches broad audiences in urban and rural areas, to raise awareness	2	8	1	
То	Tool Effectiveness Rating		Go	od	

In areas of the province where sufficient resources have been available to permit comprehensive delivery of the Cows and Fish process, the general presentation was seen as an effective and important step in communicating landscape knowledge and related management options to a wide variety of audiences. The tool was also viewed as a way to break down scepticism and establish initial working relationships, building necessary trust and credibility. General presentations had the added advantage of presenting producers to the general public in a positive light, illustrating their proactive involvement in sustainable riparian management. Participants indicated that the tool addresses the desire of the producer community to communicate a more comprehensive picture of riparian impacts than just those caused by cattle. The tool was seen as neutral, flexible and adaptable, easily targeted to a variety of audiences and, accordingly, it has solid potential for raising awareness. It was assigned an effectiveness rating of **Good**.

In areas where program resources have not been as available, however, participants indicated that the process of using the general presentation tool as a trigger for local involvement has broken down. The role of an identifiable individual to initiate and co-ordinate events, and build upon local interest, was viewed as an aspect essential to successful delivery of the tool. Without it, the reputation of Cows and Fish and its community-based process was weakened. The success of the general presentations has placed it in high demand. This factor raised the matter of prioritizing target audiences and determining the most appropriate use of resources available to deliver the tool. Further, it was noted that some of the impact and enthusiasm arising out of exposure to the tool may be lost due to the absence of take-home materials to accompany it.

Suggested modifications for improving tool effectiveness are set out below.

(1) Clarify the appropriate scope of the tool and how best to meet demand for it.

- (2) Resources should be consistently applied to ensure continuity of service and maintenance of the Cows and Fish community process.
- (3) Determine appropriate hand-out materials to accompany the tool.

Site Tours of Demonstration Ranches

Tours of cattle operations that use a variety of grazing strategies for managing riparian zones. Tours usually incorporate contrasting sites to illustrate management implications, and provide an opportunity for a question-and-answer session with the producer.

TOOL EFFECTIVENESS (Perfo	rmance Assessme	ent - medium-high exposure partic	ipants)
Objective Ranking			
Priority of Objectives	# Participants	Alternate Participant Ranking	# Participants
(Cows and Fish Ranking)	Agreeing		Agreeing
 Legitimizes the Cows and Fish messages by presenting the producer as the messenger by illustrating locally useful tools 	0/6	 Legitimize Cows and Fish message by presenting the producer as the messenger by illustrating locally useful tools 	6/6
 Presents ground validation or evidence of concepts and practices being applied (incorporating riparian zone into range management using the foundation management principle of rest) 		 Presents ground validation or evidence of concepts and practices being applied (incorporating riparian zone into range management using the foundation management principle of rest) 	
3. Promotes team building and community action		 Promotes team building and community action 	

Ob	jective Effectiveness Rating	#	#	#	#
	-	EXC	GOOD	FAIR	POOR
1.	Legitimizes Cows and Fish message by presenting the	6			
	producer as the messenger by illustrating locally useful tools				
2.	Presents ground validation or evidence of concepts and practices being applied (incorporating riparian zone into range management using the foundation management principle of rest)	6			
3.	Promotes team building and community action			6	
То	ol Effectiveness Rating		Go	bod	

Site tours were assigned an effectiveness rating of **Good**. Participants suggested that the tool offers a clear link between real landscape impacts and management options. This information is offered in the context of meeting long-term goals, which are of immediate concern to producers. Concrete, practical examples of management systems and techniques provide the credibility necessary to reduce producer scepticism. The availability of the site, and the on-site producer, was seen to promote ongoing dialogue and interest at the local level. The hands-on and visual aspects were considered fundamental to this

process. The tool was seen to promote good resource management to the public, reducing the sense that many producers have of being targeted for improper practices.

Participants suggested that site tours provide an appropriate programming transition for producers, allowing them to visualize and learn about landscape processes addressed in general presentations, and setting the stage for them to develop further skills in evaluating landscape health. Access to site tours in areas outside the southwest was, however, stated as a concern due to perceived lack of resources to develop and implement them.

A suggestion for improving the effectiveness of this tool is to ensure that sufficient resources are available to ensure the tool can be provided to any interested producers outside the southwest of the province.

Riparian Workshops

One day meetings providing a forum for community members to identify and discuss riparian issues. Workshops begin with a slide presentation on riparian ecology, and are followed by a break-out session in which participants discuss concerns and potential solutions for riparian zone management.

ТО	TOOL EFFECTIVENESS (Performance Assessment - medium-high exposure participants)						
Ob	jective Ranking						
Pri	prity of Objectives	# Participants	Alternate				
(Co	ows and Fish Ranking)	Agreeing	Participant				
			Ranking				
1.	Delivers in-depth slide talk (function, grazing principles and	13 / 13					
	strategies, human role/impact) to raise awareness						
2.	Encourages community-based action so people start talking the						
	same language						
3.	Promotes team-building with and among agency staff and						
	community representatives						

Ob	jective Effectiveness Rating	#	#	#	#
	-	EXC	GOOD	FAIR	POOR
1.	Delivers in-depth slide talk (function, grazing principles and strategies, human role/impact) to raise awareness	2	10	1	
2.	Encourages community-based action so people start talking the same language	2	10	1	
3.	Promotes team-building with and among agency staff and community representatives	2	10	1	
То	ol Effectiveness Rating		Go	bod	

Riparian workshops were considered to be an appropriate stepping stone in starting the awareness process at the local level, because they provide local interests with the opportunity to identify and discuss issues of concern. It was recognized that central coordination of the tool as a start-up event is required. This has worked well in areas where central co-ordination by the program has been available. Accordingly, the riparian workshop tool was assigned an effectiveness rating of **Good**.

The tool has failed where the task of co-ordination has fallen to partner agencies whose mandates do not include this type of activity. It was suggested that the co-ordination role is best met by a neutral party, such as Cows and Fish, given sufficient resources.

Suggestions for improving the effectiveness of this tool include providing personnel and financial resources to capture and co-ordinate interest at the local level, in order to create a forum in which producers can begin to discuss issues of concern. While it is important to include other interest groups in the tool, the focus should remain producer-based.

Riparian Health Assessment Field Days

Starts with a workshop that includes a slide presentation addressing riparian ecological functions, followed by a field trip to teach participants how to use the lotic riparian health assessment monitoring technique. Can be combined with other tools.

TOOL EFFECTIVENESS (Performance Assessment - medium-high exposure participants)					
Objective Ranking					
Priority of Objectives	# Participants	Alternate Participant			
(Cows and Fish Ranking)	Agreeing	Ranking			
 Provides field instruction on the health assessment technique as a way to encourage individual monitoring practices 	11 / 11				
 Delivers in-depth talk (function, principles, human role/impact, and touching on grazing strategies), to raise awareness and encourage changed management behaviour 					
Notes					
Number of participants: 12 Number of votes: 11 (one individual not familiar with tool)	Number of participants: 12 Number of votes: 11 (one individual not familiar with tool)				

Ob	Objective Effectiveness Rating		#	#	#
		EXC	GOOD	FAIR	POOR
1.	Provides field instruction on the health assessment technique	9	2		
	as a way to encourage individual monitoring practices				
2.	Delivers in-depth talk (function, principles, human role/impact,	9	2		
	and touching on grazing strategies), to raise awareness and				
	encourage changed management behaviour)				
То	Tool Effectiveness Rating		Excel	lent	

The riparian health assessment field day was assigned an effectiveness rating of **Excellent**. The field setting was considered by participants to be very helpful and appropriate, because it provides the necessary hands-on opportunity to visualize and interpret the landscape. Development of these skills provides producers with the means, once at home, to independently evaluate their landscapes, creating a knowledge base of riparian ecology and leading them to appropriate management decisions. This tool was considered by producers to help keep management decisions at the producer level.

The field setting for instruction, and the potential use of the riparian health assessment at home, were viewed by participants as being delivered in a suitably neutral manner, providing producers with the opportunity to learn through discussion and interaction among themselves. This reflects an established practice of social information-gathering within the producer community, creating a positive environment for management change based on newly acquired skills and information. Access to the tool continues to be of interest.

Accounting for non-cattle impacts was a concern raised by participants, particularly in the needs assessment group, highlighting their sense of being targeted and the need to involve and communicate with other users who impact riparian zones. Participants with limited exposure to the program valued the idea of the riparian health assessment field day as highly as those experienced with it. However, the former viewed the tool as something that could be utilized as soon as they had read the print materials and checklist, failing to understand the need for awareness and education prior to its use. This difference can likely be explained by low exposure participants being introduced to and asked to rate a fundamentally field-oriented tool in a focus group setting.

Suggested modifications for improving tool effectiveness are set out below.

- (1) Maximize access to the tool by communicating its availability and potential and by continuing to present it in learning situations that allow interaction between participants.
- (2) Use resources efficiently by targeting follow-up to only participants expressing high interest.
- (3) Modify the lengthy printed materials used in the field instruction setting, for ease of use.

(4) Consider mechanisms to communicate the tool and the results to non-agricultural audiences.

Stockmen's Range Management Course

Three-day intensive field course covering many aspects of rangeland and riparian management, hosted by the Cows and Fish Program and a variety of agricultural and conservation agencies and organizations.

TOOL EFFECTIVENESS (Performance Assessment - medium-high exposure participants)								
Objective Ranking								
Priority of Objectives	# Participants	Alternate Participant	# Participants					
(Cows and Fish Ranking)	Agreeing	Ranking	Agreeing					
 Provides Cows and Fish message (in shared agency setting) through field instruction, including health assessment, plant ID, soil typing 	9 / 10	 Provides Cows and Fish message (in shared agency setting) through field instruction, including health assessment, plant ID, soil typing 	1 / 10					
 Shares expertise (e.g. historical land use, role of fire, alternate forms of winter grazing, fencing, watering) from various disciplines/perspectives, including producers 		3. Shares expertise (e.g. historical land use, role of fire, alternate forms of winter grazing, fencing, watering) from various disciplines/perspectives, including producers						
 Legitimizes message by presenting the producer as the messenger, illustrating enlightened use 		2. Legitimize message by presenting the producer as the messenger, illustrating enlightened use						

Objective Effectiveness Rating		#	#	#	#
	-	EXC	GOOD	FAIR	POOR
1.	Provides Cows and Fish message (in shared agency setting) through field instruction, including health assessment, plant ID, soil typing	9	1		
2.	Share expertise (e.g. historical land use, role of fire, alternate forms of winter grazing, fencing, watering) from various disciplines/perspectives, including producers	9	1		
3.	Legitimizes message by presenting the producer as the messenger, illustrating enlightened use	8	2		
Tool Effectiveness Rating		Excellent			

The Stockmen's Range Management Course was rated consistently high by participants, and was assigned an effectiveness rating of **Excellent**. Participants indicated that both the format and content of the tool provided a constructive, comfortable learning forum for producers. Benefits of the tool include increased awareness, incorporation of management practices into operations, and opportunities to share information and build relationships, both within the producer community and with others interested in riparian management. Plant identification was identified as one of the most valuable course topics, as was placing

riparian management into a broader ecological context of range and watershed management. The role of Cows and Fish in working with other agencies in this learning setting was considered to be appropriate.

The matter of the three-day commitment to attend the course was raised, but for the most part it was acknowledged that the nature and volume of the course material merits the three day format. The June date of the course was also acknowledged as necessary for plant identification, but it may prevent attendance by many producers and their field staff due to operational factors, such as releasing cow-calf pairs into new pastures, or onto grazing co-operatives, which must occur at this time of year.

No major recommendations are made with respect to the course, although some consideration could be made to providing a portion or variation of the course during some period other than mid-June.

4.3 Qualitative Discussion

These programming tool effectiveness ratings, together with the thematic discussion supported by participant input, suggest three key evaluation findings, described below.

4.3.1 Delivery Process and Program Values

The first key finding of Phase 1 of the evaluation is that both the delivery process and program values assumed in program design are, for the most part, validated by the qualitative data. The delivery process is effective: the program is additive in nature, starting with introductory tools that build awareness through a series of more comprehensive tools, in a process leading to proper management practices. The program rationale of developing ecological literacy is, therefore, supported. The values on which the program is designed, however, have been implemented with differing degrees of effectiveness. The community-based aspect of the program is very effective, the effort to reflect a producer-positive value is primarily, but not entirely, effective, and the intent of the program partners to act as a team-based partnership is ineffective in some circumstances (notwithstanding the positive

aspects of the community-based program value related to partnership with producers, discussed separately).

These observations suggest that Cows and Fish is fundamentally sound in its design and delivery, but that some modifications, as outlined in this section, could increase its impact. The delivery process and the community-based value of Cows and Fish are addressed in the program overview provided in the next paragraph. The producer-positive and partnership values are addressed in the subsequent parts of this section that deal with other key findings of Phase 1.

Focus group participants identified the strength of delivery of the community-based value as fundamental to the effectiveness of Cows and Fish. This occurs because Cows and Fish provides a framework in which local individuals identify community-specific needs, control and manage local information, and determine future direction on landscape issues. The program is structured at a manageable, locally-driven pace, building knowledge and promoting action over time. It provides an initial contact and information source, but encourages increasing levels of local leadership and provides a forum to initiate dialogue between different interests. Cows and Fish is a focal point for community action, filling a niche that cannot be met by other organizations due to jurisdictional limitations. It helps individual producers learn to recognize and understand landscape change, promoting bottom-up, not top-down, decision-making, giving individuals the flexibility of science-based choices that are communicated in a neutral manner. Cows and Fish also shares relevant management solutions with individual producers, where traditional sources of information do not, and encourages learning through personal and local interaction. It reflects producers' desire to act as stewards, and illustrates that desire and its results to others. Finally, Cows and Fish reflects producers' expertise and reputation within their communities, providing them with an opportunity to act as communicators in those communities.

These observations suggest that the community-based approach, as applied by Cows and Program, reflect the tenets of sustainable resource management. They also mirror evaluation of Australia's Landcare program, in which Curtis (1995) states that collaborative interaction on decision-making is becoming the standard for land use management and, in particular, that it appropriately and proactively incorporates local knowledge and expertise

55

into the process. Similarly, Feick's (2000) evaluation of multi-stakeholder land use decisions in national parks in British Columbia stresses that information, to be used, must be relevant, accessible and presented in an inclusive setting. This suggests that Cows and Fish understands and applies the principle that community members, whether called stakeholders or program participants, play a more significant role in land use management decisions than occurred under past, traditional and sole leadership by government agencies.

As Roling (1988) has suggested, this process is about developing people, not about developing agricultural operations. The result is more informed individuals, better able to make appropriate decisions and to organize themselves to deal with circumstances unique to their situation. It is a type of social learning, in which numbers of people are able to work together effectively because they share problems, ideas, encouragement and solutions, which together promote better land management (Campbell, 1989, Edgar and Patterson, 1992, and Woodhill, 1990, as cited in Curtis, 1995: 13).

4.3.2 Partner Resources and Management Options

The second key finding in Phase 1 is that the intended impact of programming tools is reduced when staff and/or technical resources are perceived to be unavailable from, or not applied consistently by, the program and/or the program partners. This impediment to promoting awareness is due, first, to lack of clarity in developing and maintaining the role and contribution of program partners and, to a lesser extent, profile producers. Focus group participates stated that this impediment is most likely caused by a lack of financial resources. Second, effectiveness of some of the existing programming tools is reduced because of a perceived lack of management solutions for non-foothill (southwestern Alberta) ecozones, and for various sizes and types of cattle operations, in which individual producers might otherwise express interest.

With regard to the first reason for reduced impact, producers expressed consistently that they want reliable and easy access to relevant management information. Follow-up on enquiries and on projects is viewed as an important program feature, one that has sometimes not been achieved. This drawback is evidenced by telephone calls from producers remaining unanswered by representatives, the inability of producers to access

information through program partners (e.g. the Alberta Cattle Commission and Alberta Agriculture, Food and Rural Development), as well as the inability of existing program partners to initiate or follow through on ranch visits, community programming activities (e.g. riparian workshops and general presentations) and development of new programming tools (e.g. site tours). Some program partner representatives who participated in the focus groups expressed frustration at being unable to move forward due to the limitations of their agency mandates, while others suggested that a certain lack of co-ordination within the program hinders progress on joint projects. This situation is caused by heavy demands on existing staff (both Cows and Fish representatives and partners), with a consequent reduction in communication.

Focus group participants were close to unanimous in stating that financial and technical support from Cows and Fish partners, including industry organizations and government agencies, is both necessary and appropriate if riparian management is to be applied successfully. This support is required so that the program can maintain its activities, its reputation and its ability to help producers address riparian management issues. As one participant observed succinctly, "it's time to put their money where their mouth is."

This finding is again similar to observations made in the Landcare evaluation conducted by Curtis (1995). The assumption is faulty that significant levels of activity and change manifest on the landscape occur by some organic process, driven by individuals or groups with local, occasional financial and technical support. Once a certain level of program participation and awareness is achieved at the community level, more permanent resources are needed to manage the growth of the process. In the Cows and Fish programming evaluation, focus group participants indicated that dependable financial resources to support future programming are "really important, because if we lose it at this stage, we've lost a lot of work". Without these resources, it was suggested, Cows and Fish "will die soon". Curtis (1995) mentions the conundrum of dependence on government by groups claiming to be community-based. Similarly, the Cows and Fish focus group participants spoke about the complex relationship with government agencies. On the one hand, the idea of the community driving action on riparian issues is paramount, yet the funding and technical resources necessary to continue the process are available primarily from government

agencies. The point at which communities act independently is, therefore, difficult to pinpoint.

In order for programming to be considered legitimate, producers want their industry and, in particular, riparian grazing management, to be presented in a positive light and to be explained in the context of other human impacts on riparian zones. The integration of cattle with healthy riparian ecosystems is treated inconsistently in the programming tools. The Stockmen's Range Management Course and site tours, for example, are very effective at engendering positive attitudes and actions by producers. "I found watching the people leave ... that everyone felt proud of being a rancher... I can say, oh, I'm doing that OK... it becomes a learning thing over time"... "my own approach to grazing management has

However, tools such as the conference booth and the Suzuki video appear to single out cattle as the primary culprit in riparian ecosystem decline. "It says the problem... here's a cow... the problem is the cow, is what I see right away... as a cattleman, it gets your hackles up right away". It is important that producers not feel targeted by programming, if the Cows and Fish goal is to achieve their commitment to sustainable riparian management. Many producers, for example, regularly experience damage to their property by recreationalists, and believe that it is essential to direct Cows and Fish programming to urban and recreational audiences to a much greater extent than in the past. To encourage greater understanding of riparian issues among different groups, it is important to highlight current and potential actions taken by producers to manage their riparian zones properly. Communicating this in every tool, in the positive, balanced manner achieved in, e.g., the Stockmen's' Range Management Course and site tours, will promote the Cows and Fish producer-positive value more effectively. As Feick (2000) suggests, use of information in decision-making depends on the nature and quality of its delivery. This appears to hold true for Cows and Fish.

The concept of partnership communicated by some tools was a very positive feature, establishing immediate interest. "I saw right off the bat that there was partnership... [it means] it's not being forced down your throat." As explained above, the collaboration between Cows and Fish representatives and producers is highly valued. When this program

value is not consistently illustrated in all tools, however, a barrier of scepticism is created. For example, <u>Caring for the Green Zone: Riparian Areas and Grazing Management</u> lists its program partners, most being government agencies. Producers are not included in the list. Further, information about Cows and Fish, including <u>Caring for the Green Zone: Riparian</u> <u>Areas and Grazing Management</u>, cannot be obtained from those partner agencies, and, as one participant indicated, the partner agency staff he dealt with had "never heard of" Cows and Fish. If the assumption in Cows and Fish is that good information leads to good decisions, producers must first be able to access the information. Producers become distrustful quickly if they perceive a mixed message in programming delivery, especially as it relates to government involvement. Any tools that do not clarify the identity and nature of the partnership, and its producer focus, reduce the potential of producers to become interested in the substantive content that Cows and Fish intends to deliver.

Producers also need information that is relevant to their operational situation. For example, <u>Caring for the Green Zone: Riparian Areas and Grazing Management</u> was rated Very Good for use in southwestern Alberta. As the program expands, the absence of similar tools that describe management options suitable for landscapes outside of the foothills ecozone may impede interest from producers operating there. In particular, information tools dealing with management options for small-size operations, and flat-land operations, were observed to be absent from the current programming tools. Further, producers in the focus groups perceived an emphasis on streambank fencing in some tools (e.g. introductory pamphlet, Foster video), a factor that may discourage producers from pursuing further information from the program if by circumstance they are first exposed to only these tools. Fencing was explained by participants to be an unpopular management option because of its material and labour costs, the limitations it places on appropriate grazing and its tendency to create a fire hazard in corridors of ungrazed vegetation.

4.3.3 Program Identity

The third key finding in Phase 1 is that the identity and purpose of Cows and Fish is not clearly stated across the suite of programming tools. Participants observed that the tools do not contain a concise description of its objective or goal. This lack of clarity has led to misconceptions about Cows and Fish, including confusion about whether it is a government

program. For example, the list of program partners found in the website tool suggests that the program consists almost entirely of government agencies, when it is intended to be oriented to and driven by producers. The association with government, particularly in introductory programming tools, presents a barrier to some individuals in and of itself. It can create confusion and potential distrust which may only be resolved if an individual is subsequently exposed to more comprehensive tools (e.g. general presentations), that successfully explain that Cows and Fish is a community-based, producer-oriented program. Clarification and appropriate involvement of government agencies within the Cows and Fish process is merited. As described earlier, Curtis (1995) has noted the conundrum of needing government involvement to ensure the long-term effectiveness of a community-based program.

Some producers in the focus groups who believed themselves to be well-informed producers had not yet heard about Cows and Fish, which had been operating in their area for some time. This suggested both that name recognition had not been maximized and that, if it was, producers may be more likely to identify with, and pursue additional information from, Cows and Fish: "Is this a book [Caring for the Green Zone: Riparian <u>Areas and Grazing Management</u>] that's put out by Cows and Fish, that's what you're saying?"... "You're more likely to pick this stuff up [introductory pamphlet] if you've had previous exposure [heard of the name]."

In discussing several tools, participants expressed strongly that it is important to reach nonagricultural audiences with Cows and Fish programming, including urban, recreational and youth groups, so that these people increase their knowledge about the role of grazing and the variety of other impacts on riparian zones. However, this raises the question about who the Cows and Fish primary target is or should be, given that it is, ostensibly, intended to assist cattle producers in achieving healthy riparian ecosystems through sustainable grazing management. Resources devoted to non-agricultural audiences may place greater demand on the program, but may also promote broad-based interest in riparian issues by sharing of information in a co-operative and inclusive manner. Given the complexity of land use decisions, and the potential for conflict over riparian resources as expressed by participants, a well-informed and involved public was stated as desirable. As Feick (2000) suggested, raising awareness about ecosystems and providing practical mechanisms by which information exchange occurs will enhance, rather than inhibit, the process and outcomes of land use decisions pertaining to important landscapes.

Accordingly, while focus group participants explained that the tools were generally effective in terms of being producer-positive and partnership-based, the implementation of these values was not consistently evident across the suite of tools.

4.3.4 General Observations

Some general observations about producers and their response to delivery of management information were made in the focus groups. These observations were not tied to any specific tool, but are stated here as supplemental information pertaining to potential program effectiveness. Participants identified the best features of the program as its grassroots involvement, building trust with community groups, the credibility of science-based knowledge combined with community wisdom, and flexibility in management practices. Personalized interaction was stressed as an essential component in kick-starting and refreshing awareness and education, communicated by both expert producers and specific Cows and Fish representatives.

The elements of the Cows and Fish name were raised repeatedly in discussion by focus group participants. As the initiative's trademark, as it were, it was acknowledged that the two elements in the name are easy to remember and have become established. The name does, however, present some potential drawbacks in terms of attracting people to pursue information. First, it was suggested that the name does not contain a third element representing people, one that would reflect the essential role people play in riparian management, as indicated by programming content. Second, not all cattle producers have fish, and so may fail to make the link between the literal use of the term fish, and the analogy that the term fish is intended to represent water or riparian ecosystems. Third, urbanites may simply disregard or misunderstand Cows and Fish and/or its programming tools because their personal experience does not relate to either the fish or the cows elements within the name.
Participants candidly expressed what they believe to be their own barriers to changing management practices. Reluctance to move away from familiar, traditional practices, and to admit that riparian zones require more active management, were identified as self-imposed barriers to change. Participants also stated that they found it easy to blame others for management problems and agreed that they were not as open to working with urban and recreational interests as may be merited. They emphasized that, if Cows and Fish represents one way to achieve change, producers first need to know more about what is involved (options for management) and not involved (streambank fencing). Economics was stated as playing a large role in whether new management ideas are accepted. Ecologically sustainable management strategies must, therefore, be illustrated to producers in ways that tie into their requirement to produce a return on their investment in cattle. Generally speaking, barriers to accepting program information were more apparent among participants with less exposure to the program. They felt more sensitive to being targeted, were more fearful of government regulation, and understood less that building awareness takes time and is necessary before some management strategies can be appropriately applied. This is likely explained by the fact of their lower exposure and reinforces the ongoing process of learning that characterizes the Cows and Fish rationale.

4.4 Strategic and Operational Recommendations

This section sets out three recommendations aimed at improving programming effectiveness. The first recommendation is strategic, while the others are operational.

(1) <u>Clarify the Program's Future Direction</u>. This includes determining and prioritizing target audiences, incorporating additional site-relevant management strategies, and ensuring that appropriate resources are in place to maintain current programming quality and to support new initiatives.

Participants indicated an awareness that the program is at a crossroads. Concern was expressed, particularly by producers, that Cows and Fish should fulfil a broad awareness function directed to many audiences, including urban, recreational and youth groups, while also maintaining a producer focus. It is necessary, therefore, to determine where programming efforts and resources should be directed and used most effectively, and to

identify how a broader awareness function fits with a producer-oriented programming. It is important to work with producers to continue to identify and learn about a wider spectrum of management options suitable for different landscapes, and different operational types and sizes. The programming design and delivery is sound and should remain so in other areas of the province if the process is continued. However, financial and technical resources are required to support the Cows and Fish process and to support producers in managing riparian ecosystems. Appropriate resource levels will prevent alienation and misunderstanding by ensuring that follow-through occurs at the current level of quality.

(2) <u>Clarify Working Relationships Within the Program Partnership</u>. Team-building is not fully developed or maintained. It is necessary, therefore, to identify, educate and maximize available staff resources within the Cows and Fish partnership.

People relate well to the idea of partnership, and this program value has been implemented reasonably well in southwestern Alberta. However, tools are not consistently promoted by Cows and Fish partners, nor are all potential technical resources maximized from partners that would help implement and support Cows and Fish. Specifically, strategies are needed to utilize agencies at appropriate times to distribute information, to advise the public about Cows and Fish, to co-ordinate referrals, to provide technical support, and to provide funding. With regard to producers who volunteer their time to program activities, it is necessary to communicate regularly with them, and to ensure they are treated like other professionals within the team, for example by offering per diem reimbursements to cover their contributions of time and expertise. It is also appropriate to offer producers some form of standardized preparation prior to involvement with public Cows and Fish awareness activities, so that they are more comfortable and effective when acting in their roles as communicators.

(3) <u>Develop a Plan to Ensure Accurate and Positive Presentation Of Content Across All</u> <u>Programming Tools</u>. It is recognized that the variety of programming tools have been developed over several years and that some have received more attention in this regard, based on demand for the tools and resources available to update them.

This recommendation involves the creation of a communications plan that focuses on strengthening the program's identity by explaining its objectives, activities, team members, resources and contact information. A communications plan should also involve a review of all tools for visual and thematic consistency, paying attention to the three key program values of community-based action, producer-positive focus and partnership. Program identity needs to be articulated. Revisions to tools must include management strategies relevant to producers operating in a variety of circumstances and address non-agricultural impacts on riparian zones, if only to soften the sense that producers often feel that they are, intentionally or otherwise, blamed for causing damage to these areas. Finally, a communications plan should address the nature and extent to which non-agricultural audiences are to be targeted by programming tools and, accordingly, incorporate tools and message content relevant to those audiences.

5. Results and Recommendations - Phase 2 (Telephone Interviews)

5.1 Overview

Section 5 first describes the Phase 2 (quantitative) response rate and then describes the respondents who participated in the telephone interviews. This is followed by an outline of the statistical procedures undertaken to examine the relationship between exposure to Cows and Fish programming tools and (a) riparian knowledge and (b) use of sustainable riparian grazing management strategies. The section concludes with a brief discussion of that relationship, outlining observations that may be considered for potential incorporation into the design and delivery of Cows and Fish programming.

5.1.1 Response Rate

Table 5.1 sets out the response rate of 14% for Phase 2 of the evaluation, resulting in 91 interviews. While this seems to be a relatively low rate, several factors associated with availability of contact lists for producers and the multi-step nature of the study help explain the response rate. A key factor contributing to the relatively low response rate was, unfortunately, the quality of the Alberta Cattle Commission membership list used to identify potential evaluation participants. After the point of mailing, the list was found to contain many duplicate entries, outdated addresses, entries for children and deceased persons, as well as a large number of individuals who had retired from the cattle business and/or sold their herds. In addition to these factors, a joint review of the mailing lists with the commission's zone representatives prior to telephone follow-up indicated that as many as 32% of the entries were unknown to them and, possibly and quite likely, were not active producers. Without these factors, the response rate may have been as high as 52%. A breakdown of possible factors affecting response rate is set out in Table 5.2. In subsequent discussions with the commission, it was acknowledged that its management of the membership list focuses on adding current year's cattle sales, rather than deleting sales that occurred in prior years. Despite its impact on the response rate, the commission's list represented the best opportunity to contact cattle producers in the province.

DESCRIPTION	#	AS % OF TOTAL MAILING
Requests mailed	637	-
Not useable due to incorrect contact information	42	6.6
Respondents willing to be interviewed (returned the pre-	159	25.0
screening booklet)		
Respondents disqualified from interview, determined by returned pre-screening booklet or specified during telephone follow-up (too few # of head, non-cow/calf operation, out of study area, no riparian zone)	79	12.4
Respondents qualified for interview	92	14.4
Non-useable interviews (determined to be Indian reserve)	1	-
Useable interviews (including 24 resulting from follow-up)	91	14.3

Table 5.1Phase 2 Response Rate

Another factor that may have contributed to the low response rate was the requirement placed on respondents for specific operational and landscape characteristics (e.g. a certain type and size of operation and the presence of a riparian zone) that could not be determined during the initial selection process. The two steps involved in the evaluation may have appeared too complex to potential respondents and presented an additional barrier to engendering their commitment to participate. The nature of the membership list available from the commission was not designed or intended to help pre-determine who might qualify or not qualify for participation.

Table 5.2	
Factors Affecting Response	Rate

EXPLANATION	#	AS % OF MAILINGS	AS %, WHEN LIST FACTORS EXCLUDED
List Factors Affecting Response Rate			
Wrong address or phone number	42	7	
Specified as retired or deceased	64	10	
Possibly not in business per ACC	203	32	
representative			
Subtotal	309	49	
Other Factors Affecting Response Rate			
Not interested / could not reach during follow-	157	25	48
up			
Disqualified from interview	79	12	24
Interviewed (including one reject)	92	14	28
Subtotal	328	51	
TOTAL	637	100	100

5.1.2 Demographic Description of Respondents

Of the 91 useable telephone interviews conducted, 80 respondents (88%) were male and 11 (12%) were female. Almost all (87) respondents (96%) represented family-run cattle operations. One respondent (1%) spoke on behalf of a corporate entity. Three (3%) represented specialty types of operations. Sixty-five respondents (72%) reported that they owned the land area discussed in the interview. Fourteen (15%) leased the area, four (4%) were managers or foremen, one (1%) was a representative of a community pasture/grazing co-operative and seven (8%) reported that they acted in a combination of roles. Locations of respondents were generalized based on statements of their nearest stream or river. Responses were combined into five watersheds. Fifty-two respondents (47%) were located in the Oldman River watershed, 35 (32%) were located in the Highwood River-Bow River watershed, seven (6%) were located in the Waterton River watershed and two (2%) were located in the Castle River watershed. Age, education, number of head in the operation and percentage income from cattle production were reported by category, as set out in Table 5.3.

Frequency of use of management strategies is provided in Table 5.4.

The degree of exposure reported by respondents to the 17 programming tools is set out in Table 5.5.

CATEGORY	FREQUENCY	%
$\Delta q_{0} = n - 01$		
29 - 29 years	1	1
30 -39 years	15	17
40 - 49 years	29	32
50 - 59 years	29	32
60 - 69 years	12	13
70+ years	5	5
Total	91	100
Education $n = 91$		
Some / All High School	26	29
Some Post-Secondary	12	13
Diploma / Certificate	34	37
Bachelor Degree	14	16
Post-Graduate Degree	3	3
Other	2	2
Total	91	100
Number of Head in Operation $n = 91$		
21 - 50 head	10	11
51 - 100 head	22	24
101 - 200 head	25	27
201 - 500 head	18	20
501+ head	16	18
Total	91	100
% Income from Cattle Production (family operations only) $n = 87$		
25% or less	16	18
26-50%	13	15
51-75%	22	26
76-100%	36	41
Total	87	100

Table 5.3Descriptive Demographic Category Tabulations

STRATEGY	FREQUENCY	%
Grazing Systems $n = 91$		
Time-Controlled Grazing (also called Deferred Grazing)	78	86
Rotational Grazing	59	65
Rest-Rotational Grazing	24	26
Riparian Pasturing	50	55
Corridor Grazing	5	6
Management Techniques n = 91		
Placing salt or mineral supplies in upland areas.	87	96
Using developed watering sites in upland areas.	53	58
Using fences and/or hardened surfaces at watering points.	39	43
Temporarily removing cattle from riparian zones during heavy rain/spring melt.	33	36
Shortening the grazing period when forage plants are growing.	62	68
Removing cattle for long periods of time (more than one year)	21	23
Distributing cattle across the landscape.	67	74
Monitoring Technique $n = 91$		
Lotic Riparian Health Assessment	9	10

Table 5.4Management Strategy Frequencies

	NEVER HEARD OF	HEARD OF NEVER READ / PARTICIPATED	READ / PARTICIPATED ONCE	READ / PARTICIPATED MORE THAN ONCE	TOTAL
ORDINAL VALUE	0	1	2	3	
Introductory					
Introductory Pamphlet	65	8	11	7	91
Display Booth	60	11	11	9	91
General Media	N/A	41	15	35	91
Website	88	2	1	0	91
Profile Producers	41	11	8	31	91
Program Representatives	46	13	8	24	91
Comprehensive					
Caring for The Green Zone: Riparian Areas and Grazing Management	41	11	24	15	91
Cows, Fish, Cattle Dogs and Kids	87	2	1	1	91
Along the Water's Edge	80	4	6	1	91
Suzuki (video)	71	14	6	0	91
Foster (video)	79	4	6	2	91
General Presentations	52	22	10	7	
Site Tours of Demonstration Ranches	46	22	16	7	91
Riparian Workshops	58	23	6	4	91
Riparian Health Assessment Field Days	54	21	13	3	91
Stockmen's Range Management Course	31	31	17	12	91
Community Health Assessment Process	61	20	7	3	91

 Table 5.5

 Self-Reported Exposure Level to Programming Tools

5.2 Preliminary Statistical Procedures

5.2.1 Identifying Programming Exposure and Attitude-Behaviour Indices

Several statistical procedures were required prior to analyzing whether Cows and Fish programming contributed to (a) the building of ecological knowledge and (b) the use of sustainable riparian management strategies. These steps and their results are summarized briefly below.

<u>Step 1</u>

First, principal components analysis was used to identify distinct sets of programming tools to which respondents had similar levels of exposure. These groupings, or components, of exposure to tools established a set of easily interpreted variables (rather than attempting to analyze patterns across 17 tools for only 91 respondents). The new variables were used in all subsequent regression procedures employed to determine whether exposure to programming was associated with (a) respondent knowledge scores; (b) current use of any of five sustainable riparian grazing management systems; and (c) current use of any of eight grazing techniques.

Five distinct exposure components were identified in the analysis. Each component was given a domain name to identify it as a unique combination of tools (variables). Exposure domain names reflect the tools contained within each component, the nature of the tools and their relative contribution of variability to the component. Table 5.6 sets out the names and programming tools associated with the five components. The table can be interpreted to mean that, across all respondents, similar patterns of exposure were reported for the tools associated with each component. A limitation of this approach is that it does not provide information about relative level of degree of exposure, only that the pattern of exposure to the tools in each component was similar.

Membership in a component was determined by statistically calculated eigenvalue scores that approached the value of 1.000 within the component (Dunteman, 1989; Tabichnick and Fidell, 1996). Eigenvalue scores are provided in Appendix I.

DOMAIN NAME	PROGRAMMING TOOLS (IN ORDER OF CONTRIBUTION OF VARIANCE)
1. Personal Contact-Field	Program Representatives Site Tours Profile Producers Stockmen's Range Management Course Display Booth <u>Caring for the Green Zone: Riparian Areas and</u> Grazing Management
2. Community-Based	Health Assessment Field Day Riparian Workshops General Presentations Community Health Assessment Process
3. Special Target	Website Cows, Fish, Cattle Dogs and Kids Along the Water's Edge
4. Introductory Communications	Introductory Pamphlet General Media
5. National Media	Foster (video) Suzuki (video)

Table 5.6 Summary of Exposure Domain Tools

Step 2

Indices for affect, cognition, perceived behavioural control and subjective norm were calculated as mean scores from responses to questions associated with the elements of the Theory of Planned Behaviour element questions in the interview, as described in Section 4. The mean index scores were used in all subsequent regression procedures, described below. Index items/questions with weak inter-item correlation were first eliminated from the index in order to arrive at an index score having the highest possible reliability, based on Cronbach's alpha value. The resulting indices more accurately reflect the concept being measured (i.e. cognition, affect and so on) (Cronbach and Meehl, 1955; DeVellis, 1991; Judd et al., 1991). Table 5.7 lists the finalized indices for the elements of the Theory of Planned Behaviour that were used in the quantitative analysis. The alpha scores, ranging from.57 to .68, fell within a moderately acceptable range of reliably accounting for variability within the indices (DeVellis, 1991).

INDEX / ITEM			CRONBACH'S
	CORRELATION	CORRELATION	đ
Affect			.68
1. Want to Maintain Landscape Productivity	.52	.27	
2. Afraid of Regulation	.49	.25	
3. Feel Responsible for Watershed	.49	.24	
Cognition			.57
1. Vegetation Deals with Energy	.56	.33	
2. Structure has Value	.42	.20	
3. Water Quality Increases	.50	.26	
4. Water Quantity Increases	.36	.18	
5. Hydrology Performs Ecological Function	.39	.19	
Perceived Behavioural Control			.63
1. Confident in Identifying Riparian Veg'n	.41	.35	
2. Confident in Identifying Range Vegetation	.56	.41	
3. Confident in Assessing Health	.32	.21	
4. Confident in Recognizing Overgrazing	.38	.22	
Subjective Norms			.58
1. Seek Advice from Neighbouring Producer	.32	.17	
2. Seek Advice from Producer Elsewhere	.54	.29	
3. Seek Advice from Friend	.32	.17	

Table 5.7Theory Indices and Reliability Values

5.3 Examining Ecological Literacy - Findings and Discussion

5.3.1 Knowledge Scores

Evaluation question 2.1(a) asks whether exposure to programming is associated with building knowledge on key riparian ecology concepts, explored in the cognition items in the interview. While giving an indication of current knowledge levels, the concepts also provide the index of cognition for subsequent analysis of the Theory of Planned Behaviour. Descriptive statistics for the knowledge items are provided in Table 5.8. Note that these scores reflect all participants regardless of exposure to Cows and Fish.

Concepts (3a) and (3b) were treated as separate items in the interview. However, it became apparent during the interview stage that concept (3b) did not clearly reflect the intended concept, but that concept (3a) did. Hence, concept (3b) was dropped from subsequent analysis, leaving nine knowledge items. Respondents' overall knowledge of riparian ecology was operationalized as the score values, ranging from one through 11, reported across all nine questions. The overall mean score across all questions was relatively high at 8.37, indicating that evaluation participants were reasonably knowledge about the riparian ecology questions asked in the interview. Concept (3a) pertaining to the role of vegetation reported the highest mean score across 9 questions, at 9.85. Concept 7 pertaining to the role of soil in riparian function scored the lowest, at 4.89.

The nine mean scores and the total knowledge score were then correlated with the five exposure domains calculated in the principal components analysis, in order to examine any relationship between knowledge and exposure to Cows and Fish, described in the next paragraphs.

#	CONCEPT	MEAN SCORE	STD DEV	MINIMUM SCORE	MAXIMUM SCORE
1.	Riparian zones are a functional part of rangeland.	7.19	2.60	1	11
2.	Diversity is best.	8.70	1.82	3	11
За.	Vegetation is key in dealing with stream energy.	9.85	1.86	3	11
3b.	The vegetation component of riparian zones performs an ecological function.	-	-	-	-
4.	Rest must follow grazing disturbance.	9.60	2.02	1	11
5.	Structure has value.	8.87	2.35	2	11
6.	Water quality increases with riparian function.	9.66	1.56	3	11
7.	The soil component of riparian zones performs an ecological function.	4.89	3.36	1	11
8.	Water quantity increases with riparian function.	8.18	2.58	2	11
9.	The hydrology component of riparian zones performs an ecological function.	8.43	2.40	1	11
n = 91	Overall	8.37	1.05		

Table 5.8Key Riparian Concepts

5.3.2 Knowledge and Exposure Pattern

Under the assumptions of the process of developing ecological literacy, and as confirmed in discussions with Cows and Fish representatives, a positive association between knowledge of key riparian ecology concepts (building ecological knowledge) and exposure to programming tools would indicate an intermediate degree of program effectiveness. To examine whether any relationships exists as set out in evaluation question 2.1(a), a correlation of the nine knowledge scores and the five exposure domains determined in the principal components analysis was calculated. Results are provided in Table 5.9.

Notwithstanding the research design limitations outlined previously regarding the restrictions on determining causality in this phase of the evaluation, the correlation matrix provided in Table 5.9 suggests that only the tools in the Community-Based exposure domain may correlate significantly to overall knowledge scores (8%), as well as to two specific riparian ecology concepts. These relate to the positive relationship between healthy riparian function and water quality and quantity, representing 8% and 7% of variance respectively. The personalized, structured, repetitive, visual and experiential nature of the tools in this domain may explain the possible association. These are characteristics more conducive to learning than introductory tools. This relationship parallels the findings in Phase 1 of this evaluation which indicated that the opportunity for community-based information exchange plays an important role in engendering commitment to sustainable activities.

#	CONCEPT	EXPOSURE DOMAIN									
		Pers Con Fie	Personal Community- Contact- Based Field		Personal Community- Special Contact- Based Target Field		In Con	Intro Comm's		ional edia	
			sig.		sig.		sig.		sig.		sig.
1.	Riparian zones are a functional part of rangeland.	006	.003	.048	.285**	.188	.074	033	.757	037	.727
2.	Diversity is best.	957	.974	.651	.006	.138	.191	.077	.469	.085	.421
3.	Vegetation is key in dealing with stream energy.	.070	015	.058	.091	015	.885	.046	.667	008	.942
4.	Rest must follow grazing disturbance.	.512	.886	.588	.389	.148	.160	042	.695	.012	.908
5.	Structure has value.	.075	.064	.202	.263**	.044	.677	.127	.232	.034	.747
6.	Water quality increases with riparian function.	.480	.547	.055	.012	.108	.310	.063	.552	098	.356
7.	The soil component of riparian zones performs an ecological function.	.013	.004	.073	.109	173	.101	055	.601	.052	.626
8.	Water quantity increases with riparian function.	.901	.968	.489	.303	.074	.486	026	.808	110	.301
9.	The hydrology component of riparian zones performs an ecological function.	064	.000	.119	.289**	.119	.262	089	.401	.146	.167
	Overall Knowledge Score	.545	.997	.261	.005	.125	.238	002	.988	.025	.813
sig.	** =<.01										

Table 5.9 Knowledge-Exposure Domain Pearson's Correlations

** =<.01 * =<.05

The apparent lack of a positive association between the four other exposure domains and knowledge of riparian ecology might be explained by the nature of those tools. For example, it is not realistically anticipated that specific knowledge on ecological concepts will result from exposure to the tools in the Special Target, Introductory Communications or National Media domains. On the other hand, a positive association between the Personal Contact-Field exposure domain and knowledge was anticipated to some degree, but did not materialize. Specifically, the <u>Caring for the Green Zone: Riparian Areas and Grazing Management</u> booklet and the Stockmen's Range Management Course are knowledge-oriented tools that do not appear to correlate to knowledge as measured here. The absence of a positive correlation between knowledge and the Personal Contact-Field domain as a whole may be a function of the nature of the other tools within the domain (i.e. exposure to representatives and profile producers does not assume an independent, direct knowledge link), or it may suggest that the tools within the domain are simply not individually effective at delivering the concepts addressed in this evaluation.

The negative correlations shown for the role of soil structure in riparian function (concept 7) reflect difficulties that participants encountered with this item during the interview. The mean score was 4.9, the lowest for all knowledge items. This may have been caused by poor question wording or by incomplete or ineffective coverage of this concept in programming tools.

The discussion of correlations provided here should be tempered by acknowledging both that the research design contains the limitations previously specified, that some of the tools are not expected to have a direct link to developing knowledge and that Cows and Fish is neither the first nor only source of management information available to the cattle producer community. Many respondents indicated that they have long experience in the cattle industry, that they read widely and that they pursue courses and workshops provided by municipal and provincial agencies as well as producer organizations. Correlations indicating that Cows and Fish tools within the Community-Based exposure domain contribute to 7% and 8% of variance on specific ecological concepts can be interpreted, therefore, as fairly positive when taken in context. Alternate sources of management information are described in a later section of this report.

In summary, while exposure to Cows and Fish programming overall does not appear to have a positive association with knowledge of key riparian concepts as tested by the methods used in this phase of the evaluation to explore the development of ecological literacy. Only those tools that fall within the Community-Based domain are positively correlated with knowledge.

5.3.4 Management Strategies and Exposure Pattern

Under the assumptions of the process of developing ecological literacy and as confirmed in discussions with the program representatives, a positive association between use of sustainable riparian management strategies (applying ecological awareness) and exposure to programming tools would be considered an ultimate degree of program effectiveness. Tables 5.10 and 5.11 provide the logistic regression results for evaluation question 2.1(b), which examines whether use of five grazing systems and eight management techniques are associated with exposure domains.

A discussion about relationships between exposure to programming tools and *use* of sustainable management strategies is meaningful only when referring to those tools which are specifically designed to promote use and when use is considered in light of alternate influences. For example, the tools within the Special Target and National Media exposure domains are not individually or collectively designed to directly promote *use*. Rather, they form part of a suite of tools used cumulatively to develop awareness. Positive correlations between these domains and strategy use were not, therefore, anticipated and did not materialize. Another factor to be considered in analyzing these correlations is the Yes-No binary format used to report use of strategies in this evaluation. In some cases, this resulted in very limited variation in the data, precluding any valid discussion about observed results. For example, less than 10% of respondents reported use of corridor grazing and health assessments, while 96% reported use of upland salt and/or minerals. Accordingly, because these data do not meet the required underlying assumptions relating to variability in data, these strategies were excluded from this discussion.

	TIME-CONTROLLED GRAZING		ONTROLLED ROTATIONAL AZING GRAZING		RES ROTAT GRA	st- Ional Zing	RIPARIAN PASTURING	
	n = 9	91	<i>n</i> =	91	n =	91	n = 91	
	Yes = 86% No = 14% B	sig.	Yes = 65% No =35% B	sig.	Yes = 26% No = 74%	sig.	Yes = 55% No = 45%	sig.
Personal Contact-Field	0.856	0.054	0.287	0.219	0.041	0.867	0.206	0.373
Community-Based	1.097	0.038*	-0.061	0.787	0.199	0.406	0.924	0.001*
Special Target	-0.120	0.766	0.234	0.372	0.194	0.386	0.430	0.285
Introductory Comm's	-0.788	0.023*	-0.212	0.343	-0.086	0.728	0.026	0.912
National Media	1.617	0.064	-0.151	0.506	-0.238	0.364	0.099	0.699
Chi ²	19.594	0.001*	3.915	0.562	2.406	0.791	16.612	0.005*
Nagelkerke R ² (note 1)	0.346		0.058		0.038		0.223	

Table 5.10 Exposure Domain-Management Strategy Regression Model (Use of Grazing Systems)

sig. =< .05

Note 1: Nagelkerke R² in logistic regression represents the percentage of variance of binary variables explained across all domains (Garson, 2000). It is similar, but not equivalent, to the R² statistic commonly used in multiple regression.

The Community-Based exposure domain was positively associated with the use of two grazing systems, time-controlled grazing and riparian pasturing. The relationship with the Community-Based domain tools seems reasonable, due to the interactive and structured nature of the tools in this domain, as described previously. The relationship with riparian pasturing was also seems reasonable because it is a relatively new grazing system that is specifically introduced in the tools contained within this domain, and other non-Cows and Fish sources of variation to account for its use are unlikely. The reason for the positive correlation between time-controlled grazing and exposure to Introductory Communications tools is not clear.

The absence of any positive relationship between exposure to all tools and both rotational and rest-rotational grazing may be explained by their similarity to time-controlled grazing in terms of meeting some of the same management objectives (e.g. reduction of grazing intensity and provision of rest). It is unlikely that a producer would report use of additional, similar systems within the same area when landscape or operational objectives are already being met.

Table	5.11
-------	------

Exposure Domain-Management Strategy Regression Model

	UPLAND WATER DEVELOPMENT		HARD SUR FENC	FACING / CES	REMOVE WHEN VULNERABLE		
	n = 91		<i>n</i> =	91	n = 91		
	Yes = 58%	sig.	Yes = 43%	sig.	Yes = 36%	sig.	
	No = 42%		No = 57%		No = 64%		
	ு		ு		ு		
Personal Contact-Field	0.004	0.987	-0.001	0.997	-0.101	0.652	
Community-Based	-0.064	0.764	-0.128	0.561	0.091	0.682	
Special Target	-0.075	0.724	0.343	0.157	0.051	0.812	
Introductory Comm's	-0.046	0.830	0.000	1.000	-0.015	0.948	
National Media	0.165	0.455	-0.248	0.281	0.264	0.224	
Chi ²	0.831	0.975	3.755	0.585	1.891	0.864	
Nagelkerke R ²	0.012		0.054		0.028		

(Use of Techniques)

	LONG-TERM REMOVAL n = 91		SHORTE GROV	N WHEN VING	DISTRIBUTE GRAZING LOAD	
			<i>n</i> =	91	n =91	
	Yes = 23%	sig.	Yes = 68%	sig.	Yes = 74%	sig.
	No = 77%		No = 32%		No = 26%	
	₿		₽		₽	
Personal Contact-Field	0.002	0.994	0.439	0.075	0.812	0.027*
Community-Based	0.008	0.976	0.212	0.386	0.351	0.355
Special Target	0.192	0.393	0.064	0.800	2.107	0.122
Introductory Comm's	-0.084	0.745	-0.184	0.422	1.083	0.009*
National Media	0.056	0.822	0.048	0.846	0.874	0.070
Chi ²	0.853	0.974	4.799	0.441	18.341	0.003*
Nagelkerke R ²	0.014		0.072		0.267	

* sig. =< .05

In terms of grazing management techniques, the majority of respondents reported use of upland water developments (58%), shortening the grazing time period (68%) and distributing the grazing load (74%). A minority reported use of hard surfaces/fences at riparian crossings (43%), removing cattle during vulnerable periods (36%) and long-term removal to allow regeneration of a riparian zone (23%). The general absence of positive associations with the exposure domains with these techniques may indicate failure of Cows and Fish programming to be effective in promoting their use.

Only one technique (distributing the grazing load) was positively associated with exposure domains (in this case, both the Personal Contact-Field and Introductory Communications exposure domains). Use of this technique incorporates the same two management principles (reducing grazing intensity and providing rest) involved in time-controlled grazing.

This suggests a common understanding and application of these principles. The principles are easily illustrated on the landscape and are incorporated into visual and verbal aspects of many of the tools contained in the Personal Contact-Field Domain. Again, the reason for association with Introductory Communications domain is not clear.

The general absence of observed relationships in this study between exposure to programming and use of the techniques may indicate that it is not so much exposure to Cows and Fish or some combination of alternate information sources, but rather operational or landscape factors that determine usage. These may include time and labour costs, dependence on limited water sources, landscape structure, breed requirements, land tenure arrangements and/or use of other management strategies that achieve the same goals.

Correlations reported here, and the absence of them, must be interpreted in the context of the inability to reliably ensure causation in this phase of the evaluation. Notwithstanding, Cows and Fish programming tools included in the Community-Based exposure domain appear to have a positive association with the use of both time-controlled grazing and riparian pasturing, while the Personal Contact-Field and Introductory Communications exposure domains were positively associated with the use of the load distribution technique that addresses similar management principles.

5.3.4 Grazing Systems and Theory Elements

Any observed relationship between use of sustainable riparian management strategies (applying ecological awareness) and the elements of the Theory of Planned Behaviour would suggest that:

- the theory is an appropriate one to explain riparian grazing management decisions; and
- (b) the rationale that programming is associated with positive attitudes, and consequently positive behaviour, is valid.

Table 5.12 provides the logistic regression results for evaluation question 2.2, which examines whether use of five grazing systems is associated with the elements of the Theory

of Planned Behaviour.⁶ As described in the discussion of exposure domains and use of management strategies, almost no variation was reported in the binary data associated with the use of corridor grazing (6% usage). The corridor grazing strategy was, therefore, excluded from this discussion.

Table 5.12 indicates that the Theory of Planned Behaviour does not, in the case of this study, fully explain use of sustainable riparian management strategies, insofar as the theory has been used as a conceptual framework to explain use of these five grazing systems. Only one positive correlation was reported, namely between use of rotational grazing and subjective norms. The index for subjective norms included consultation with producers, locally and across the province, as well as friends, although the moderately weak Cronbach's alpha score (.58) may mitigate this observation because a relatively small proportion of the variance in the index is explained by the index items. Even so, the positive correlation may reinforce the contribution made by community members sharing information among themselves, an observation also identified in Phase 1 of this evaluation. Notwithstanding this important characteristic, the other elements of the Theory of Planned Behaviour do not appear to explain the behaviours examined in this evaluation. Specifically, the two elements that comprise attitudes, namely affect and cognition, show no significant relationship to the behaviours. Second, the moderately weak Cronbach's alpha scores on these indices (.68 and .57 respectively) may reduce the ability of the indices to sufficiently explain variance. Third, the measurement of single, almost mutually exclusive behaviours rather than indices of behaviours that could more reliably be correlated to the theory elements may prevent otherwise significant correlations from being observed. Last, these may also be explained by some types of operational and/or landscape factors suggested earlier in this section (such as landscape characteristics) that may influence decisions, but that were not specifically measured in this evaluation.

⁶ The elements of the theory include affect (feelings, emotions), cognition (knowledge, beliefs), perceived behavioural control (access to skills and resources) and subjective norms (the importance that an individual places on the viewpoints of significant others in determining action).

	TIME-CONTROLLED GRAZING		ROTATIONAL GRAZING		REST-ROTATIONAL GRAZING		RIPARIAN PASTURING	
	n = 91		n = 91		n = 91		n = 91	
	Yes = 86%	sig.	Yes = 65%	sig.	Yes = 26%	sig.	Yes = 55%	sig.
	No =14%		No = 35%		No = 74%		No = 45%	
	₿		ு		ு		ு	
Affective	0.139	0.453	0.091	0.581	0.085	0.658	0.141	0.369
Cognitive	0.254	0.231	-0.080	0.633	0.090	0.613	-0.007	0.962
Perceived Control	0.263	0.311	0.225	0.265	0.078	0.712	0.049	0.791
Subjective Norm	0.304	0.170	0.457	0.007*	0.259	0.127	0.170	0.247
Chi ²	6.384	0.172	10.734	0.030*	3.483	0.481	2.638	0.620
Nagelkerke R ²	0.121		0.153		0.055		0.038	

Table 5.12 Theory of Planned Behaviour-Management Strategy Regression Model (Use of Grazing Systems)

*sig. = < .05

In this evaluation, the Theory of Planned Behaviour has not, therefore, been shown to be a suitable conceptual framework for examining riparian management behaviours. This may be related not so much to the appropriateness of the theory, but to the manner in which it was operationalized in this study.

Subjective norms, however, can be cautiously assumed to be related to management behaviour -- in particular, those concepts included on the subjective norm index such as other producers and friends. Future studies incorporating the theory may prove it to be an

appropriate choice for application in the field of resource management. Changes to research design that would assist in this process include addressing causality by using control and intervention groups and/or pre-post measurement, improving index reliability, especially pertaining to behaviours, and using a larger sample to achieve greater variation for programming interventions. While little conclusive evidence has been provided here that Cows and Fish programming is positively associated with either development of ecological knowledge or use of sustainable riparian management strategies, the complexity of the both attitudes and of cattle operations requires further investigation. Accordingly, caution dictates that until more rigourous study is possible, Cows and Fish should not yet the assumption that attitudes and other behavioral influences play a role in determining decisions about sustainable behaviours. Any such recommendation to the program could be made only if more rigourous research conclusively indicates that the rationale is invalid.

5.3.5 Supplemental Analysis - Alternate Sources of Information

As part of the development of the index for perceived behavioural control (described previously) respondents were asked to state their confidence with regard to four management items, namely identifying range vegetation, identifying riparian vegetation, recognizing overgrazing and classifying riparian health. In order to garner additional information about these skills and how they were acquired, respondents were then asked to identify the two most helpful learning sources associated with the four management items. The information sources provide some insight into alternate influences on riparian knowledge and use of management strategies not accounted for by exposure to Cows and Fish programming. Refer to Figure 5.1.

Personalized/social learning was the most apparent source of management information, including family members and other producers, as well as self-teaching using books/other reference materials and personal on-the-job experience. Again, this reflects the social nature of information exchange and learning in the cattle producer community. It is a characteristic that should continue to be maximized within Cows and Fish programming by providing opportunities for family members and neighbours to share management information in a variety of interactive settings. Moreover, reading material appears to be a popular choice for learning. Additional print and/or take-home materials associated with

existing programming tools may prove worthwhile to reinforce information addressed in field or meeting settings. A similar finding was made in Phase 1 of this evaluation.

Personal on-the job experience played a much less helpful role in identifying vegetation, however, compared to post-secondary education and other types of formal training offered through agency workshops. The important role of agencies and, to a lesser extent, other organizations in providing helpful information to producers in all management categories reinforces the suggestion made in Phase 1 of this evaluation that Cows and Fish should build on these educational resources, including the Stockmen's Range Management Course, and to continue to expand working relationships with the relevant personnel.

Figure 5.1 indicates, as would be expected for a long-established industry and a relatively new program, that Cows and Fish is not the only, or even the primary, source of management information relied upon by respondents, although the program was reported as being of particular importance in classifying riparian health. Note that many respondents who reported family, producers or self-taught sources for classifying riparian health indicated that they classified health in an informal, visual manner rather than using the structured monitoring technique of the lotic riparian health assessment, which was indicated by those reporting Cows and Fish programming as their most helpful source of information for this item. In terms of performing a formal health assessment, Cows and Fish was the most important source of information to the respondents.



Figure 5.1 Alternate Management Information Sources







6. Conclusion

6.1 Cows and Fish Programming Evaluation Protocol

An evaluation protocol is outlined here which summarizes key actions taken to:

- (a) meet evaluation research standards;
- (b) provide a mechanism by which the methodological and analytical quality of this evaluation can be judged; and
- (c) illustrate a framework that can be used as a basis for evaluations of other resource management programs.

The objective of the evaluation protocol is to document key evaluator actions undertaken to ensure that the evaluation is conducted within the utilization-focused evaluation research framework, namely utility (U); feasibility (F); propriety (P) and accuracy (A). All of the Joint Committee on Standards for Educational Evaluation (JCSEE) (1994) standards have been addressed by the researcher in this evaluation, with the exception of the requirement for assessment of the evaluation process itself by program representatives (A12). One error is reported with regard to standard P3. Inadvertently, the evaluator failed to obtain signed consent forms from focus group participants, although the nature of the evaluation and the issue of confidentiality were addressed verbally with participants on at least two occasions.

EVALUATOR ACTION	JCSEE	
	STANDARD #	
	(see appendix J)	
Evaluation research conducted independently in academic setting	U2, P5, P7, A3, A4,	
	A5, A6, A7, A8, A9,	
	A10, A11	
Evaluator attended several programming events to develop familiarization	U4, P1, A1, A2	
with programming tools		
Formal evaluation research agreement signed by key parties, specifying	P1, P2, P6, P7	
evaluation research goals and procedures, and terms of access to results		
Initiation interview conducted with program representatives to identify	U1, U3, U4, F2, P3,	
program rationale, evaluation research goals, criteria and outcomes, as well	A1, A2	
as potential other stakeholders		
Literature review conducted and research design developed that is relevant	U3, A2, A4	
to program context, evaluation research goals and research standards		
Interim meetings and reports provided to users throughout evaluation	U3, U6, U7, F1, F2,	
research to delineate program rationale, discuss planning, confirm next steps	F3, P7, A1, A3, A11	
and report findings (includes strategic meetings of program partnership);		
issue of potential conflict of interest discussed openly		
Initial detailed research design, including questions, variables and	U4, U7	
procedures, drafted as a matrix and negotiated with users before proceeding		
to data collection; regular personalized contact maintained with program		
representatives		
Key content for interview instrument and focus groups negotiated with users;	U3, F1	
drafts reviewed for accuracy and relevance; descriptions and objectives of		
programming tools agreed upon; relevant focus group participants identified		
and discussed for suitability		
Detailed interim reports and thesis (and anticipated management reporting	U5, U6, P5, A1, A3,	
and publications) provide description of all or part of this protocol, the	A4	
program rationale and process, the evaluation research methods; specific		
reporting requirements or users are negotiated		
Interview instrument pre-screened with members of cattle producer	U3, P1	
	D 0 D 4	
Meetings, interviews and focus groups scheduled at participant convenience	P3, P4	
and occur on a voluntary basis; release forms signed by interviewees; numan		
Subjects research approval obtained from university	D2 DC	
Study participation request communicated in writing and verbally as voluntary	P3, P6	
and confidential, findings shared pro-actively with and are accessible by		
document		
Used established research procedures of identify participants, and to collect	A3 A5 A6 A7 A9	
and analyze data	Δ9 Δ10	
Thesis, interim and final reports disclose positive, pautral and posative	D5	
findings and include recommendations accordingly	10	
Financial summaries and forecasting shared at regular intervals between	P8	
evaluator and funding agencies requested them	10	
ביאמוטמנטי מווט וטווטוווץ מעבווטבא ובקטבאנבט נוופווו		

Table 6.1Cows and Fish Programming Evaluation Protocol

6.2 Reflections

This evaluation has applied a formal framework to evaluate the effectiveness of Cows and Fish. As one of only a few studies that have applied established evaluation methodology to the field of resource management, this work may prove useful in future studies evaluating the impact and effectiveness of resource management programming. As water-related and riparian management issues gain greater public profile in Alberta and surrounding regions, it is important to be able to add scientifically-based methodologies and information to the sometimes contentious debate. Clearly, evaluations of other resource-based programming efforts will add to the body of practical knowledge on effective programming design and delivery.

More specifically, this evaluation has attempted to examine the impact of Cows and Fish programming on sustainable riparian management. On the assumption that attitude change is fundamental to changing riparian management behaviour, this evaluation has offered the opportunity to explore the attitude-behaviour relationship from a theoretical perspective. Despite some design limitations beyond the control of the evaluator, the Theory of Planned Behaviour has provided a mechanism to partially examine knowledge and action associated with program participation. A future study incorporating a true experimental design, not possible in this evaluation, may shed more light on the role that attitudes and other behavioural influences play in ecological behaviours. In particular, a pre- and post-intervention study would help to identify the degree to which programming is associated with specific management actions.

Given that Cows and Fish is based, like many other resource management initiatives, on some type of attitude change concept, greater understanding of the role of attitudes in behaviour change may help explain potential programming impacts, and lead to better programming. It would also be useful to conduct more detailed knowledge testing of specific ecological concepts to identify factors that could be addressed through programming. In addition, the influence of the many publicly debated issues concerning land and water use in southern Alberta could be explored to identify how they affect community and individual land use decisions. Alternate approaches to examining programming effectiveness could be

employed in further studies, including marketing and communications theory, education theory and social learning theory.

This evaluation called for the use of a mixed method research design. Its strength lay in exploring both qualitative and quantitative evidence of program effectiveness. In addition to the use of a theoretically-based conceptual framework, the mixed method design has resulted in a qualitative description of program impacts based on participant feedback, information that is of strategic value to decision-makers responsible for future programming development.

The qualitative phase of the evaluation explored the effectiveness of the design and delivery of programming tools, identifying varying levels of success in addressing the core values of the program. The qualitative analysis strongly supported the community-based nature of programming. Operational and strategic level recommendations were provided to increase effectiveness, where indicated, in particular with regard to the partnership aspect of the program. The quantitative phase of the evaluation employed a conceptual framework to examine the attitude-behaviour relationship that is central to the development of ecological literacy in the program. While the operationalization of the Theory of Planned Behaviour in this particular study did not fully explain the behaviours of interest, positive correlations were observed between exposure to community-based tools and two key concepts of riparian ecological knowledge (water quality increases with riparian function), and between those tools and use of two types of grazing systems (time-controlled grazing and riparian pasturing).

Further, the subjective norm element of the attitude-behaviour theory (operationalized as questions about seeking advice from nearby producers, from producers elsewhere in the province, and from friends) was positively correlated with one grazing system (rotational grazing). These empirical relationships suggest that community and social indicators play an important role in sustainable management and should continue to be a prominent aspect of the design and delivery of Cows and Fish.

7. References

- Adams, Barry. 1999. Personal communication. Regional Range Manager, Alberta Agriculture, Food and Rural Development. Lethbridge, Alberta.
- Alberta Cattle Commission. 2000. Calgary, Alberta: Alberta Cattle Commission. www.cattle.ca/prov_assoc/acc/04beef/fact/html
- Ajzen, Icek. 1991. The Theory of Planned Behavior. <u>Organizational Behavior and Human</u> <u>Decision Processes</u> 50: 179-211.
- Babbie, Earl. 1995. <u>The Practice of Social Research</u>, 7th ed. Belmont, California: Wadsworth Publishing Company.
- Bristol, Bill. 2000. Personal communication. Wildlife Conservationist, Prairie Farm Rehabilitation Administration. Regina, Saskatchewan.
- Burnham, Byron R. 1995. <u>Evaluating Human Resources, Programs, and Organizations</u>. Malabar, Florida: Krieger Publishing Company.
- Campbell, A. 1989. Landcare in Australia: An Overview. <u>Australian Journal of Soil and</u> <u>Water Conservation</u> 2(4).
- Campbell, Donald T. and Julian C. Stanley. 1966. <u>Experimental and Quasi-Experimental</u> <u>Designs for Research</u>. Chicago, Illinois: Rand McNally.
- Chelimsky, Eleanor. 1991. On the Social Contribution to Governmental Decision-Making. Science 254(Oct.): 226-230.
- Cook, Thomas D. and Donald T. Campbell. 1979. <u>Quasi-Experimentation: Design and</u> <u>Analysis Issues for Field Settings</u>. Boston, Massachusetts: Houghton Mifflin Company.
- Cordray, David S. 1986. Quasi-Experimental Analysis: A Mixture of Methods and Judgment. In <u>Advances in Quasi-Experimental Design and Analysis</u>. W.M.K. Trochim, ed. San Francisco, California: Jossey-Bass.
- Creswell, John W. 1994. <u>Research Design: Qualitative and Quantitative Approaches</u>. Thousand Oaks, California: Sage Publications, Inc.
- Cronbach, Lee J. and Paul E. Meehl. 1955. Construct Validity in Psychological Tests. <u>Psychological Bulletin</u> 52(4): 281-302.
- Curtis, Allan. 1995. <u>Landcare in Australia: A Critical Review</u>. Report No. 33. Albury, Australia: Johnstone Centre of Parks, Recreation and Heritage, Charles Sturt University. 61 pp.

- Dean, Debra L. 1994. How to Use Focus Groups. In <u>Handbook of Practical Program</u> <u>Evaluation</u>, 338-349. Joseph S. Wholey, Harry P. Hatry and Kathryn E. Newcomer, eds. San Francisco, California: Jossey-Bass.
- DeVellis, Robert F. 1991. <u>Scale Development: Theory and Applications</u>. Applied Social Research Methods Series Vol. 26. Newbury Park, California: Sage Publications, Inc.
- Dunteman, George H. 1989. <u>Principal Components Analysis</u>. Quantitative Applications in the Social Sciences Series No. 69. Newbury Park, California: Sage Publications, Inc.
- Eagly, Alice H. and Shelly Chaiken. 1993. <u>The Psychology of Attitudes</u>. Forth Worth, Texas: Harcourt Brace Jovanovich College Publishers.
- Feick, Jennifer L. 2000. <u>Evaluating Ecosystem Management in the Columbia Mountains</u>, <u>British Columbia</u>. Ph.D. Dissertation. Calgary, Alberta: Department of Geography, University of Calgary.
- Firestone, William A. 1987. Meaning in Method: The Rhetoric of Quantitative and Qualitative Research. <u>Educational Researcher</u> 16(7): 16-21.
- Fishbein, Martin and Icek Ajzen. 1975. <u>Belief, Attitude, Intention and Behavior: An</u> <u>Introduction to Theory and Research</u>. Reading, Massachusetts: Addison-Wesley Publishing Company.
- Fitch, Lorne. 1999. Personal communication. Provincial Riparian Specialist, Cows and Fish. Lethbridge, Alberta.
- Fitch, Lorne. 2000. The Cows and Fish Process. Presentation materials, February 29. Lethbridge, Alberta: Department of Geography, University of Lethbridge.
- Garson, G. David. 2000. Logistic Regression. Internet course notes. Raleigh, North Carolina: College of Humanities and Social Sciences, North Carolina State University. www2.chass.ncsu.edu/garson/pa765/logistic.htm
- Greene, Jennifer C. 1998. Qualitative Program Evaluation: Practice and Promise. In <u>Collecting and Interpreting Qualitative Materials</u>, 372-373. Norman K. Denzin and Yvonna S. Lincoln, eds. Thousand Oaks, California: Sage Publications, Inc.
- Grumbine, R. Edward. 1996. Course Notes for The Role of Conservation Biology in Ecosystem Management: Emerging Concepts, Evolving Practice. Calgary, Alberta: Faculty of Environmental Design, University of Calgary. 70 pp.
- Hale, Greg. 1999. Personal communication. Provincial Co-ordinator, Cows and Fish. Lethbridge, Alberta.
- Hansen, Paul L., Robert D. Pfister, Keith Boggs, Bradley J. Cook, John Joy and Dan K. Hinckley. 1995. Classification and Management of Montana's Riparian and Wetland

Sites. Miscellaneous Publication No. 54. Missoula, Montana: Montana Forest and Conservation Experiment Station, School of Forestry, The University of Montana.

- JCSEE. 1994. <u>The Program Evaluation Research Standards: How to Assess Evaluation</u> <u>Research of Educational Programs</u>, 2nd ed., The Joint Committee on Standards for Educational Evaluation. Thousand Oaks, California: Sage Publications, Inc.
- Judd, Charles M., Eliot R. Smith and Louise H. Kidder. 1991. <u>Research Methods in Social</u> <u>Relations</u>, 6th ed. Forth Worth, Texas: Harcourt Brace Jovanovich, Inc.
- Kauffman, J. Boone and W.C. Krueger. 1984. Livestock Impacts on Riparian Ecosystems and Streamside Management Implications: A Review. <u>Journal of Range</u> <u>Management</u> 37(5): 430-438.
- Lee, Robert G. 1992. Ecologically Effective Social Organization as a Requirement for Sustaining Watershed Ecosystems. In <u>Watershed Management: Balancing</u> <u>Sustainability and Environmental Change</u>, 73-90. Robert Naiman, ed. New York City, New York: Springer-Verlag.
- Meehan, William R. and William S. Platts. 1978. Livestock Grazing and the Aquatic Environment. Journal of Soil and Water Conservation. 33(6): 274-278.
- Ohmart, Robert D. 1996. Historical and Present Impacts of Livestock Grazing on Fish and Wildlife Resources in Western Riparian Habitats. In <u>Rangeland Wildlife</u>, 245-279. Paul R. Krausman, ed. Denver, Colorado: The Society for Range Management.
- Patton, Michael Quinn. 1997. <u>Utilization-Focused Evaluation research: The New Century</u> <u>Text</u>, 3rd ed. Thousand Oaks, California: Sage Publications, Inc.
- Patton, Michael Quinn. 1987. <u>How to Use Qualitative Methods in Evaluation Research</u>. Newbury Park, California: Sage Publications, Inc.
- Posavac, E.J. 1998. Toward More Informative Uses of Statistics: Alternatives for Program Evaluators. <u>Evaluation Research and Programming Planning</u> 21: 243-254.
- Rees, William E. 1990. The Ecology of Sustainable Development. <u>The Ecologist</u> 20(1): 18-23.
- Riparian and Wetland Research Program. 2000a. BLM Riparian and Wetland Databases. Riparian and Wetland Research Program, School of Forestry, The University of Montana. http://rwrp60.rwrp.umt.edu/Lasso/action.lasso
- Rog, Debra J. 1994. Constructing Natural 'Experiments'. In <u>Handbook of Practical</u> <u>Program Evaluation</u>, 119-132. Joseph S. Wholey, Harry P. Hatry and Kathryn E. Newcomer, eds. San Francisco, California: Jossey-Bass.
- Roling, N. 1988. <u>Extension Science: Information Systems in Agricultural Development</u>. Cambridge, England: Cambridge University Press.

- Rossi, Peter H., Howard F. Freeman and Mark W. Lipsi. 1999. <u>Evaluation Research: A</u> <u>Systematic Approach</u>, 6th ed. Thousand Oaks, California: Sage Publications, Inc.
- Selman, Paul. 1996. <u>Local Sustainability: Managing and Planning Ecologically Sound</u> <u>Places</u>. New York City, New York: St. Martin's Press.
- Shadish, William R. 1995. The Quantitative-Qualitative Debates: DeKuhnifying the Conceptual Context. Evaluation Research and Program Planning 18(1): 47-49.
- Skovlin, Jon M. 1984. Impacts of Grazing on Wetlands and Riparian Habitat: A Review of Our Knowledge. In <u>Developing Strategies for Rangeland Management</u>, 1001-1102. Washington, DC: National Research Council/National Academy of Science.
- Strauss, Anselm L. 1987. <u>Qualitative Analysis for Social Scientists</u>. Cambridge, England: Cambridge University Press.
- Strong, W.L. and K.R. Leggatt. 1981. <u>Ecoregions of Alberta</u>. Edmonton, Alberta: Alberta Energy and Natural Resources-Resource Evaluation and Planning Division.
- Tabachnick, Barbara G. and Linda S. Fidell. 1996. <u>using Multivariate Statistics</u>,3rd ed. New York City, New York: Harper Collins College Publishers.
- Thompson, Bill. 2000. Personal communication. Research Scientist, Riparian and Wetland Research Program. Missoula, Montana: School of Forestry, The University of Montana.
- Weiss, Carol Hirschon. 1988. Evaluation for Decisions: Is Anybody There, Does Anybody Care? <u>Evaluation Practice</u> 9(1): 5-19.
- Woodhill, J. 1990. Landcare: Who Cares? Current Issues and Future Directions for Landcare in New South Wales. Discussion Paper. Hawkesbury, New South Wales: University of Western Sydney.
- World Commission on Environment and Development. 1987. <u>Our Common Future</u>. Oxford, England: Oxford University Press.
- Zelezny, Lynette C. 1999. Educational Interventions That Improve Environmental Behaviours: A Meta-Analysis. <u>The Journal of Environmental Education</u> 31(1): 5-14.

APPENDIX A Riparian Grazing Management Strategies

TOOL	DESCRIPTION
Grazing Systems	
Time-Controlled Grazing (also called Deferred Grazing)	Involves shortening the time period in which grazing is permitted in a pasture, allowing plants to maintain vigour and to regenerate, and restricting the impact that concentrations of cattle can cause in the riparian zone.
Rotational Grazing	Involves three or more pastures that are grazed in a different sequence each year, allowing the landscape to rest, reducing grazing intensity by dispersing cattle across the landscape, and promoting diversity of vegetation types.
Rest-Rotational Grazing	Similar to rotational grazing, but eliminates grazing from one pasture each year.
Riparian Pasturing	Involves fencing like-with-like landscapes within a riparian zone, allowing greater control over cattle distribution and promoting diversity of forage and woody vegetation.
Corridor Grazing	Involves temporarily fencing a strip along the water or wet area in a riparian zone. The strip is then grazed periodically, reducing grazing intensity and allowing the landscape to rest.
Management Techn	iques
General	
1.	Placing salt or mineral supplies in upland areas.
2.	Using developed watering sites in upland areas.
3.	Using fences and/or hardened surfaces at watering points.
4.	Temporarily removing cattle from riparian zones during heavy rain/spring melt.
5.	Shortening the grazing period when forage plants are growing.
6.	Removing cattle from a riparian zone for one or more years.
7.	Distributing cattle across the landscape.
Monitoring	
Lotic Riparian Health Assessment	A non-technical standardized scoring system identifying the degree of function of 15 ecological components in the riparian zone. Objective scoring is intended to focus management action, where indicated. Ecological components include vegetative coverage, noxious weeds, disturbance-caused undesirable plants, plant health and structure, utilization of woody species, debris material, bank root mass, human-caused bare ground, human-caused structural alteration to banks, tracking and hummocking of terrain by cattle, channel incisement, bank substrate composition, intensity of animal use, erosion potential, and livestock access.

Sources: Lorne Fitch and Barry Adams. 1998. <u>Caring for The Green Zone: Riparian Areas and Grazing Management</u>, 2nd ed. Lethbridge, Alberta: Alberta Riparian Habitat Management Project, 25-34; M.M. Kothmann. 1974. Grazing Management Terminology. <u>Journal of Range Management</u> 27(4), 326-327; Riparian and Wetland Research Program. 2000a. RWRP Lotic Health Assessment for Streams and Small Rivers. Missoula, Montana: Riparian and Wetland Research Program, School of Forestry, The University of Montana, 21-22.



APPENDIX B Study Area Map

Data Source: Prairie Farm Rehabilitation Administration. 2000. GIS databank, with permission. Lethbridge, Alberta: Agriculture and Agri-Food Canada.
APPENDIX C Characteristics of a Healthy Riparian Ecosystem and Impacts of Grazing on Riparian Zones

Riparian ecosystems make up the interface between aquatic zones (including lakes, ponds. rivers, streams and wetlands) and higher terrestrial areas (uplands), providing a functional link between uplands and lower elevations. Water is the fundamental characteristic of a riparian ecosystem. A healthy riparian ecosystem serves a number of ecological functions. Landscape equilibrium is maintained by regulation of stream stability and energy, thereby maintaining water quality and quantity and, accordingly, meeting an essential human need. Riparian ecosystems represent less than 5% of the landscape, but play a fundamental role in maintaining biodiversity by promoting forage and non-forage vegetation as well as fish, bird and wildlife habitat (Allan, 1995; Hansen et al., 1995; Ohmart, 1996; Meehan and Platts, 1978). Healthy riparian ecosystems offer cool, uncontaminated water as well as areas of deeper pools and escape cover required for maintenance and increase of fish populations. Wildlife, bird and insect habitat is provided by the vegetation structure and shelter in riparian ecosystems, promoting species richness, biodiversity, number of rare species, number of breeding pairs and biomass. In Alberta, it is estimated that about 80% of wildlife utilize riparian ecosystems for all or part of their lifecycles (Fitch, 1998). Abundant and nutritious vegetation, combined with cooler and moister conditions than are available in surrounding uplands, attract cattle and other livestock to riparian ecosystems. These features tend to cause animals to loiter and cause damage in riparian ecosystems, unless managed actively (Ohmart, 1996). Managing for healthy riparian ecosystems is important, therefore, to those whose livelihoods depend upon livestock production, to those who assign recreational or aesthetic values to rangeland and riparian landscapes, and to the downstream public who depend on a clean, reliable water source (Fitch, 2000).

The negative effects of intense cattle grazing on riparian ecosystems and the implications for management began to be recognized in the 1970s. Kauffman and Krueger (1984) and Skovlin (1984) reviewed and summarized these impacts that result in declines in:

- (a) water quality, caused by fecal contamination and sediment loads;
- (b) water temperature regimes, affecting fish and insect populations;
- (c) streambank stability, leading to bank cutting due to sloughing, caused by hoof shear, trampling and removal of vegetation, resulting in loss of fish habitat;
- (d) avian habitat and food, due to loss of nesting sites and diversity caused by removal of plant cover as livestock congregate along streambanks; and
- (e) small mammal, waterfowl and ungulate habitat, due to loss of vegetation types and/or structural variability in vegetation and its associated binding mass.

The small areal extent of riparian zones, the lack of management strategies to incorporate them into upland grazing management, and a lack of understanding of their ecology, are additional factors that have contributed to riparian zones being treated as sacrifice areas -- places in which no active management was applied (Ohmart, 1996; Thompson, 2000, personal communication).

Lotic riparian health assessments conducted recently in western Canada and the United States indicate that all or most of riparian ecological function is impaired in the majority of riparian zones examined, as set out on the next page.

LOCATION/EXTENT	HEALTHY (ALL ECOLOGICAL FUNCTIONS MAINTAINED)	HEALTHY BUT WITH PROBLEMS (MOST ECOLOGICAL FUNCTIONS MAINTAINED)	UNHEALTHY (ALL OR MOST ECOLOGICAL FUNCTIONS IMPAIRED)
~ 500 reaches in southwestern Alberta	17%	44%	39%
485 reaches in southern Saskatchewan	17%	46%	36%
1,200 km of stream in Idaho	31%	42%	27%
4,200 km of river/stream in Montana	33%	45%	22%

Sources: Bill Bristol. 2000. Personal communication. Wildlife Conservationist, Prairie Farm Rehabilitation Administration. Regina, Saskatchewan; Riparian and Wetland Research Program. 2000a. BLM Riparian and Wetland Databases. Riparian and Wetland Research Program, School of Forestry, The University of Montana. http://rwrp60.rwrp.umt.edu/Lasso/action.lasso

	AF	PPEN	DIX	D	
Focus	Group	Tool	and	Probe	Matrix

TOOL	W UTH	W- RTH	ED- UTH	ED- UTH	зн- ктн	PROBES / QUESTIONS
	SOI	NOI	SOI	SOI	NOI	
Introductory						
Introductory Pamphlet	X	X		X		What are your impressions of this? If you were to pick something like this up, what does it tell you? What doesn't it tell you, what are you looking for? What would lead you to hold on to this vs. throwing it away when you get home?
Display Booth	X	X	X			What are your impressions? What does this tell you? Does this catch your attention? Does it need a person here? What would a good display booth provide you with, that you could take away with you? What are downsides of this?
General Media	X	X		X	X	Should Cows and Fish use the media to promote itself? Is it important to increase the profile? How should Cows and Fish use the media? Where should the focus be? What should the audience targets be in order of importance (producers, urban communities)? What should the message be? What should the primary outlets be? Where did you see see/hear about Cows and Fish in the media? In what ways was this memorable?
Website	X	X	X	X	X	What kind of information would you be looking for if you were to use a website? How would you start to look for that information? What do you want to see on the website? Do you want to download information? What should the website be called? Should it be stand-alone or attached to website of its partners? How should the existence of the website be communicated to the public?
Profile Producers	X	x		X	X	Is there a role for community leadership? Would you consciously contact such a person? How would you know they existed? What would you look to them for? How could they help you the most? How should people be made aware of these producers?
Program Representatives		X	X	X	X	What do you see as their role? What about perceptions with associations with their partners - ACC, Public Lands, Alberta Environment? Are there enough of them to go around? What are their strengths and weaknesses?

Comprehensive						
Caring for the Green Zone: Riparian Areas and Grazing Management	X	X	X	X	X	Let's look at content Is this the kind of information that's helpful? What's helpful about it? What problems do you see with this? Is something missing? Is it practical? What's the best section or part of it? Can anything be left out? Is there too much information? What did you learn most/what stuck with you the most when you used this? Do you know who publishes this Is it important that the Cows and Fish name/logo be on the cover?
Cows, Fish, Cattle Dogs and Kids			X	Х	X	How important is it to reach a youth audience? How important is it to develop partnerships with school/curriculum programs? How important is it to reach an urban audience or a non-producer audience? How do you feel about resources being used for this kind of activity?
Along the Water's Edge	X	Х	Х			Is there useful information here? Would you pay for this (3 minutes on Alberta)? What are some good things about using the video format? What kind of information would you like to see?
Suzuki (video)	X	X	X			Observations? Is it important to get a riparian message out to a national audience? Is it important to introduce the role of cattle producers in land management to a national audience? What kind of value does this type of profile add to Cows and Fish?
Foster (video)	Х	Х			Х	As for Suzuki
General Presentations	X	X	X	X		Would you attend something like this? If so, what would you expect to see and learn and come away with? What are your impressions of this outline? What's useful to you about these presentations? What kind of information do you like to see in presentations about grazing management? How important is it to reach audiences other than cattle producers?
Site Tours of Demonstration Ranches		Х		Х		What's the value of these? What makes it valuable/helpful to producers? How important is it to show other groups these on- the-ground examples?
Riparian Workshops			Х	Х		What are your comments about this forum? Is this something that's of value? What kinds of things are achieved by these workshops?

Riparian Health Assessment Field Days		Х	Х		Х	How was this helpful? What didn't you like about this? How does the field element contribute to learning? Or does it? What can you say here about building trust, partnership? Are these things important?
Stockmen's Range	X			X	X	What about the workshop led to that happening?
Management Course	~			~	~	Was there something key that happened here that led to a shift or change in what you thought or did in terms of your management? What did you learn? What was it about the design that was positive or negative? Is the time commitment required a concern? How do you feel about Cows and Fish working with and presenting courses like this in conjunction with government agencies such as Public Lands? What format/what content is helpful planning sessions, introduction of new technologies, field component, slide talks, lectures?
Community Health Assessment Process			X	Х	X	What are the important features of this? What results do you see coming from this? What didn't work well? What would you do differently?

APPENDIX E Quality Control in Qualitative Data Analysis



APPENDIX F Content Analysis Summaries for Evaluated Programming Tools

Introductory Programming Tools

Introductory Pamphlet

Along the Water's Edge: Enhancing Our Natural Resources	Introductory one-page fold-out pamphlet describing the history of the program and providing brief testimonials by producers about different riparian management strategies.				
THEME 1	There is a recognized need for a basic contact pamphlet, distinct from the more comprehensive the <u>Caring for The Green Zone: Riparian Areas and Grazing</u> <u>Management</u> booklet, in which content serves to introduce the program, its goals, and the people involved, while continuing to emphasize the idea of partnership. The current tool does not provide sufficient information to assist producers in contacting relevant resources, particularly at the local level.				
Descriptive Statements					
1. An easily-accessibl get more local info	1. An easily-accessible pamphlet introducing the program to new people is desirable, including how they can get more local information				
2. The program and it	s objective need to be succinctly communicated to start building recognition.				
3. Use of the word <i>pa</i> producers in decision	rtnership conveys an appealing, positive message reinforcing the active role of ons and the supporting role of relevant information.				
THEME 2	The explanation of management strategies is limited and is neither people- centered nor positive, contrary to the program's proactive philosophy. The management strategies illustrated seem to emphasize streambank fencing, and cattle are presented as problematic.				
Descriptive Statements					
1. The brochure portrays cattle in a negative light, and does not sufficiently stress the positive interaction of both producers and other riparian users, in using these systems.					
The link between m positive.	. The link between management strategies and desired landscape objectives is not consistently clear or positive.				
3. Fencing is a sensiti management option	 Fencing is a sensitive topic. Careful use of language with respect to use of fences, and related management options, is required. 				

TH	EME 3	The format and language of the pamphlet are not appealing, although the title is suitable.		
De	Descriptive Statements			
1.	. The pamphlet's title is suitable.			
2.	2. The pamphlet is wordy and cluttered.			
3.	The language and definitions are unclear. The definition of riparian is not easily understood.			

TOOL EFFECTIVENESS				
Objective	This tool was reviewed by Needs Assessment (low exposure) participants only.			
Effectiveness Rating				
Tool Effectiveness	N/A			
Rating				

Display Booth

Shown at agricultural exhibitions, conferences, shopping malls, and various producer-related and other community events.

THEME 1 The tool targets cattle activity exclusively and negatively, without it the responsibility or positive actions of various groups of people v riparian zones.		The tool targets cattle activity exclusively and negatively, without reference to the responsibility or positive actions of various groups of people who use riparian zones.		
Des	scriptive Statement	s		
1.	. The cow is targeted as a negative, literally as "the problem". Other types of users and impacts are not addressed.			
2.	The cow is targeted as "the solution", without explaining how the solution can be achieved.			
3.	. The message is perceived as both imposed by external interests and as misinformed.			
4.	People, especially	producers, are not recognized as part of the solution.		

TH	EME 2	The tool's ecological content is simplistic and distrusted.	
Des	scriptive Statements	S	
1.	The title terminolo	gy "The Green Zone" is not meaningful. Riparian is not highlighted or defined.	
2.	 The management choices intended to be illustrated by the before-and-after photographs are discounted because the photograph content is seen as misleading. 		
3.	Cattle are not pres	sented as legitimate in a broader ecosystem or ecological sense.	
4.	The inclusion of fi	sh is not clear.	

THEME 3	The tool's relationship to the Cows and Fish Program and process is unclear.
Descriptive Statement	S
 The tool does not program. 	take advantage of the Cows and Fish name to link the tool's message with the
2. The tool is static/r	non-interactive.

TOOL EFFECTIVENESS				
Objective	The tool was reviewed by Needs Assessment (low exposure) participants only.			
Effectiveness				
Ranking				
Tool Effectiveness	N/A			
Rating				

General Media

Articles about relevant program activities or riparian information, appearing in community newsletters and in national and local newspapers and magazines.

THEME 1	A positive, informed message about the program's objectives and activities is considered appropriate, through various media or communication forums, but there is a lack of consistency in content that can lead to potential misconceptions in the public. The program is not known by some producers, suggesting a need to communicate the existence of the program more comprehensively.
Descriptive Statements	
1. Use of media is an a	acceptable means of drawing positive attention to, and support for, the program.
2. Although not always	possible, it is desirable to try to control content to prevent misuse or misconceptions.
3. A number of produc	ers, even in the southwest, remain unfamiliar with the program.

THEME 2	The role of the partnership in communicating with producers is seen as important, but is insufficient and not consistently positive, reducing the level of desired awareness within the staff of program partner organizations and the producer community.	
Descriptive Statements		

- 1. Partner agencies are not proactively promoting the program internally, or with producers, to a satisfactory degree.
- 2. Producer groups, in particular, within the partnership are not sufficiently informed, proactive or positive in communicating their program.

TOOL EFFECTIVENESS (Performance Assessment - medium-high exposure participants)				
Objective Ranking				
Priority of Objectives	# Participants	Alternate Participant Ranking	# Participants	
(Cows and Fish Ranking)	Agreeing		Agreeing	
1. Provides general	7 / 11	2. Provides general	4 / 11	
introduction to program to		introduction to program to		
broad audience		broad audience		
2. Raises program profile		1. Raises program profile		
3. Provides information on how		3. Provides information on		
to contact the program in		how to contact the program		
order to obtain riparian or		in order to obtain riparian or		
range management		range management		
information		information		

Ob	jective Effectiveness Rating	#	#	#	#
	-	EXC	GOOD	FAIR	POOR
1.	Provides general introduction to program to broad audience		1	7	3
2.	Raises program profile		3	8	
3. Provides information on how to contact the program in order to			1	4	6
obtain riparian or range management information					
Tool Effectiveness Rating			Fa	ir	

Website

Internet site accessible (at the time of this evaluation) through *Ropin' the Web*, the website for Alberta Agriculture, Food and Rural Development.

TH	<i>IE 1</i> The tool provides basic information about program content and contact, which is available elsewhere, but does not optimize the flexibility and interactive nature of the internet.
De	iptive Statements
1.	he internet is seen as suitable for providing basic content and contact information about the program, but ne website in its current format could be improved to more efficiently maximize access to relevant information, people and resources.
2.	he tool does not, but could, act as a central source of information about current activities of the program, ather than duplicating information available in other tools.
3.	he tool does not, but could be used to, keep in touch with its partners and key producers, and to ommunicate information to help them promote the program.
4.	he tool does not, but could, maximize ways to obtain community feedback about needs and expectations f the program and its partners, who are seen as removed from program activity.
5.	he tool does not, but could be used to, maximize the distribution of information and tools to new udiences or to supplement tools directed to existing audiences.
6.	While the tool has the ability to provide downloaded documentation, it may not be appropriate to do so due (a) lack of exposure to other awareness tools and (b) inefficiency.

THEME 2	The tool may not reach all audiences due to its technological nature and practicalities of access.		
Descriptive Statements			
 Practicalities of access to computers and other time commitments, as well as producer age and unfamiliarity with the tool, may limit its use. 			
TUENE 2 The teal date not communicate the gradere at notice of the program and the			

TH	EME 3	The tool does not communicate the grassroots nature of the program, and the use of financial resources for non-producer audiences may not be appropriate.		
De	Descriptive Statements			
1.	The program appear	ars to be government-based, to the exclusion of producers.		
2.	The tool may be addressing targets that lie outside the program's main objective and, if so, consideratio of appropriate funding resources should be made.			

TH	EME 4	The tool is difficult to use and is not synchronized with other program tools.
De	scriptive Statements	
1.	The website location websites is confusion	n is neither well-known nor intuitively easy to find, and its association with government ng.
2.	The tool is out of da	ate.
3.	The tool is not easy	/ to navigate.
4.	The website is not	consistent in appearance to other program tools.
5.	The name of the w	ebsite should reflect the program and match the intended target.

TOOL EFFECTIVENESS (Performance Assessment - medium-high exposure participants)		
Objective Ranking		
Priority of Objectives # Participants /		
(Cows and Fish Ranking)	Agreeing	Participant
		Ranking
1. Provides program goal and how to contact program office 11 / 11		
2. Provides introductory information on hydrological function of		
riparian zones		

Objective Effectiveness Rating			#	#	#
		EXC	GOOD	FAIR	POOR
1. Provides program goal a	and how to contact program office			11	
2. Provides introductory in	formation on hydrological function of			11	
riparian zones					
Tool Effectiveness Rating			F	air	

Profile Producers

Producers familiar with the program who actively share information and ideas about riparian management, either through specific program activities or informally through ongoing community contact.

TH	EME 1	The program provides a forum for profile producers to act as communicators of expert, highly credible management information, which is viewed as valid, relevant and accessible by other producers.
De	scriptive Statements	
1.	Information delivere	d by experienced producers is practical and reflects the complexity of management
	decisions. Generall	y, producers are more receptive than if information is delivered to them by non-
	producers.	
2.	Profile producers pr	ovide an informed, local source for other producers to contact for further information.

TH	EME 2	In representing themselves and other producers as good land stewards, profile producers can initiate informed dialogue with non-producer interests, developing common ground and reducing conflict. This buy-in by non- producer interests enhances and expands the communications role filled by profile producers.		
Des	Descriptive Statements			
1.	Profile producers illustrate that producers are agents of landscape change.			
2.	Profile producers build trust by bridging the gap between producer and non-producer interests; this role is enhanced when coupled with non-producer interests in, e.g., presentations or courses.			

TH	EME 3	Involvement of profile producers as communicators of the program is fundamental, and should be safeguarded.
De	scrintive Statements	
000	Scriptive Statements	
1.	Profile producers ca	n take advantage of local community interaction, which builds enthusiasm and
	promotes a sense o	f local ownership of riparian management.
2.	There is some conce	ern about a shift away from being producer-delivered toward being government-
	delivered.	

TH	EME 4	Support provided by the program to profile producers is limited or insufficient.
De	scriptive Statements	
1.	The efforts of profile	producers are not appropriately acknowledged, resulting in a feeling of alienation.
2.	Insufficient effort has return for their contr	s been made to communicate program activities and progress to profile producers, in ibutions.
3.	There is no standard presentations.	dized procedure to assist profile producers in preparing their programming

THE	ME 5	Profile producers must be seen as viable, accessible to others, and representative of the average producer.
Desc	riptive Statements	
1. F	Profile producers c	arry more weight if seen to be non-biased and economically viable.
2. t	The role of the pro- ypical producer.	file producer would be strengthened if their operations are more representative of the
2 1	Mhile respected n	at all profile producers are viewed as skilled communicators for the program

While respected, not all profile producers are viewed as skilled communicators for the program. 3.

TOOL EFFECTIVENESS (Performance Assessment - medium-high e	exposure participants	5)
Objective Ranking		
Priority of Objectives	# Participants	Alternate
(Cows and Fish Ranking)	Agreeing	Participant Ranking
 Legitimizes program messages by presenting a producer as the messenger 	11 / 11	
 Spreads program messages by taking advantage of alternate sources 		

Ob	jective Effectiveness Rating	#	#	#	#
		EXC	GOOD	FAIR	POOR
1.	Legitimizes program messages by presenting a producer as the	5	6		
	messenger				
2.	Spreads program messages by taking advantage of alternate	5	6		
	sources				
Tool Effectiveness Rating			Very	Good	

Program Representatives

Based in Lethbridge, Alberta: Provincial Co-ordinator Assistant Provincial Co-ordinator Provincial Riparian Specialist (in-kind involvement from Alberta Environment-Natural Resources Service) Range Specialist (in-kind involvement from Alberta Agriculture, Food and Rural Development-Public Lands Division) Riparian Field Crew Chief, and crew staff

TH	EME 1	The representatives are viewed as competent and effective.		
Des	Descriptive Statements			
1.	The representatives	s are seen as excellent, non-threatening communicators for the program.		
2.	. In areas where involvement has been long-term, the representatives have established relationships of trust and familiarity, helping producers to accept the program.			
3.	The representative	s are viewed as knowledgeable, appropriately trained, flexible and committed.		
4.	The role of some fi	eld staff in building awareness may be under-utilized.		

THEME 2	It is recognized that non-producer representatives are the appropriate primary deliverers of the program, but concern is expressed about ensuring that delivery and future direction of the program continues to reflect that it is fundamentally producer-driven.
Descriptive Statements	
1. The representative	s successfully fill a qualified, full-time communications role in delivering the program, one

- that cannot be met practically by producers.
- 2. Communicating the program as producer-driven is seen to be fundamental to its existence and future viability.
- 3. The representatives do not maintain sufficient, proactive communication with profile producers and agency staff, leading to potential disenchantment and to concern that the program's emphasis is shifting away from being producer-driven.

TH	EME 3	The relationship of the representatives to government is unclear, resulting in confusion and establishing a potential barrier to program acceptance.
Des	scriptive Statements	
1.	The representative agencies, instead of	s are introduced as or are identified in some tools as being associated with government of acting on behalf of a producer-based initiative.
2.	The wide range of hence its significant	viewpoints about the relationship to government suggests that both the relationship, and ce, are not well understood.

TH	EME 4	The demands on the representatives are perceived to outrun their available resources, reducing their effectiveness and threatening the program's reputation.		
Des	Descriptive Statements			
1.	Accessibility to representatives is insufficient, affecting the program's positive reputation.			
2.	Demands on representatives are recognized as being too great.			
3.	Lack of resources is perceived to be a threat to the program's future continuity.			
4.	The reputation of the how to maintain the	ne program is tied to the reputation of its representatives, and concern is expressed about at continuity of standard over time and during periods of expansion.		

5. Resources from within the partnership are not being fully utilized.

TOOL EFFECTIVENESS (Performance Assessment - medium-high exposure participants)			
Objective Ranking			
Priority of Objectives	# Participants	Alternate	
(Cows and Fish Ranking)	Agreeing	Participant	
		Ranking	
1. Provides credible source of information/believability	12 / 12		
2. Provides alternate source of information from government agencies			
3. Provides a conduit for building trust about the program			
4. Puts a face on the program			
5. Clarifies the program (what is it, what it isn't)			

Ob	jective Effectiveness Rating	#	#	#	#
		EXC	GOOD	FAIR	POOR
1.	Provides credible source of information/believability	8	4		
2.	Provides alternate source of information from government agencies		11	1	
3.	Provides a conduit for building trust about the program	5	7		
4.	Puts a face on the program		12		
5.	Clarifies the program (what is it, what it isn't)		12		
То	ol Effectiveness Rating		Very	Good	

Comprehensive Programming Tools

Caring for The Green Zone: Riparian Areas and Grazing Management

A 40-page booklet describing riparian zone ecological functions, human use of riparian zones, and principles of rangeland and riparian management. The booklet also introduces riparian grazing management strategies.

TH	EME 1	The ecological and management content in the tool is appealing because it is presented as positive, relevant and flexible.	
Des	Descriptive Statements		
1.	Management options and ecological content are accessible, relevant and practical.		
2.	Management options are seen as individualized and positive.		
3.	The format is appropriately easy for an introductory awareness tool.		

TH	EME 2	The tool is seen as an early step in a cumulative process of awareness building, when used in context. It raises interest in obtaining further information (in some format).	
Des	Descriptive Statements		
1.	The tool triggers i	nitial interest.	
2.	The tool triggers i	nterest in obtaining more information, both technical and economic.	
3.	The tool's effectiv	eness may be reduced if not accompanied by contextual information.	

THEME 3 The tool does not effectively address the needs of producers in areas out southwest of the province because its content focuses on landscapes an management strategies relevant in the foothills region only.				
Descriptive Statements				
1. It is suitable for the foothills.				
2. The tool's content is not seen as relevant outside of the foothills.				
3. The tool does not	appear to present management techniques suitable for small operations.			

THEME 4 The tool reflects the importance that producers place on their role as steward riparian zones, but the role of other watershed users is not emphasized er					
Descriptive Statemen	Descriptive Statements				
1. Producers are seen in a stewardship role, which reduces potential conflict.					
2. It is important to address the role of other users and impacts, but this is done only minimally.					

THE	ME 5	Non-agricultural issues need to be addressed in this tool or in supplementary tools. Non-agricultural issues and tools must be determined locally by the community.		
Desc	Descriptive Statements			
1. (1. Clarification of the target and reformatting of the tool may be required.			
2. (2. Content should be determined by and for local producers in any new area.			

TH	EME 6	The tool is not clearly associated with the Cows and Fish Program and its partners.
De	scriptive Statement	s s
200		
1.	The tool does not	explain the role of the Cows and Fish program or partnership, and is not readily
	identifieble og o	Source and Eich tool
	identinable as a C	ows and Fish tool.
2.	It is somewhat dif	ficult to determine contact information to pursue further queries.
3.	The tool is not act	ively promoted or available through those organizations identified as its partners
	throughout the pro	ovince. Some sensitivity around the use of logos and partner names is noted
	unoughout the pre	whoe. Come sensitivity around the use of logos and particle names is noted.

TOOL EFFECTIVENESS (Performance Assessment - medium-high exposure participants)					
Objective Ranking					
Priority of Objectives	# Participants	Alternate			
(Cows and Fish Ranking)	Agreeing	Participant			
		Ranking			
 Provides general riparian messages in print format addressing ecological function, management principles, grazing strategies, human role/impact [to raise awareness] 	17 / 17				
2. Introduces management strategies [to change management behaviour]					

Objective Effectiveness Rating		#	#	#	#
		EXC	GOOD	FAIR	POOR
1.	Provides general riparian messages in print format addressing ecological function, management principles, grazing strategies, human role/impact [to raise awareness]	6	11		
2.	Introduces management strategies [to change management behaviour]	6	11		
Tool Effectiveness Rating			Very C	Good	

Cows, Fish, Cattle Dogs and Kids

An interactive youth game show modelled on TV's Jeopardy, presented at elementary schools, agricultural fairs, park interpretive programs and community events. Themes include riparian biodiversity and the interaction between riparian zone health and cattle management.

THEME 1 The availability of the tool reflects the fundamental importance of education young people about riparian systems. A more general riparian health m may be sufficient and appropriate for a younger age group, without incorporating management strategies.		The availability of the tool reflects the fundamental importance of educating all young people about riparian systems. A more general riparian health message may be sufficient and appropriate for a younger age group, without incorporating management strategies.		
De	Descriptive Statements			
20.	compare clatemente			
1.	The tool is one way	of reaching what is considered to be a very important audience.		
2.	It is important to use the tool in urban audiences.			
3.	A broad riparian health message may be sufficient and appropriate for this age group.			
4.	The tool currently r	eflects the ecology of the foothills, and so does not target other areas.		

THEME 2		It is acknowledged that it is difficult to break into the elementary school curriculum structure, so the tool may be most effective when communicated through existing programs only.	
Des	Descriptive Statements		
1.	. Curriculum restrictions limit where and when the tool can be used.		
2.	The tool is most useful when directed through existing programming avenues.		

TH	THEME 3 Non-school settings may require supplemental tools to reach bigger audience numbers.			
De	scriptive Statements			
1.	. At large events, the small audience size does not maximize coverage and impact of the tool.			
2.	The tool does not address the teen-aged group who, as recreationalists, may impact riparian areas.			

TOOL EFFECTIVENESS (Performance Assessment - medium-high exposure participants)							
Objective Ranking							
Priority of Objectives	# Participants	Alternate Participant	# Participants				
(Cows and Fish Ranking)	Agreeing	Ranking	Agreeing				
1. Introduces basic riparian	1 / 6	1. Introduces basic riparian	5 / 6				
ecology concepts to young		ecology concepts to young					
people (elementary age)		people (elementary age)					
Introduces link between		Introduces link between					
grazing management and		grazing management and					
riparian health, including		riparian health, including					
fish and wildlife, to young		fish and wildlife, to young					
people		people					
Provides a tool that		Provide a tool that					
incorporates riparian		incorporates riparian					
messages into related		messages into related					
school curriculum		school curriculum					
elements, using teachers		elements, using teachers					
as the messenger		as the messenger					

Objective Effectiveness Rating		#	#	#	#
		EXC	GOOD	FAIR	POOR
1.	Introduces basic riparian ecology concepts to young people (elementary age)	4	2		
2.	Introduces link between grazing management and riparian health, including fish and wildlife, to young people				
3.	Provides a tool that incorporates riparian message into related school curriculum elements, using teachers as the messenger				
Tool Effectiveness Rating			Very C	Good	

Videos

Along the Water's Edge	A 20-minute video produced by the Department of Fisheries and Oceans that includes testimonials by cattle producers in all three prairie provinces. They talk about their experiences and decisions pertaining to managing cattle in their riparian zones.	
The Green Zone	A one-hour CBC documentary produced by David Suzuki for his program, The Nature of Things. The program focuses on riparian management and ecology in various regions of Canada, including southwestern Alberta rangeland.	
Wind, Grass and Sky: A Passion for Prairie	A one-hour Discovery Channel documentary produced by John and Janet Foster, showcasing grassland ecology and sustainable rangeland/riparian management, filmed on the McIntyre Ranch in southern Alberta.	
THEME 1 Generally, these tools successfully introduce concepts of landscap and benefits of change. Two of the three videos successfully link n strategies to landscape goals. The videos do not illustrate the need management options required by producers.		
Descriptive Statements		
1. Foster and Suzuki	videos help producers recognize landscape processes and landscape goals.	
2. Foster and Suzuki options, and raise	videos seem to emphasize fencing, rather than illustrating a variety of management questions with producers about risks associated with fencing.	
3. Along the Water's Edge video communicates a relationship between commercial benefits and good management of riparian areas.		
4. Along the Water's goals.	Edge video does not create a management link between ecological information and end	

THEME 2	A sense of stewardship is communicated by the videos.
Descriptive Statements	
1. A sense of steward	ship is promoted by providing real-life examples that other producers can relate to.

THEME 3 Videos are seen as appropriate tools to reach broader, non-agricultural audiences, but producers are sensitive to their content when it illustrates those impacts caused by cattle, when those videos are used for non-agric audiences.		Videos are seen as appropriate tools to reach broader, non-agricultural audiences, but producers are sensitive to their content when it illustrates only those impacts caused by cattle, when those videos are used for non-agricultural audiences.
Des	scriptive Statements	
1.	It is important to re	present good cattle management to broader audiences, and videos can achieve this.
2.	The emphasis on c	attle impacts may communicate an undesirable message to non-agricultural audiences.
3.	Non-agricultural au	diences may be more receptive if broader ecological topics are addressed.
4.	It is important to co	ommunicate that cattle are an appropriate part of the environment.
5.	In video production	, control over content should be maintained.

	The videos are most effective when a producer acts as the messenger, and will reach a higher proportion of producers if the messenger is similar in operational attributes to the typical producer.
Descriptive Statements	
1. The video content messenger is distri	is well received when delivered by producers, but may be resisted if the video usted.

- 2. Interest is established when the producer delivering the message has similar operational attributes as the intended target producer.
- 3. The videos focus on deeded land; needs of producers with leased land were not perceived to be addressed.

THEME 5	Along the Water's Edge is most appropriate for use in non-personal, multi- viewer, public situations rather than individual at-home use.

Descriptive Statements

1. Brief videos like *Along the Water's Edge*, with current type of content, are suitable for quick sound-bites, in public settings.

TOOL EFFECTIVENESS (Performance Assessment - medium-high exposure participants)		
Objective Ranking		
Priority of Objectives	# Participants	Alternate
(Cows and Fish Ranking)	Agreeing	Participant Ranking
Along the Water's Edge	7/7	
1. Legitimizes riparian management message by presenting		
producers as messengers, in video format		
Suzuki	7 / 7	
2. Introduces importance of riparian zone to a national audience		
3. Builds general awareness of riparian zone function		
Foster (This video was not reviewed by medium-high exposure		
participants, only low exposure participants.)		
1. Introduces concept of stewardship by producers, including co-		
existence of cows and streams		
2. Introduces program tools (such as SC) and techniques (such as		
gravel bases and fencing)		
3. Provides general range and riparian management		

Objective Effectiveness Rating		#	#	#
		GOOD	FAIR	POOR
Along the Water's Edge				
1. Legitimizes riparian management message by presenting prairie		7		
producers as messengers, in video format				
Suzuki				
1. Introduces importance of riparian zone to a national audience		7		
2. Builds general awareness of riparian zone function				
Foster (This video was not reviewed by medium-high exposure				
participants, only low exposure participants.)				
1. Introduces concept of stewardship by producers, including co-				
existence of cows and streams				
2. Introduces program tools (such as SC) and techniques (such as				
gravel bases and fencing)				
3. Provides general range and riparian management				
Tool Effectiveness Rating	Good			

General Presentations

Slide presentations of approximately one to two hours in length, describing riparian zones and some strategies for riparian zone management. Ecological function and human interaction are key themes. THFMF 1 Producers are interested in learning about broad landscape issues and impacts such as those addressed in the tool. The tool is presented in a simple, flexible and neutral format, allowing participants to weigh the validity and applicability of the information given, establishing a starting point in raising awareness and building knowledge about management options to help in future decisions. The tool may not address landscape processes outside of the producer's control to the desired extent, nor does it consistently incorporate materials that can be taken home for review or to share newly learned information with sceptical family members. **Descriptive Statements** 1. Producers who have not participated in the tool value the opportunity to learn new information that might assist them in decision-making, but tool content must be neutral and comprehensive to reduce scepticism. 2. The tool is neutral, comprehensive and easy to understand. It promotes learning and dialogue between different groups, but may not be as well known as is desirable. The tool develops relevant knowledge by introducing management options that assist in future decisions. 3. The tool does not provide supplemental materials for participants to build on enthusiasm and knowledge, 4. subsequent to the presentation. THEME 2 The tool has broad value and utility, within and outside of the producer community. In particular, the tool addresses the concern of producers of the need to raise awareness in wider audiences about producer stewardship and riparian issues generally. Urban, youth and recreational audiences are viewed as targets that should be actively pursued, but concern about maintaining a producer focus arises. **Descriptive Statements** 1. The tool illustrates producers as proactive stewards of riparian landscapes. 2. It is important to producers that the impacts of non-agricultural riparian users be understood and communicated. The tool is suitable for reaching a variety of audiences, including agricultural, recreational and urban 3. audiences. Producers are interested in the tool and want it to be proactively delivered, including use of program 4. partner venues. 5. A high priority is placed on using the tool to reach young people, especially in agriculture. 6. Viewpoints vary on the priority of target audiences for which the tool should be utilized, with concern about maintaining a focus on the producer. THEME 3 The tool and sufficient follow-up to it has led to success in building upon initial interest and creating community involvement. In the absence of co-ordinated follow-up by an identifiable party with a clear mandate, interest has waned and frustration set in. **Descriptive Statements** In some locales, the tool has initiated interest in the program, established the basis for future working 1. relationships, and has ultimately led to high levels of community involvement. Lack of co-ordinated follow-up in other locales has led to disenchantment with the process, and 2.

3. Lack of resources in some locales has led to frustration with the tool, and an undervaluing of its contribution in the awareness process.

TOOL EFFECTIVENESS (Performance Assessment - medium-high exposure participants)		
Objective Ranking		
Priority of Objectives	# Participants	Alternate
(Cows and Fish Ranking)	Agreeing	Participant
	0 0	Ranking
1. Provides general overview of key range and riparian ecology	11 / 11	
topics to kick-start increased awareness, introducing the idea		
that management can be effective in reducing grazing impacts		
2. Reaches broad audiences in urban and rural areas, to raise	1	
awareness		
Notes		
Number of participants: 13		
Number of votes: 11 (two individuals not familiar with tool)		

Objective Effectiveness Rating		# EXC	# GOOD	# FAIR	# POOR
1.	Provides general overview of key range and riparian ecology topics to kick-start increased awareness, introducing the idea that management can be effective in reducing grazing impacts	2	8	1	
2.	Reaches broad audiences in urban and rural areas, to raise awareness	2	8	1	
Tool Effectiveness Rating Good					

Site Tours of Demonstration Ranches

Tours of cattle operations that use a variety of grazing strategies for managing riparian zones. Tours usually incorporate contrasting sites to illustrate management implications, and provide an opportunity for a questionand-answer session with the producer.

THEME 1 The tool illustrates landscape interactions, providing a setting in which producers begin to relate that ecological information to sustainable management. Producers can distinguish management options relevan their operations, but acknowledge that operational factors may limit the ability to achieve sustainability.		The tool illustrates landscape interactions, providing a setting in which producers begin to relate that ecological information to sustainable management. Producers can distinguish management options relevant for their operations, but acknowledge that operational factors may limit their ability to achieve sustainability.
Des	scriptive Statements	
1.	The tour leads produ	ucers to begin to link landscape characteristics into the context of their long-term goals.
2.	Producers relate the	e tour information to their fundamental concern about carrying capacity, but
	acknowledge that th	ere are some barriers to them achieving appropriate carrying capacity levels.
3.	The tour illustrates a	a variety of management options, allowing producers the flexibility to consider practices
	that match their indi	vidual needs.

THEME 2	The visual nature of the tour is a particular strength, providing credible evidence to producers of comparative results arising from different management options. The involvement of producers as managers of the demonstrate sites adds significant credibility, both during the tour, and subsequently within the community, where interest and learning is promotion by local word-of-mouth.
Descriptive Statements	

1.	By visually illustrating the practical aspects of different management strategies, on comparative sites, the
	tour reduces producer scepticism, thereby increasing the credibility of new management options.
2.	Producers who are the managers of the sites are credible messengers.
3.	Once established, sites become the subject of local dialogue, promoting interest and awareness within the
	community, reinforcing the learning and decision processes as local ones.

THEME 3	While primarily focused on producers, both the tour and the general availability of the site, the tool communicates to non-producers that producers are acting responsibly as land managers and are addressing past problems.
Descriptive Statements	

- 1. The tool addresses the concern that producers have about the importance of communicating their good management to the public.
- 2. The tool illustrates that problems arising from past management can be and are being addressed by producers.

THI	EME 4	The delivery of the tour by program representatives provides needed up-front expertise. The task is seen as a labour-intensive commitment, with necessary resources being unavailable outside the southwest, reducing use of the tour as a program tool. While intended to achieve team-building, there is some confusion over the timing and nature of involvement by representatives and on-site producers in presenting the sites as a program tool.
Des	scriptive Statements	
1.	The program's expe	rtise is a valuable and necessary element of the tool.
2.	. Resources are limited outside the southwest to arrange tours.	

3. The on-site producer may be viewed as being separate from the team process that is one goal of the program.

THEME 5	The positioning of the tour among other program tools is appropriate. It is seen as a preliminary field component, necessarily occurring after introductory ecological information sessions, but prior to a producer determining and implementing any management strategies.
Descriptive Statements	
 The site tour is place presentations of eco 	ed appropriately in the process of building knowledge, following the introductory logical processes but preceding health assessments.

TOOL EFFECTIVENESS (Performance Assessment - medium-high exposure participants)					
Objective Ranking					
Priority of Objectives	# Participants	Alternate Participant Ranking	# Participants		
(Cows and Fish Ranking)	Agreeing		Agreeing		
1. Legitimizes the Cows and Fish Program messages by presenting the producer as the messenger by illustrating locally useful tools 0 / 6		 Legitimize Cows and Fish Program message by presenting the producer as the messenger by illustrating locally useful tools 	6 / 6		
 Presents ground validation or evidence of concepts and practices being applied (incorporating riparian zone into range management using the foundation management principle of rest) 		 Presents ground validation or evidence of concepts and practices being applied (incorporating riparian zone into range management using the foundation management principle of rest) 			
3. Promotes team building and community action		3. Promotes team building and community action			

Ob	Objective Effectiveness Rating		#	#	#
		EXC	GOOD	FAIR	POOR
1.	Legitimizes Cows and Fish Program message by presenting the producer as the messenger by illustrating locally useful tools	6			
2.	Presents ground validation or evidence of concepts and practices being applied (incorporating riparian zone into range management using the foundation management principle of rest)	6			
3.	Promotes team building and community action			6	
Tool Effectiveness Rating			Go	bod	

Riparian Workshops

One day meetings providing a forum for community members to identify and discuss riparian issues. Workshops begin with a slide presentation on riparian ecology, and are followed by a break-out session in which participants discuss concerns and potential solutions for riparian zone management.

THEME 1 The tool is a building on develop a c groups.		The tool is a starting point in the process of creating awareness and action, building on initial interest from within the community. It provides a forum to develop a common language about riparian issues between a variety of interest groups.
De	scriptive Statement	S.
200	scriptive otatement	
1.	It is important to p	rovide a forum of this type to break down barriers between groups.
0		
Ζ.	I ne tool is a logica	al starting point for discussion of issues, fitting appropriately in the process of awareness
	buildina.	
3.	i ne tooi provides	a forum for different interests to share their knowledge and discuss issues.

THEME 2	Due to limited co-ordination resulting from lack of mandate or resources, the tool has failed to become established in some areas outside the southwest.
Descriptive Statements	S

- 1. There is a recognized need for an identifiable, co-ordinated effort to build on any local producer interest, both for the tool itself, and the anticipated developments arising from it.
- 2. Agencies do not have the jurisdictional mandate to perform the necessary co-ordination and follow-up, a niche that may best be filled by the Cows and Fish Program.

ТО	TOOL EFFECTIVENESS (Performance Assessment - medium-high exposure participants)			
Ob	jective Ranking			
Pric	prity of Objectives	# Participants	Alternate	
(Co	ws and Fish Ranking)	Agreeing	Participant	
			Ranking	
1.	Delivers in-depth slide talk (function, grazing principles and	13 / 13		
strategies, human role/impact) to raise awareness				
2.	Encourages community-based action so people start talking the			
same language				
3. Promotes team-building with and among agency staff and				
	community representatives			

Ob	jective Effectiveness Rating	#	#	#	#
	-	EXC	GOOD	FAIR	POOR
1.	Delivers in-depth slide talk (function, grazing principles and strategies, human role/impact) to raise awareness	2	10	1	
2.	Encourages community-based action so people start talking the same language	2	10	1	
3.	Promotes team-building with and among agency staff and community representatives	2	10	1	
Tool Effectiveness Rating			Go	bod	

Riparian Health Assessment Field Days

Starts with a workshop that includes a slide presentation addressing riparian ecological functions, followed by a field trip to teach participants how to use the lotic riparian health assessment monitoring technique. Can be combined with other tools.

TH	EME 1	The tool provides a method, not available elsewhere, that enables producers to view landscape processes and change both consistently and critically, as part of a cumulative process leading to them choosing appropriate management actions.
Des	scriptive Statements	
1.	The tool communic	ates to producers how to identify, measure and comparatively assess elements of
	riparian landscape	š.
2.	The tool supports p	roducers' need and ability to act independently as the decision-maker in managing their
	own riparian sites,	helping them to monitor health, set goals and identify management options appropriate
	for their specific sit	es
~		
3.	I nere is no other s	imilar tool available to producers to neip them to understand the elements and
	interactions of ripa	rian landscapes

THEME 2 Field instruction is essential to the effectiveness of the tool because management by producers is inherently field-based, but the print document slightly cumbersome in size and language.		
Descriptive Statements		
. The hands-on nature of the tool reflects the working style of producers.		
2. The printed hando	. The printed handout is cumbersome for at-home use.	

3. The form's language may be too technical for some, and the form does not provide an opportunity to record comparative site history.

THEME 3	The tool reflects producers' traditional sharing of expertise through interaction, allowing them to arrive at a common understanding of the landscape without assigning blame for its condition to the producer managing it. The tool may have its greatest impact in settings where opportunities for producer interaction are maximized.
Descriptive Statement	S

- 1. The process of learning and applying the health assessment at home encourages interaction and dialogue between producers, creating a neutral forum to understand the condition of their landscapes.
- 2. Presenting the tool in one-day events may not maximize efficient use of resources or provide the greatest opportunity for the necessary interaction between participants.
- 3. Return on investment of program resources, and producer interest in the tool, may be diluted without proactive, targeted follow-up from the program.

The tool is of interact to producers, and they are socking alternate ways to obtain
The tool is of interest to producers, and they are seeking alternate ways to obtain
an introduction or explanation of its potential, prior to participating in or
conducting full assessments.
5

Descriptive Statements

1. The tool is not well known outside its current field day setting; other methods of communications are not maximized.

THEME 5	Among low-no exposure participants, the tool may not address non-agricultural impacts sufficiently, representing a desire on the part of these producers to ensure non-agricultural riparian zone users are reached.
Descriptive Statement	S
1. For those unfamil	iar with the tool, it appears to focus on cattle impacts without communicating with other

users.

FOOL EFFECTIVENESS (Performance Assessment - medium-high exposure participants)			
Objective Ranking			
Priority of Objectives	# Participants	Alternate Participant	
(Cows and Fish Ranking)	Agreeing	Ranking	
 Provides field instruction on the health assessment technique as a way to encourage individual monitoring practices 	11 / 11		
 Delivers in-depth talk (function, principles, human role/impact, and touching on grazing strategies), to raise awareness and encourage changed management behaviour 			

Notes
Number of participants: 12
Number of votes: 11 (one individual not familiar with tool)

Ob	ective Effectiveness Rating	#	#	#	#
		EXC	GOOD	FAIR	POOR
1.	Provides field instruction on the health assessment technique	9	2		
	as a way to encourage individual monitoring practices				
2.	Delivers in-depth talk (function, principles, human role/impact,	9	2		
	and touching on grazing strategies), to raise awareness and				
	encourage changed management behaviour)				
Тос	ol Effectiveness Rating		Excel	lent	

Stockmen's Range Management Course

Three-day intensive field course covering many aspects of rangeland and riparian management, hosted by the Cows and Fish Program and a variety of agricultural and conservation agencies and organizations.

TH	EME 1	The tool is an appropriate setting for promoting riparian awareness as part of range management generally, and provides a positive, flexible and open forum in which producers can share their knowledge and learn about new management information.
De	scriptive Statements	
1.	The tool places lear	ning about riparian management within the larger ecology of range management, and rum for Cows and Fish Program involvement
~		
2.	I ne tool provides a	forum for constructively sharing both practical and science-based information, breaking
	barriers and establis	shing new working relationships.
3.	The less formal asp	ects of the course are highly valued because they provide opportunities for further
	discussion on cours	se material.
4.	The flexibility of the	course material options and direct access to program representatives are valued
	components of the c	course.

THEME 2	The course provides a hand-on field experience that is key to increasing ecological awareness and changes in management practices.
Descriptive Statements	
1. The course materia	I promotes ecological knowledge.
2. The course creates those strategies, the	interest in changing to new management strategies, and promotes implementation of ough hands-on learning and shared experiences.
THEME 3	The length of the course is appropriate given the volume of material covered.

THEME 3	The length of the course is appropriate given the volume of material covered, but the season of the course, while necessary for plant identification, is not conducive to some producers or operations field staff who cannot attend in June. Concern is also expressed about finding new ways to reach other potential participants.
Descriptive Statements	
 The three-day timet breadth of informati 	able is considered appropriate and necessary to ensure acceptance of the depth and on covered.
 It is acknowledged attendance by certa benefit from instruc 	that, for practical purposes, the course must be held in June, but this timing prevents in key operational staff, or producers from areas outside of the southwest, who would tion.

3. The course may only be reaching those most interested in improving management strategies, and not those who most need to change their management strategies.

TOOL EFFECTIVENESS (Performan	DL EFFECTIVENESS (Performance Assessment - medium-high exposure participants)				
Objective Ranking					
Priority of Objectives	# Participants	Alternate Participant # Participants			
(Cows and Fish Ranking)	Agreeing	Ranking Agreeing			
 Provides Cows and Fish 	9 / 10	1. Provides Cows and Fish 1 / 10			
message (in shared agency		message (in shared agency			
setting) through field		setting) through field			
instruction, including health		instruction, including health			
assessment, plant ID, soil		assessment, plant ID, soil			
typing		typing			
Shares expertise (e.g.		3. Shares expertise (e.g.			
historical land use, role of fire,		historical land use, role of			
alternate forms of winter		fire, alternate forms of			
grazing, fencing, watering)		winter grazing, fencing,			
from various		watering) from various			
disciplines/perspectives,		disciplines/perspectives,			
including producers		including producers			
Legitimizes message by		2. Legitimize message by			
presenting the producer as the		presenting the producer as			
messenger, illustrating		the messenger, illustrating			
enlightened use		enlightened use			

Ob	jective Effectiveness Rating	#	#	#	#
		EXC	GOOD	FAIR	POOR
1.	Provides Cows and Fish message (in shared agency setting) through field instruction, including health assessment, plant ID, soil typing	9	1		
2.	Share expertise (e.g. historical land use, role of fire, alternate forms of winter grazing, fencing, watering) from various disciplines/perspectives, including producers	9	1		
3.	Legitimizes message by presenting the producer as the messenger, illustrating enlightened use	8	2		
То	ol Effectiveness Rating		Exce	llent	

APPENDIX G Telephone Interview Prescreening Booklet

<section-header><section-header><section-header><section-header><section-header><section-header></section-header></section-header></section-header></section-header></section-header></section-header>	THANK YOU FOR CONTRIBUTING YOUR TIME TO ASSIST ME IN THIS STUDY. If you have any questions, please call me at (403) 394-0494. Nancy Bateman
Department of Geography University of Lethbridge Lethbridge, Alberta TTJ 4M7 © Nancy Bateman 1999	
HOW TO COMPLETE THIS CHECKLIST	<u>PART 1</u>
HOW TO COMPLETE THIS CHECKLIST This checklist forms the first of two stages in the evaluation study. The second stage is a more detailed telephone questionnaire.	PART 1 Please tell me a little about yourself and your cattle operation. <u>YES</u> NO
HOW TO COMPLETE THIS CHECKLIST This checklist forms the first of two stages in the evaluation study. The second stage is a more detailed telephone questionnaire. The person most responsible for making decisions about complete this checklist. The same person will be contacted shortly to complete the telephone questionnaire. This checklist has four parts. Part 1 asks you a little about your family area (of your choice) within your operation that you cattle operation. Part 2 asks you to forthin your operation that you can tak about during the study. Part 3 asks about your family to confirm your name and telephonen number so that can contact you to set up a convenient time for the telephone questionnaire. Information gathered in the study will be treated forinfernity by the sesuits will be provide to the Cows & Fish program, and shared with you in summary form. You name and location will never be known to anyone but your anter and your cattle operatin the study results. Desenser each question by checking the box for the faswer you feel is most appropriate to your situation.	PART 1 Please tell me a little about yourself and your cattle operation.



<u>SECTION A</u>	In ch choo chara each	oosing your own study area, please se an area that includes <u>all</u> of the acteristics listed below. Please check off box to indicate that your study area is:	SECTION	B Plea cont ripa that has	ase also choose your stu tains <u>at least one of</u> the rian zones. Check off <u>ar</u> apply, to indicate that yo one or more:	dy area s following ny of the our study	so that it types of boxes area	
		LAND THAT IS LOCATED ENTIRELY <u>WITHIN</u> THE BOUNDARIES SHOWN BY THE DASHED LINE ON THE MAP ON PAGE 2 (but the land should <u>not</u> be colony or reserve lands)	CHOOSE ANY OF THESE THAT		STREAM OR RIVER THA WATER FOR THE ENTIR OR MOST YEARS	T CONTA	INS N ALL	
<u>AND</u>		LAND THAT IS EITHER <u>ALL OR ALMOST</u> <u>ALL</u> RANGELAND (trees, shrubs, grasses, or grass-like plants, as either native or tame forage). <u>OR</u> IT HAS <u>SOME</u> RANGELAND AND <u>SOME</u> CULTIVATED CROPS (the land should <u>not</u> consist entirely of cultivated crops)	APPLY		ALL OR MOST YEARS	T OF THE	INS YEAR, IN ATER, AR, IN	
<u>AND</u>		LAND THAT IS AT LEAST 40 ACRES IN SIZE LAND THAT IS USED FOR CATTLE			DRAW, COULEE OR STF YOU BELIEVE CONTAIN PAST, EITHER ALL OR F YEAR, BUT WHICH IS NO PERMANENTLY DRY	REAMBED ED WATE PART OF T	THAT R IN THE THE	
	_	GRAZING AT LEAST PART OF THE YEAR IN MOST YEARS			NATURAL SPRING			
<u>AND</u>		LAND WHERE YOU ARE THE PERSON WITHIN THE OPERATION WHO HAS THE GREATEST AMOUNT OF INFLUENCE OR CONTROL IN MAKING DECISIONS ABOUT MANAGING THE CATTLE THAT GRAZE THERE (OR YOU SHARE THAT RESPONSIBILITY <u>EQUALLY</u> WITH	Please pro to select a because th #5. Hav	bceed to any of t hey don	e question #5 <u>even if y</u> <u>he items listed above</u> in 't apply to your operation en able to identify a study	ou were n Section <u>YES</u>	unable B <u>NO</u>	
		SOMEONE ELSE IN YOUR OPERATION)	area •	a that has all of the Section A at least o listed in S	characteristics listed in , <u>AND</u> , <u>ane</u> of the characteristics section B?]		
		4	•	at least o listed in S	ne of the characteristics tection B?			

lf you quest	answered	YOU	S to question #5, please proceed to answered NO to question #5, stop now.	PART 3		
Pleas this c	se accept i checklist in	ny th the	nanks for your participation, and return enclosed stamped envelope.	Now, please indicate whether or not you have <u>ABOUT</u> any of the following activities or extrementation of the following activities or extrementation of the second secon	ve <u>HEA</u> ension	<u>RD</u>
#6.	What is th major stre	e nea am th	arest river or hat the water in flows into?	about your participation in each of these in of this checklist.)	a later	section
	If it is also	know	vn by one or		YES	NO
	more diffe please inc	rent r lude f	name(s), them here.	The Stockmen's Range Management Courses? (These are 2-3 day field courses covering many aspects		
#7.	How would	d you	describe the landcover in your study area?	of range management, hosted by a variety of organizations including the Cows & Fish program.)		
CHOC	DSE	ן	IT CONTAINS <u>ONLY</u> RANGELAND (trees, shrubs, grasses or grass-like plants, as either native or tame forage)	The Cows & Fish Riparian Health Assessment Field Workshops? (These Cows & Fish workshops involve a slide consectation on how tigering comes function, followed		
ONL	C	ן	IT CONTAINS <u>SOME</u> RANGELAND AND <u>SOME</u> CULTIVATED CROPS	by a field trip to determine the condition of the riparian zone using a scoring system that evaluates vegetation, soil, etc.)		
#8.	Which cat study are	egory a?	v best describes your role in most of your	The Cows & Fish Riparian Workshops? (These are one day meetings involving a slide		
	C	ו	YOU OWN THE LAND	presentation, followed by a session where participants break into working groups to talk about living and working around riparian zones.)		
CHOC	DSE]	YOU LEASE THE LAND	The Cows & Fish Riparian Presentations?		
ONE]	YOU ACT AS A MANAGER OR FOREMAN FOR THE LANDOWNER(s) OR LEASEHOLDER(s)	(These presentations are about an hour in length, and describe riparian zones and managing livestock in these areas. One or more of these presentations may have been hosted by your municipality, a conservation group, a producer group or your methoburs).		
]	YOU SHARE THE LAND AS PART OF A FORESTRY GRAZING ALLOTMENT	The Cows & Fish Riparian Health Assessment		
		כ	YOU SHARE THE LAND AS PART OF A COMMUNITY PASTURE OR GRAZING CO-OPERATIVE	(This involves the community inviting Cows & Fish representatives to work with local producers along a stream or river, or within a watershed, to assess the general condition of the riparian zone.)		
]	OTHER (please specify)			
			6	7		

Continued have you HEARD ABOUT?	YES	NO	Other than hearing about the Cows & Fish listed above, please indicate whether you h ABOUT any of the following sources that pl	program ave <u>HE/</u> rovide	items ARD	
The brochure called "Caring for the Green Zone: Riparian Areas and Grazing Management"?			information about the Cows & Fish program	YES	NO	
(This is a large green booklet describing riparian zones, principles of range management and techniques for grazing cattle in these areas.)			Cattle producers who you know to be very familiar with the Cows & Fish program, and who actively share the program's information			
The pamphlet called "Along the Water's Edge: Enhancing our Natural Resources"? (This small yeallow pamphlet describes the history and ourpose of the Cows & Fish program.)			or ideas with other producers? (These cattle producers may be neighbours you've talked with, or other people vuive met at producer meetings or similar events.)			
The video called "Along the Water's Edge"? (This video includes interviews with producers in Alberta, Saskatchewan and Manitoba, who talk about managing cattle in cinarian zonas.)			Representatives of the Cows & Fish program? (These include Greg Hale, Lorne Fitch and Barry Adams.)			
The youth game show called "Cows, Fish, Cattle Dogs and Kids"? (This is an interactive game show for young people, oresented in park interpretive programs, agricultural			The television documentary covering Cows & Fish, called "Wind, Grass and Sky: A Passion for Prairie", a one-hour Discovery Channel program hosted by John and Janet Foster?			
fairs and special events like EnviroDays, AgiDays and WildThing.)			The television documentary covering Cows & Fish, called "The Green Zone", presented by			
The Cows & Fish display booth?			Things"?			
(This booth is shown at agricultural exhibitions, in shopping malls and at various producer and other special events.)						
Site tours of demonstration ranches?						
(These are tours, co-ordinated by the Cows & Fish orogram, of ranches that demonstrate a variety of strategies for grazing in riparian zones. Some of the ranches are the Waldron Ranch, the VXV Ranch, the Elkhorn Ranch and the Mt. Sentinel Ranch.)						
The Cows & Fish website on the internet?						
8			9			

PARTICIPATED IN the follow	ing.	ENDED	
	NEVER	ONCE	
The Stockmen's Range Management Courses?			[
The Riparian Health Assessment Field Workshops?			[
The Riparian Workshops?			[
The Riparian Presentations?			[
Community Riparian Health Assessments?			[
Site tours of demonstration ranches?			[
Please indicate how often you	have <u>RE</u>	AD ALL C	DR P
<u></u>	NEVER	ONCE	
The brochure called "Caring for the Green Zone: Riparian Areas and Grazing Management"?			[
The pamphlet called "Along the Water's Edge: Enhancing our Natural Resources"?			[
Articles or other information about the Cows & Fish program contained in newspapers, newsletters or magazines?			(

If you answered <u>YES</u> to the last item, please list some examples of the newsletters, magazines and/or newspapers in which you read about the Cows & Fish program.	·		
Please indicate how often yo <u>OF</u> the following.	ou have <u>SEE</u> NEVER	ONCE	TWICE
			MORE
The video called "Along the Water's Edge"?			
The game show called "Cows, Fish, Cattle Dogs and Kids"?			
The TV documentary called "Wind, Grass and Sky: A Passion for Prairie"?			
The TV documentary called "The Green Zone"?			
The Cows & Fish display booth?			
The Cows & Fish website?			

And, finally, please indicate h DISCUSSED the Cows & Fish	ow often y h program	ou have with the f	ollowing.	Cows & Fish program, this evaluation study, or managing cattle around riparian zones? If so, please provide your commente here.
	NEVER	ONCE	TWICE OR MORE	Also, I would appreciate any comments you have that might help improve future Cows & Fish programming and
Cattle producers who you know to be very familiar with the Cows & Fish program, and who actively share the program's information or ideas with other producers?				assist Alberta cattle producers. You can use this space, or send a separate letter. If you wish, we can expand on these comments when we speak on the telephone.
Representatives of the Cows & Fish program?				
PAI	<u>RT 4</u>			
PAI So that I can contact you to si complete stage 2 of the study questionnaire), please provide number, and the best time to Your Name (please print)	RT 4 et up a cor r (the telep e your nam reach you.	nvenient ti hone ne, teleph . THANK	ime to one YOU.	
PAI So that I can contact you to complete stage 2 of the stoay questionnaire), please providi number, and the best time to Your Name (please print) Your Telephone Number	RT 4 et up a cor (the telep e your nan reach you.	nvenient ti hone ne, teleph . THANK	ime to one YOU.	
PAI So that I can contact you to s complete stage 2 of the study questionnaire), please providi number, and the best time to Your Name (please print) Your Telephone Number Best Time to Reach You to Set Up Appointment for Telephone	et up a corr (the telep e your nam reach you.	nvenient ti hone ne, teleph . THANK WEEKDAY	ime to one YOU.	
PAI So that I can contact you to su complete stage 2 of the study questionnaire), please providi number, and the best time to Your Name (please print) Your Telephone Best Time to Reach You to Set <u>Apopointment</u> for Telephone Questionnaire	RT 4 et up a cor (the telep e your nam reach you.	nvenient ti hone ne, teleph THANK WEEKDAY WEEKEND DAYTIME	ime to one YOU.	
PAI So that I can contact you to sug questionnaire), please provid number, and the best time to Your Name (please print) Your Telephone Number Best Time to Reach You to Set Questionnaire	RT 4 et up a corr (the telep e your nam reach you.	nvenient ti hone ne, teleph . THANK WEEKDAY WEEKDAY WEEKEND DAYTIME EVENING	ime to one YOU.	 Your contribution to this effort is greatly appreciated.

APPENDIX H

Telephone Interview Questionnaire







her			Question		Theoretical	Q#	Prompt	Question			
uerces, lernate ormation surce.	4.6	IF RESPONSE IS ZERO, SKIP TONET, A AL QUESTION, OTHERWISE And what were the most helpful and these most helpful sources in this? Lan read the list for you again if you wish. Specific	amily member?	117-01 1127-02 All othars not solicitid -03	Construct Other Influences. Alternate Information Source.	4.8	[IF RESPONSE IS ZERO, SKIP TO NEXT ZERO, SKIP TO NEXT ZERO, SKIP TO NEXT TO THERWISE. : A nd, the most helpful sources in learning this were?	A family member? A fellow cattle producer? A fellow cattle producer? A conservation group? A conservation group? A conservation group? A griculture agency or rep? A minicipal agriculture agency or rep? A private hired range consultant? The Society for Range Management? The Society for Range Management? The Stockmen's Range Management? The Stockmen's Range Management? You range your post-secondary You range your set using books and similar reference materials? Or some other method I haven't mentioned?			#1 - #2 - not sele - 03
rceived	4.7	And lastly, using the 0- You ca	n recognize the signs of razing in your study area?	99/99				Specny:			
ills.	2	are you that 3 4 5 6			The section!	0#	Descurt				99/9
02	03	04 03 06 07	00 09 70 71		Construct Belief 1.	5.1	The following stateme	nts are Riparian zones ren	resent al	bout 2%	of
					Riparian is part of range.		Intended to get an understanding of your experience with riparis found on rangelands. these statements, piece the 0-10 scale to indica- statement is. Choosin the 0-10 scale to indica- statement is. Choosin MEANS YOU BELIEVE STATEMENT IS COMP (NACCURATE, AND 10 YOU BELIEVE THE STATEMENT IS COMP ACCURATE. Choosin, woul you with a course of the output inaccurate or accurate	the total area of rar own an zones for seuse to rangeland produ small degree. sin how ig 0 Ti THE LETELY J 5, being d mean here we c 0K?	ngeland i Ily, they ctivity to	n southe contribut o only a	ern ite
					0 1 1	2	3 4 5 07 06	6 7 8 9[10		
						03				1 0	30
			an 1999				e Na	incy Bateman 1999			
Theoretics	al Q	# Prompt	Question		Theoretical Construct	Q#	Prompt	Que	stion		
Theoretic: Construct Belief 5. Diversity is best. D 1 01 0	al Q t 5.2 2 2 12 0	# Prompt	Question All things being equal, a riparian zon that contains good fish and wildlife habitat is likely to increase the profitability of a catile operation. 7 8 9 101 11 7 08 09 10 11 19		Theoretical Construct Belief 8c. Riparian components (hydrology) perform ecological functions	<u>Q</u> # 5.9	Prompt And,	Que Riparian zones are increasingly dry wh riverbank gets mor year.	stion likely to en the se e down-c	become tream or rut each	
Theoretic; Construc Belief 5. Diversity is best. D 1 1 D 1 0 Belief 4. Vegetation is very in dealing with stream anergy. Belief Ba, Riparian components veg) perfor scological functions.	al Q t 5.2 02 0 5.3 s g	Prompt 3 4 5 6 Addition 5 6 6 Again, Just a reminder that You BeLIEVE THE STATEMENT IS COMPLETE NACCURATE AND 10 MEAN YOU BELEVE IT IS COMPLETELY ACCURATE.	Question All things being equal, a riperior son habitat is they to increase the profitability of a cattle operation. 7 0 8 9 10 11 7 0.8 9 10 10 11 7 0.8 9 10 10 11 7 70 8 9 9 10 10 11 7 70 8 9 9 10 10 11 7 70 8 9 9 10 9 10 9 10 9 10 9 10 10 11 7 10 9 10 9 10 10 11 11 10 12 <	10 19 19	Theoretical Construct Belief & Riparian components (hydrology) beform below: be	Q# 5.9 2 03 6.1	Prompt And, 3 4 5 0 04 05 00 04 05 00 04 05 00 05 00 casle one last time 0 inDicATES THAT 20MPLETELY DISAGE WITH THE STATEMEN 10 INDICATES THAT 20MPLETELY AGREE	Que Riparian zones are increasingly dry wh riverbank gets more year. 6 7 8 9 1 7 00 9 1 sing the for the grazing managemen ary YOU REE 7, AND OU with it. You prefer to contit Ways used in the preference of the sing the grazing managemen ary YOU	stion likely to then the size down-co o 10 0 1 100 100	become tream or rut each	99
Theoretic: Construct Belief 5. Diversity is best.	al Q t 5.2 2 0 5.3 99 2 0 0 0.0 5.4	Prompt 3 4 5 6 7 3 0.4 0.5 0.6 6 7 Again, Just a reminder that is volume to the stratement is completely the stratement is completely the stratement is completely to mean you be levely is completely to the stratement is completely tot the stratement is completely tot the stratement is comp	Question All things being equal, a riparian zon that contains good flah and wildlik profitability of a cattle operation. 7 0 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.9 10 11 11 7 10.3 12 10 11 10 13 0.2 10 19 5 0 0.3 0.2 0.1 19 9 Forage productiv		Theoretical Construct Bolint Ge. Riparian components (hydrology) perform functions. 0 1 02 Past Behaviour	Q# 5.9 2□ 03 6.1	Prompt And, 3 4 5 0 04 05 00 04 05 00 04 05 00 05 00 04 05 00 05	Que Riparian zones are increasingly dry wh riverbank gats more year. 6 7 8 9 1 7 0 9 1 1 10 7 0 9 1 10 7 0 9 1 10 7 0 9 1 10 7 00 9 1 10 7 00 9 1 10 7 00 9 1 10 7 00 9 1 10 7 00 9 1 10 7 00 1 1 10 7 00 1 1 10 10 1 1 1 10 10 1 1 1 10 10 1 1 1 10 10 1 1 1 10 10	ilkely to the side of the side	become tream or ut each 111 1 9 9 the but have	
Theoretics Construct Belief 5. Durersity is best.	al Q t 5.2 2 0 2 0 5.3 s 5.3 5.3 s 5.3 c n 2 2 0 0 0.0 0 0 0 0 0 0 0 0.0 0 0.0 0 0 0	# Prompt 3 4 5 6 4 5 6 6 4 5 6 6 4 5 6 6 4 5 6 6 5 0.4 05 06 0 1 4 5 6 1 3 4 5 6 6 9 08 07 06 6 0 08 07 06 6 3 4 5 6 6 3 4 5 6 6 3 4 5 6 6 3 4 5 6 6	Question All things being equal, a riparian zon that contains good fish and wildlife profitability of a cattle operation. 7 0 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.8 9 10 11		Theoretical Construct Ballet Sc. Riparian components ecological of of of Past Behaviour	Q # 5.9 2 □ 03 6.1 2 □ 03 6.2 2 □	Prompt And, 3 4 5 6 04 05 00 04 05 00 04 05 00 04 05 00 04 05 00 05 00 04 05 00 05	Que Riparian zones are increasingly dry wh riverbank gets more year. 6 7 8 9 1 7 8 9 1 3 ising the for the for the savays used in the www.sused in the risk This aways used in the risk This aways used in the risk This daways used in the risk This grazing management to try 1 8 9 1 60 7 08 09 7 1 1 7 8 9 1	stion likely to o e down-co e down-c	become tream or ut each 1 111 1 9 9 the 9 the u have	
Theoretic: Construct Balled 5. boast. Dealer 1. Dealer 1	al Q 5.2 2.2 3.5 5.3 5.3 5.3 5.3 5.3 5.3 5.3	# Prompt 3 4 5 6 3 04 05 06 0 LAgain, Just a reminder that these statements, 0 MEANS STATEMENT & COMPLETE MACCURATE AND 10 MEAN YOU BELLEVEN ITS COMPLETELY ACCURATE 3 4 5 6 6 3 4 5 6 6 3 4 5 6 6 3 4 5 6 6 3 4 5 6 6 3 4 5 6 6 3 4 5 6 6 3 04 05 06 6	Question All things being equal, a riparian zon that contains good fish and wildlife habitat is likely to increase the habitat is likely to increase the fishely to increase the fishely to define the second sec	9 9 9 9 9 9 9 10 9 10 10 10 10 10 10 10 10 10 10 10 10 10	Described Construct Construct Saliaf & Riparian components (hydrology) perform ecologica fiction: 0	Q # 5.9 5.9 03 6.1 03 6.3	Prompt And, And,	Que Riparian zones are increasingly dry wh riverbank gets more year. 607 708 91 700 90 7 807 700 91 sising the tor the grazing management, dways used in the tor ty 91 77 700 91 97 00 95 97 00 95 97 00 95 97 00 95 97 00 99 97 00 09 9 97 08 09 9 97 08 09 9 07 08 09 9 07 08 09 1 08 00 09 1 07 08 09 1 07 08 09 1 07 08 09 1 07 08 09 1 07 08 09 1	stion likely to o 0 100 0 100 0 100 0 100 100 100 100 100 100 100	become tream or ut each 1 11 9 g the su have	
Theoretic: Construct Balled S. best J. D 1 01 01 01 D 1 01 01 D 1 01 01 D 1 01 01 D 1	al $\frac{1}{1}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{2}{10}$ $\frac{1}{2}$ $\frac{2}{10}$ $\frac{1}{2}$ $\frac{2}{10}$ $\frac{1}{2}$ $\frac{2}{10}$ \frac	# Prompt 3 4 5 6 4 5 6 6 4 5 6 6 4 5 6 6 4 5 6 6 4 5 6 6 5 747EMENTS 60MENTS 60MENTS 5 747EMENTS 60MENTS 6 9 08 07 06 6 3 4 5 6 6 3 4 5 6 6 3 4 5 6 6 3 4 5 6 6 3 4 5 6 6	Question All things being equal, a riparian zon that contains good fish and wildlie habitat is likely to increase the habitat is likely to increase the field of the second sec	9 9 9 9 9 9 9 9 9 9 9	Descritical Construct Ballet & Riparian components Components Indicess Indicess OI	Q # 5.9 0.3 6.1 2 □ 0.3 6.1 2 □ 0.3 6.2 2 □ 0.3 6.3 0.3 6.4	Prompt And, 3 4 5 04 05 06 06.1 appreciate you u 0-10 scale one last time. 10/01 06.1 appreciate you u 0-10 scale one last time. 0.10/02.7/E5 T/M Y 0/MDICATES THAT Y 0/MDICATES THAT Y 0/MDICATES THAT Y 0/MDICATES THAT Y 0/MDICATES THAT Y 0/M UNIT / HIG STATEMEN' 0/MDICATES THAT Y 0/MDICATES THAT Y 0/M UNIT / HIG STATEMEN' 0/MDICATES THAT Y 0/MDICATES THAT Y 0/M 005 06 04 05 06 3 4 5 0/4 05 06 3 4 5 0/4 05 06 3 4 5 0/4 0/5 06	Que Riparian zones are increasingly dry wh riverbank gets more year. 607 7 8 9 1 1000 7 0.00 9 1 1010 7 0.00 9 1 1010 7 0.00 9 1 1010 100 100 100 1 1010 100 100 100 1 1010 100 100 1 1 1010 10 1 1 1 1 1010 10 1 1 1 1 1010 10 1 1 1 1 1010 10 1 1 1 1 1010 10 1 1 1 1 1 1010 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	stion likely to to en the size on the size	become tream or tream	29 29 29 29 29 29 29 29 29 29 29 29 29 2
Theoretics Construct Solid 5. Diversity is Bold 5. Diversity i	al Q. 5.2 5.2 5.3 5.3 5.3 9 9 1 2 2 0 0 5.4 9 9 1 2 2 0 0 5.4 9 9 9 1 2 2 0 0 5.4 1 0 9 9 9 1 2 2 0 0 5.4 1 0 9 9 9 1 2 2 0 0 5.4 1 0 9 9 9 1 2 0 0 0 9 9 9 1 2 0 0 0 9 1 0 9 9 9 1 2 0 0 0 9 9 9 1 2 0 0 0 9 9 9 1 2 0 0 0 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	# Prompt 3 4 5 6 6 3 4 5 6 6 4 5 6 6 7 3 4 5 6 7 5 7 7 7 7 7 5 7 7 7 7 7 7 5 7 <td>All things being equal, a riperion control that contains good fish and wildlife habitat is likely to increase the profitability of a cattle operation. 7 0 9 10 11 7 0.8 9 10 11 7 0.8 0.9 10 11 7 0.8 0.9 10 11 7 0.8 0.9 10 11 7 0.8 0.9 10 11 7 0.8 0.9 10 11 7 0.8 0.9 10 11 6 0.0 0.0 0.1 10 6 0.0 0.0 0.1 11 6 0.0 0.0 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.3 0.2 0.7 11 6 0.9 10 11 11 7 0.9 10 11 11 7 0.9 10 11 11</td> <td></td> <td>Theoretical Construct Belief &: Riparian components Components Doi: 1 O: 1 D: 1 O: 1<</td> <td>Q.# 5.9 03 6.1 03 6.2 2 03 6.3 2 03 6.3 2 03 6.3</td> <td>Prompt And, 3 4 5 0 06 06 0/C. boppreciate you u pollowing two statements with the statements 0/MICATES THAT YOUR COMPLETELY DISAGE When you hear about T 0/MICATES THAT YOUR COMPLETELY OF AGREE When you hear about T 0/MICATES THAT YOUR COMPLETELY OF AGREE When you hear about T 0/MICATES THAT YOUR COMPLETELY OF AGREE 0/MICATES THAT YOUR COMPLETELY OF AGREE 0/MICATES THAT YOUR COMPLETELY OF AGREE 0/MICATES THAT YOUR COMPLETELY OF AGREE 0/MICATES THAT YOUR COMPLETELY OF AGREE 0/MICATES THAT YOUR COMPLETELY OF AGREE 0/MICATES THAT YOUR COMPLETELY OF AGREE 0/MICATES THAT YOUR COMPLETELY OF AGREE 0/MICATES THAT YOUR COMPLETELY OF AGREE 0/MICATES THAT YOUR COMPLETELY COMPLETELY</td> <td>Que Riparian zones are increasingly dry wh riverbank gets mor year. 6 7 8 9 1 7 0.0 9 1 1 1 10 7 8 9 1 <td< td=""><td>stion likely to en the s o down-c o</td><td>become tream or treach 1 11 1 19 1 10 1 10</td><td></td></td<></td>	All things being equal, a riperion control that contains good fish and wildlife habitat is likely to increase the profitability of a cattle operation. 7 0 9 10 11 7 0.8 9 10 11 7 0.8 0.9 10 11 7 0.8 0.9 10 11 7 0.8 0.9 10 11 7 0.8 0.9 10 11 7 0.8 0.9 10 11 7 0.8 0.9 10 11 6 0.0 0.0 0.1 10 6 0.0 0.0 0.1 11 6 0.0 0.0 10 11 7 0.8 9 10 11 7 0.8 9 10 11 7 0.3 0.2 0.7 11 6 0.9 10 11 11 7 0.9 10 11 11 7 0.9 10 11 11		Theoretical Construct Belief &: Riparian components Components Doi: 1 O: 1 D: 1 O: 1<	Q.# 5.9 03 6.1 03 6.2 2 03 6.3 2 03 6.3 2 03 6.3	Prompt And, 3 4 5 0 06 06 0/C. boppreciate you u pollowing two statements with the statements 0/MICATES THAT YOUR COMPLETELY DISAGE When you hear about T 0/MICATES THAT YOUR COMPLETELY OF AGREE When you hear about T 0/MICATES THAT YOUR COMPLETELY OF AGREE When you hear about T 0/MICATES THAT YOUR COMPLETELY OF AGREE 0/MICATES THAT YOUR COMPLETELY OF AGREE 0/MICATES THAT YOUR COMPLETELY OF AGREE 0/MICATES THAT YOUR COMPLETELY OF AGREE 0/MICATES THAT YOUR COMPLETELY OF AGREE 0/MICATES THAT YOUR COMPLETELY OF AGREE 0/MICATES THAT YOUR COMPLETELY OF AGREE 0/MICATES THAT YOUR COMPLETELY OF AGREE 0/MICATES THAT YOUR COMPLETELY OF AGREE 0/MICATES THAT YOUR COMPLETELY	Que Riparian zones are increasingly dry wh riverbank gets mor year. 6 7 8 9 1 7 0.0 9 1 1 1 10 7 8 9 1 <td< td=""><td>stion likely to en the s o down-c o</td><td>become tream or treach 1 11 1 19 1 10 1 10</td><td></td></td<>	stion likely to en the s o down-c o	become tream or treach 1 11 1 19 1 10 1 10	
Theoretical Construct Development best Development was an energy. Development was an energy. Development Spanian metal Spanian m	al Q 5.2 2 0 3.7 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	# Prompt 3 4 5 6 Again, Just a reminder that You betterve THE STATEMENT IS COMPLETENT STATEMENT IS COMPLETEL VACCURATE OMPLETEL VACCURATE 0 3 4 5 6 3 4 5 6 3 4 5 6 3 4 5 6 3 4 5 6 3 4 5 6 3 4 5 6 3 4 5 6 3 4 5 6 3 4 5 6 3 4 5 6 3 4 5 6 3 4 5 6 3 4 5 6 3 4 5 6 3 4 5 6 3 4 5 6 3 4 5 6	Question All things being equal, a riparian zon that contains good fish and wildlik profitability of a cattle operation. 7 0 9 10 11 7 0 9 10 11 7 0 0 10 11 7 0 0 10 11 7 0 0 10 11 7 0 0 10 11 7 0 0 10 11 7 0 0 10 11 7 0 0 10 11 7 0 0 10 11 7 0 0 10 11 7 0 0 10 11 7 0 0 10 11 7 0 0 10 11 7 0 0 10 11 7 0 0 10 11 7 0 0 10 11 7 0	9 9 9 9 10 9 9 9 10 10 10 10 10 10 10 10 10 10 10 10 10	Described Construct Ballet & Riparian components Inclines	Q # 5.9 2 03 6.1 2 03 6.2 03 6.3 03 6.4 2 03 6.4 2 03 6.5 20 09	Prompt And, 3 4 5 04 05 06 06 08 90 07 08 90 90 08 08 90 90 08 08 90 90 90 00 08 90 90 90 00 05 06 90 90 00 00 00 00 90 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 <td< td=""><td>Que Riparian zones are increasingly dry wh riverbank gets more year. 6 7 8 9 1 7 8 9 1 1 10 7 06 09 1 10 7 08 09 1 10 7 08 09 1 10 7 08 09 1 10 7 08 09 1 10 7 08 09 1 10 7 08 09 1 10 7 08 09 1 10 7 08 09 1 10 7 08 09 1 10 7 8 9 1 10 7 8 9 1 10 7 8 9 1 10 7 8 9 1 10 7<td>stion likely to cent the side down-orgen of the side do</td><td>become tream or ut each 1 11 1 7 9 19 1 9 10 1 9 10 10 1 9 10 1 9</td><td>299 299 299 299 299 299 299 299 299 299</td></td></td<>	Que Riparian zones are increasingly dry wh riverbank gets more year. 6 7 8 9 1 7 8 9 1 1 10 7 06 09 1 10 7 08 09 1 10 7 08 09 1 10 7 08 09 1 10 7 08 09 1 10 7 08 09 1 10 7 08 09 1 10 7 08 09 1 10 7 08 09 1 10 7 08 09 1 10 7 8 9 1 10 7 8 9 1 10 7 8 9 1 10 7 8 9 1 10 7 <td>stion likely to cent the side down-orgen of the side do</td> <td>become tream or ut each 1 11 1 7 9 19 1 9 10 1 9 10 10 1 9 10 1 9</td> <td>299 299 299 299 299 299 299 299 299 299</td>	stion likely to cent the side down-orgen of the side do	become tream or ut each 1 11 1 7 9 19 1 9 10 1 9 10 10 1 9	299 299 299 299 299 299 299 299 299 299

Theoretical Construct	<u>Q</u> #	Prompt	Qu	estion				Theoretical	Q#	Prompt	Question	Yes	No	
erceived ontrol.	6.6		No matter what gr plan you try, you	azing mana cannot prote	agement tect	1		Construct			4. [(a) If explanation alread	dy provide	d]:	-
	2	3 4 5	yourself against f	uture dry ye	ears.						You've described some bad	ckground a	to why	/ou
11 10 arceived	09 6.7	08 07 06 And,	05 04 03 Luck plays a big r	02 01 part in maint	taining						understand correctly, it's b	ecause	ke sure l	
ontrol. alls			your study area in condition.	a productiv	ve				1		OR			
11 10	2 09	3 4 5 5 08 07 06	6 7 8 9 05 04 03	02 01	1 99						[(b) If no explanation alread	dy provide	d]:	ome
Theoretical	Q#	Prompt	Question	Yes	No				- Č		background why you use/d	o not use	this techni	que i
Construct	7.	OK, this is the second	The first technique						17					
Past Attitude -	1	last set of questions.	involves placing salt or mineral supplies in upland	1					1					
Current Intended		The following items describe techniques	areas.		-		A	tion	7.		The second technique			-
<u>elief</u> Knowledge		have found useful in	 Have you ever used this technique in your study 			L 99	:	Past Attitude -			involves using developed watering sites in upland			
		Again, I am interested	2. [ONLY IF (1) IS YES]	01	00	96		Current Intended			E bleve very ever used this			
		have found useful in	technique in your study area in 19992			P 99	•	Knowledge			technique in your study			
	-	and of course there	3. For this next part.	01	Yes						6. [ONLY IF (5) IS YES] Are you using this	01	00	
	100	responses.	please answer in one of five ways. You may		No Not Sure						technique in your study area this year?			
		Please answer yes or no.	answer yes, OR no, OF you're not sure, OR	₹ □ 04 □ 98	No Help N/A						7. Again, please answer	01	Yes	-
			you believe the technique is not								yes, no, you're not sure, you believe the		No Not Sure	
			helpful, OR it doesn't apply. Do you think you								technique is not helpful, OR it doesn't	□ 04 □ 98	No Help N/A	
	12.5	1	will use this technique in your study area either		1						apply. Do you think you will use this technique in			
			next year or the year after?			99					your study area either next year or the year			
											8. [(a) If explanation alread	dy provide	d]:	
											And the reason or backgrou	und to you	r answers	is/yo
											OR			
											[(b) If no explanation alread	dy provide	d]:	
											And the reason for answeri	ng as you	have is?	
ugust 4, 1999		© Nan	cy Bateman 1999		17		Au	gust 4, 1999		© N	iancy Bateman 1999		18	
igust 4, 1999	Q#	© Nan Prompt	cy Bateman 1999 Question	Yes	17 <u>No</u>	-	Αυ	Just 4, 1999	Q#	© N Prompt	ancy Bateman 1999	Yes	18 <u>No</u>	
Theoretical Construct	<u>Q#</u> 7.	© Nan Prompt	cy Bateman 1999 Question The third technique involves using either	Yes	17 <u>No</u>	-		just 4, 1999 Theoretical Construct chion Past	<u>Q#</u> 7.	© N Prompt	ancy Bateman 1999 Question The next technique is to temporarily remove cattle	Yes	18 <u>No</u>	
Theoretical Construct tion Past Attitude - Current	<u>Q#</u> 7.	© Nan Prompt	Cuestion Question The third technique involves using either fences or hardened surfaces to control cattle	Yes	17 <u>No</u>	-	λυ Α	Theoretical Construct Ction Past Attilude - Current	<u>Q#</u> 7.	© N Prompt	Ancy Bateman 1999 Question The next technique is to temporarily remove cattle from riparian zones after heavy rains or during	Yes	18 <u>No</u>	
Theoretical Construct tion Past Attitude - Current Intended lief	<u>Q#</u> 7.	© Nan Prompt	Question Question The third technique involves using either fences or hardened surfaces to control cattle impact at watering points in riparian zones.	Yes	17 <u>No</u>		ли 	Theoretical Construct clion Past Attitude - Current Intended elief	<u>Q#</u> 7.	© N Prompt	Ancy Bateman 1999 Question The next technique is to temporarily remove cattle from (partian zones after heavy rains or during spring melt.	Yes	18 <u>No</u>	
gust 4, 1999 Theoretical Construct Construct Construct Intended Jilel Knowledge	Q# 7.	© Nan Prompt	Question The third technique involves using either fences or hardened surfaces to control cattle impact at watering points in riparian zones. 9. Have you ever used this behavior of the second se	<u>Yes</u>	No	99	Aux	Theoretical Construct Citian Past Attitude Attitude eliel Knowledge	<u>Q#</u> 7.	e N	Ancy Bateman 1999 Question The next technique is to temporarily remove cattle from ripartan zones after heavy rains or during spring melt. 13. Have you ever used this technique in your study	<u>Yes</u>	18 <u>No</u>	
gust 4, 1999 Theoretical Construct Clon Past Attilude - Current Intended Jiel Knowledge	<u>Q#</u> 7.	© Nan Prompt	Question The third technique involves using either fences or hardened surfaces to control cattle in riparian zones, points in riparian zones, points technique in your study 0. Have you ever used this technique in your study 10. (DNI) (Fe on te Yee)	Yes	No	99	Au	Theoretical Construct Citon Past Attitude Current Intended Iolei Knowledge	<u>Q#</u> 7.	e n	Question Prevention Free most sectomized use is to free point years and the point year ward the sectomized by the point years and	<u>Yes</u>	18 № 00 00	
Theoretical Construct tion Past Attitude - Current Intended lifet Knowledge	Q# 7.	© han	Question The third technique involves using either fences or hardened surfaces to control cattle impact at watering points in riparian zones. 9. Have you ever used this technique in your study area? 10. Are you using this technique in your study	Yes	No 000 000 [99	Au	Theoretical Construct clion Altitude - Current Intended elid Knowledge	Q# 7.	Prompt	Question The rest technique is to trongingly remove catter trongingly remove catter trongingly remove catter tronging melt. 13. Have you ever used this technique in your study area? 14. Alave you ever used this technique in your study area? 15. Alave you ever used this technique in your study area?	Yes 01 01	No 00 00	
guat 4, 1999 Theoretical Construct Construct Assi Assi Assi Assi Assi Assi Assi Ass	Q.# 7.	© han	Cuestion The third technique Involves using either fences or hardened surfaces to control cattle impact at vatering points in riparian zones. 9. Have you ever used this technique in your study area? 10. [ONLY IF (9) IS YES] Are you using this work of the set of the set of the set of the technique of the set of the set of the set of the set of the set of the set of the technique of the set of the set of the set of the technique of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of t	Yes 01 01	No [000 [000 [000 [99 96 99	ли А.	Theoretical Construct Class Attitude - Current Intended Biel Knowledge	<u>Q</u> # 7.	Prompt	Question The next technique is to temporarily remove cattle from riparian zonea after technique is to temporarily remove cattle from riparita zonea fina spring melt. 13. Have you ever used this technique in your study area? 4. (ONLY IF (13) IS YES] Are you using this dy area this year? 13. Appin, please answer	Yes 01 01 01	18 No 00 00 Yos	
Interventional Interventional Interventional Knowledge	<u>Q#</u> 7.	© han	Question The third technique Involves using either fences or hardened surfaces to control cattle impact at watering points in riparian zones. 9. Have you ever used this technique in your study area? 10. [ONLY IF (9) IS YES] Are you using this technique in your study area this year? 11. Again, using yes, no, you're not sure, you	Yes 01 01 01 01 01 01	No [000 [000 [Yes No	99 96 99	ли 	Theoretical Construct Class Past Attituda - Current Intended Biel Knowledge	<u>Q#</u> 7.	Prompt	Question The next technique is to temporarily remove cattle from riparian zonea after technique is to temporarily remove cattle from riparian zonea after hapfing melt. 13. Have you ever used this technique in your study area? 14. (ONLY IF (13) IS YES] Are you using this dy area this year? 15. Again, pelase answer yes, no, you're not suro, you belive if its	Yes 01 01 01 02	18 <u>No</u> 00 00 Yes No Not Sure	
Interventical Construct Past Activat Intended lief Knowledge	<u>Q#</u> 7.	0 han	Question The third technique Involves using either Involves using the Involves using the technique in your study area the year? 11. Again, using yes, no, you're not sure, you believe the technique is not heipful, OR it	Yes 01 01 01 01 02 04	№2 000 1 000 0 000 0 Yes No Not Sure No Help	99 96 99	ли А.	Theoretical Construct Construct Construct Attitude Attitude Attitude Current Intended Bild Knowledge	<u>Q#</u> 7.	Prompt	Question The next technique is to temporarily remove cattle from riparian zones after harmonic technique in your study 13. Have you ever used this technique in your study 14. [ONLY IF (13) IS YEB) 14. [ONLY IF (13) IS YEB) 15. Again, place answer 15. Again, place answer out believe the norm study area the year? 15. Again, place answer out believe the norm study area the year? 16. Again, place answer out believe the norm study. Dublieve the study area the year?	Yes 01 01 01 02 04 98	No OO Yes Not Sure Not Alup NA	
Theoretical Construct Dion Past ACurront Intended lief Knowledge	<u>Q#</u> 7.	0 han	Cuestion Question The third technique Involves using either surfaces to control cattle impact at watering points in riparian zones. Have you ever used this table in your study area this year? 10. [ONLY IF (9) IS YES] Are you using this technique in your study area this year? 11. Again, using yes, no, you're not sure, you believe the technique is not helpful, OR it doesn't apply Do you think you will use this	Yes □ 01 □ 01 □ 01 □ 01 □ 02 □ 98	17 № 00 00 10 00 Ves No Not Sure N/A	99 96 99	ли А.	Theoretical Construct Class Construct Auturda - Current Intended Bilot Knowledge	<u>Q#</u> 7.	Prompt	Question The next technique is to temporarily remove cattle from riparian zones after heavy rains or during opring molt. 13. Heavy ou ever used this technique in your study area? 14. [ONLow you're not study area this year? 15. Again, please answer yes, no, you're not helpful, OR it doesn't apply. Do you will take this technique in your study area this year?	Yes 01 01 01 02 04 98	No 00 No No No No No No No No No No No No	
Theoretical Construct tion Past Attitude- Current Current Knowledge	Q# 7.	0 Han	Question Revealed to the second sec	Yes 01 01 01 01 02 04 98	17 № 00 00 00 Vos Sure No Holp N/A	99 99 96 99	ли А.	Theoretical Construct Class Construct Auturdo - Current Intended Biel Knowledge	Q# 7.	Prompt	Question The next technique is to temporarily remove cattle from riparian zones after heavy rains or during spring melt. 13. Have you ever used this technique in your study area? 14. [ONLY F (13) IS YES] Are you using the work and the year? 15. Again, please answer yes, no, you're not such yeare the year? 16. Again, please answer yes, no, you're not such yeare the year? 17. Havy will use this technique in your study area the year?	Yes 01 01 01 01 02 04 98	No 00 00 Yes Not Sure Not Sure Not Sure	
Theoretical Construct tion Past Attitude - Current Knowledge	<u>Q#</u> 7.	Prompt	Question The third technique involves using either fences or hardened fences or hardene	Yes 01 01 02 04 05 04 96	17 No 00 00 Yes No Help NVA NVA 17:	99 96 99 99	ли 	Theoretical Construct Cons	Q# 7.	Prompt	Question Question The next technique is to temporarily remove cattle from riparian zones after heavy rains or during spring melt. Hennight remove sattle from riparian zones after heavy rains or during spring melt. Again, please answer yes, no, you're not sure, you believe it's not heighd, OR it n	Yes 01 01 01 02 04 98 dy provide	18 <u>No</u> 00 00 Ves No Help No Help No Help	
heoretical Construct Uion Past Attitude - Current Intended Krowledge	<u>Q#</u> 7.	Prompt	Question The third technique involves using either fences or hardened second technique involves using either fences or hardened second technique in vigor second technique in vigor second technique in your study area this year? 1. Again, using yes, no, you're not sure, you bis not thould, OR te desen't apply Do you think you will use this technique in your study area either next year or think you will use this technique in your study area either next year or this you will use this technique in your study area either next year or this you will use this technique in your study area either next year or this you suitant technique in your study area either next year or the year after?	Yes 01 01 01 02 98 98 by provided]	No 00 1 00 0 Yes No tours No Help NVA	99 96 99 99	ли 	Theoretical Construct Cons	Q# 7.	Prompt	Cuestion Question The next technique is to temporarily remove cattle from riparian zones after heavy rains or during spring melt. Hennight remove technique in your study area? (ONLY IF (13) IS YES] Ac you using this technique in your study area they year? Again, please answer yes, no, you're not sure, you believe it's not helpful, OR it doesn't apply. Do you technique in your study area they rear? I. (0) If explanation alree And the background to you OR	Yes 01 01 00 02 04 98 dy provide	No 00 00 00 Vas No No Vas No No Vas Use Vas No Vas No Vas Vas No Vas	
Cheoratical Construct Dist Past Attitude - Current Intended Mel Knowledge	<u>Q.#</u> 7.	Prompt	Question The third technique involves using either fences or hardened surfaces to control cattle impact at watering points in ripartian zones. 9. Have you ever used this technique in your study area? 10. Are you using this technique in your study area this year? 11. Again, using yese, no, believe the technique is not helpful, OR it doesn't apply Do you think you will use this technique prove you believe the technique area either not year or the year after? 21. (goil regularation arized Area you using both fences J lust one of them? And yout to?	Yes 01 01 02 04 yes yes yes yes yes 01 02 04 yes y	No I I I I I I I I I I I I I I I I I I I	99 96 99 99	Au 	Theoretical Construct Construct Cition Past Current eintended eintended Knowledge	Q# 7.	Prompt	Again, please answer yes, no, you're not technique in you result technique in you result technique in your study area? 14. Hony you ever used this technique in your study area? 14. Joney you ever used this technique in your study area? 15. Joney you ever used this technique in your study area this year? 16. Joney Joney States 16. Joney Joney States 17. Joney ou will use this area this year? 16. Joney Joney Joney 16. Joney Joney Joney 16. Joney Joney 16. Joney Joney 17. Joney Joney 18. Joney Joney 19. Joney Joney 19. Joney Joney 19. Joney Joney Joney Joney Jone	Yes 01 01 01 01 01 02 04 98 dy provide dy provide	18 <u>No</u> 00 00 00 Yos No Sure No Sure No Help N/A df: is: df:	
heoretical Construct Construct Course Past Autitude - Autitude - Autitude - Current Intended lief Knowledge	<u>Q.#</u> 7.	Prompt	Question The third technique involves using either fences or hardened surfaces to control cattle impact at watering points in ripartan zones. 9. Have you ever used this technique in your study area? 10. ONLocu using this technique in your study area this year? 10. Again, using yes, no, you have the technique is not helpful, OR it doesn't apply Do you technique in your study me year after? 12. ((a) If explanation aread Are you using both fences a: just one of them? And yout to?	Yes 01 01 01 02 02 04 P P P P P P P P P	No I I I I I I I I I I I I I I I I I I I	99 96 99 99	Au Au B B B	Theoretical Construct Construct Cibn Past Current Intended Mill Knowledge	<u>Q#</u> 7.	Prompt	Question The next technique is to temporarily remove catile from riparian zones after heavy rains or during spring melt. 13. Horavy ou cerr used this technique in your study area? 14. (ONLY IF (13) [SY ES] Are you using this technique in your study area? 15. Again, please answer you believe it's oncy ou'le not technique in your study area? 16. (a) We cycle answer you believe it's oncy ou'le not technique in your study area? 17. And you will use this doesn't apply. Do you think you will use this technique in your study area ther? 16. (a) We explanation alrea And the background to you OR (b) Ho explanation alrea	Yes 01 01 01 01 02 02 02 02 02 02 02 02 02 02	18 №0 00 00 №0 №0 №0 №0 №0 №0 №0	
heoretical Construct Construct Construct Correct Intended Intended Met Knowledge	Q.# 7.	Prompt	Question The third technique involves using either fences or hardened surfaces to control catile impact at watering points in riparian zones. 9. Have you ever used this technique in your study area? 10. [ONLY IF (9) IS YES] Are you using this more this year? 11. Again, using yes, no, you're not sure, you bis not helpful, OR it doesn't apply Do you think you will use this technique in your study area either next year or the year and the your study area either next year or the year and both fences a just one of them? And your to? OR (1) or explanation alread Are you using both fences a	Yes 01 01 02 02 02 02 04 04 04 04	No OO Vas No Help NVA U I I I I I I I I I I I I I I I I I I	99 96 99 99		Theoretical Construct Construct Cition Past Attitude - Attitude -	<u>Q#</u> 7.	Prompt	Question The next technique is to temporarily remove cattle from remove attret from remove attret from remove attret from remove attret to the second of	Yes 01 01 01 01 02 04 98 04 provide v provide v answers	18 №0 00 00 №00 №0 №0 №0 №0 №0 №	
Theoretical Construct Idea Idea Attitude - Current Intended Idea Knowledge	Q.# 7.	Prompt	Question The third technique involves using either fences or hardened surfaces to control cattle impact at vatering points in riparian zones. 9. Have you ever used this technique in your study area? 10. [ONLY IF (9) IS YES] Are you using this the technique desart spaly Or you believe the technique desart spaly Or you think you will use this technique to your study area either next year or the year either desart apply Do you think you will use this technique both fences ; just one of them? And your to? OR (f) If o explanation aread Are you using both fences ; just one of them? And your to?	Yes 01 01 01 02 04 04 04 04 04 04 04	No oo I 000 I 000 I 000 I Vas No Holp N/A 1: 1: 1: 1: 1: 1: 1: 1: 1: 1:	99 96 99 99		Theoretical Construct Construct Cition Past Attitude Attitude Attitude Mark Knowledge	Q.# 7.	Prompt	Question The next technique is to temporarily remove cattle from riparian zones after the technique in your study of the technique in your study area the technique in your study area the year of the technique in your study area the year. 13. Have you ever used this technique in your study area the year? 14. [ONLY IF (13) IS YEB) 15. Again, please answer yes, no, you're not surve, you believe the year after? 16. (a) Replanation after after head year after? 17. (b) IS Hoginantion after after head year after? 16. (b) If no explanation after after head year after? 16. (b) If no explanation after after head year after? 17. (b) If no explanation after after head year after?	Yes 01 01 01 01 02 04 98 dy provide yerovide yerovide yerovide	18 <u>No</u> 000 000 000 Vos No 160p N/A vos No 160p N/A df: is: df: is:	
Theoretical Construct Construct Construct Antitude - Current Intended Vilef Knowledge	<u>Q.#</u> 7.	Prompt	y Bateman 1999 Question The third technique forces or hardned surfaces to control cattle impact at watering points in riparian zones. 9. Have you over used this technique in your study area? 9. ONLY IF (9) IS YES] Are you using this technique in your study area the year? 9. ONLY IF (9) IS YES] Are you using this technique in your study area the year? 9. (1) Again, using yes, no, you're not sure, you believe the technique is not height). ON in technique in your study area either next year or the hord the next point of the technique on your study area either next year or the technique four area (1) (1) of explanation area (1) (1) or explanation area (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	Yes 01 01 02 02 02 02 02 02	Ng □ 00 □ 00 □ 00 □ 00 ○ 00 Yes No Help No No No ed surfaces p: them??	99 96 99 99 99	Au Au B B B B B B B B B B B B B B B B B	Theoretical Construct Construct Citon Past Attitude Attitude Attitude Mark Knowledge	<u>Q#</u> 7.	Prompt	Question The next technique is to temporarily remove cattle from riparian zones after horizon technique in your study 13. Have you ever used this technique in your study area the year? 14. provide the technique in your study area the year? 15. Again place answer used this technique in your study area the year? 16. (and the place answer on you're not say yes, no, you're not say yes, no, you're not helpful, OR it doesn't apply. Do you believe this year? 16. (and te planation after Andre And the background to you OR (b). If no explanation after And the background to you	Yes 01 01 01 02 04 98 dy provided dy provided	18 <u>No</u> 000 000 100 No Sure No Help NA No I Sure 15: 15:	
Theoretical Construct Clion Altitude - Current Intended elifet Knowledge	Q.# 7.	Prompt	y Bateman 1999 Question The blied technique Involves using either fences or hardned surfaces to control cattle impact at watering points in riparian zones. 9. Havey gou over used the technique in your study area fib year? 10. (ONLY IF (9) IS YES] Are you using this technique year? 11. Again, using yes, no, you're not sure, you believe the technique is not helpful. OR It desen't apply Dorou believe the technique is not helpful. OR It desen't apply Dorou betechnique in your study area either next year or the your sund hand on the Are you using both fences? OR (10. If no explanation alread Are you using the forther alread (10. If no explanation alread Are you using both fences?	Yes 01 01 01 02 19 19 19 19 19 19 19 1	No oo l oo l oo l Yes No oo l Vo oo l Vo oo l Vo oo l oo l oo l	99 96 99 99	ли — — — — — — — — — — — — — — — — — — —	Theoretical Construct Class Past Attitude Attitude Mended Bilet Knowledge	<u>Q#</u> 7.	Prompt	Question The next technique is to temporarily remove cattle from riparian zones after heavy rains or during opring molt. 13. Have you ever used this technique in your study area the year? 14. Have you ever used this technique in your study area this year? 15. Alays you ever used this technique in your study area this year? 16. Again, please enswer yes, no, yaar enswer yes, no, yaar enswer heavy rains in year? 16. (a) (B (Feglanation alrea And the background to you or the backgr	Yes 01 01 01 02 04 98 dy provided dy provided yes	Ng 000 000 000 000 000 000 Y005 No Not Sure No MG: 1%	
Interoretical Construct Clion Acurrent Intended ellet Knowledge	Q.# 7.	Prompt	y Bateman 1999 Question The bird technique finesce or hardened surfaces to control cattle impact at watering points in riparian zones. 9. howy you were used this technique in your study area? 10. (ONLY IF (9) IS YES) Are you using this technique in your study area this year? 11. Again, using yes, no, you're not sure, you believe the technique is not heipful. OR It desen't apply Do you the to sure you believe the technique is not heipful. OR It desen't apply Do you the to sure you believe the technique area either next year or the year der? 12. ((a) If explanation alread Are you using both fences I just one of them? And your OR	Yes 01 01 01 02 19 19 19 19 19 19 19 1	No 00 1 00 0 Yes No 00 0 Yes No 00 0 Yes No 00 0 Yes the first of the	99 96 99 99 99 99 0f		Theoretical Construct Cons	<u>Q#</u> 7.	Prompt	Question The next technique is to temporarily remove cattle from riparian zones after heavy rains or during spring melt. 13. Heavy ou ever used this technique in your study area? 13. Heavy ou ever used this technique in your study area this year? 14. (ONLY using this technique in your study area this year? 15. Again, please answer yes, no, you're not such area this year? 16. (Ag / C explanation alrea And the background to you on the background to you on the such area this technique in your study area ether next year or background to you on the such area ther next year or background to you on the such area that area the such area that the suckground to you on the such area that the background to you on the suckground to you on the suckgrou on the s	Yes 0 01 0 01 0 02 0 02 0 04 0	18 № 00 00 00 100 100 100 100 100	
Interded Interded Interded Interded Interded Interded	Q.# 7.	Prompt	Question The third technique involves using either surfaces to control cattle impact at watering points in riparian zones. 9. Have you even used this targent at watering points area this year? 10. [ONLY IF (9) IS YES] Are you using this technique in your study area this year? 11. Again, using yes, no, you're not sure, you believe the technique is not helpful, OR it desen't apply Do you think you will use this technique in your study area this year? 12. ((a) If explanation aireac Are you using both fences ; just one of them? And your to? OR	Yes O O O O O O O O O O O O O O O O O O O	No 00 1 00 0 Yes No Gure No Help Not Sure No Help No Help No Help No Help No Help No Help Surfaces - them?	99 96 99 99 99 99		Theoretical Construct Cons	2.	Prompt	Question Question Question The next technique is to temporarily remove cattle from riparian zones after heavy rains or during spring melt. Als you very used this technique in your study area? (ONLY IF (13) IS YES] Aey you using the be you using the be your study area the year? (a, (a) IF argination after And the background to you OR ((b) If no explanation after And the background to you	Yes 0 01 0 01 0 07 0 02 0 0 0 0	18 №0 000 №00 №05 №05 №05 №05 №05	
Theoretical Construct Construct Construct Current Intended Milli Knowledge	Q.# 7.	Prompt	Question The third technique involves using either fences or hardened surfaces to control cattle impact at vering points in riparian zones. 0. Have you ever used this technique in your study 10. [ONL/ IF (9) IS YES) 11. Again, using yes, no. you're not sure, you believe the technique is not helpful, OR it doesn't apply Do you think you will use this sare aither not year or the year after? 21. [ONL gradphanicion alread Are you using hoth fences, just one of them? And you to? OR	Yes O O O O O O O O O O O O O O O O O O O	No 00 1 00 0 Yes No 400 Not Sure No 4600 Not Sure outsethem i 1: 1: 2: 3: 4: 5: 5: 5: 5: 5: 5: 5: 5: 5: 5: 5: 5: 5:	99 96 99 99 99 99 99		Theoretical Construct Cons	<u>Q#</u> 7.	Prompt	Again, please answer year out with a system area with a system	Yes 01 01 01 01 02 96 96 dy provide tr answers	18 №0 000 №00 №00 №00 №00 №00 №00	
Theorestical Construct Vision Past Attitude - Current Intended Medi Knowledge	Q.# 7.	Prompt	Question The third technique involves using either fences or hardened surfaces to control cattle impact at vatering points in riparian cones. Impact at vatering points in the technique in your study area? 9. Have you ever used this technique in your study area? 10. Are you using this technique in your study area? 11. Again, using yese, no. 12. (a) /f explanation aterace. Are you using this technique in your study area this year? 12. (a) /f explanation aterace. Are you using both fences <i>i</i> lyst you so of them? And you you is not sole for a you using both fences <i>i</i> lyst you using both fences <i>i</i> lyst you using both fences <i>i</i> lyst you sole you the your sole you sole you sole you have a sole you sole you have you have a sole you sole you have you have you sole you have you sole you have yo	Yes O O O O O O O O O O O O O O O O O O O	No 00 1 00 0 Yes No Holp NVA 0 1 1 1 1 2 1 2 2 2 3 3 3 4 3 5 4 5 4 5 4 5 4 5 4 5 5 4 5 5 4 5 5 4 5	99 96 99 99 99 99 99		Theoretical Construct Construct Calan Past Current Current dial Knowledge	<u>Q#</u> 7.	Prompt	Again, please answer yes, our work of the plane of	Yes 01 01 01 01 02 90 90 90 90 90 90 90 90 90 90	18 №0 000 №00 №05 №05 №05 №05 №05	
Cheoretical Construct Past Past Attitude - Current Intended Intended Met Knowledge	Q.# 7.	Prompt	Cuestion	Yes O O O O O O O O O O O O O O O O O O O	No 00 1 00 0 Yes No 400 Not Sure No Help NVA Sure 1 I: d surfaces outsethem i	99 96 99 99 99 99 99		Theoretical Construct Cons	<u>Q#</u> 7.	Prompt	Again, please answer yes, you weri used this technique in your study area 1. Have you weri used this technique in your study area 1. Have you weri used this technique in your study area 1. Alay you weri used this technique in your study area this year? 1. Alay you you weri used this technique in your study area this year? 1. Alay you you weri used this technique in your study area this year? 1. (a) If are planation along And the background to you OR ((b) If no explanation along And the background to you	Yes 01 01 01 01 02 98 dy provide dy provide	18 №0 000 №00 №05 №05 №05 №05 №05	
Theoretical	38.0	· · · · · · · · · · · · · · · · · · ·	Question	res	NO			Theoretical	<u>u</u> #	Frompt	Question	100	NO	
--	------------------	---------------------------------------	--	---	--	----------------------	---	---	-----------------	---------------	--	---	--	--------
Construct Action • Past • Attitude - Current	7.		Another technique is to shorten the grazing period in riparian zones when forage plants are growing.					Construct Action • Past • Attitude - Current	7.		The third last technique is to remove cattle from a riparian zone for a long time, say one or more			
Intended Belief Knowledge			17. Have you ever used this technique in your study	01	00	99		Intended Belief Knowledge			years, so that vegetation can re-establish.			
 Knowledge 			area? 18. [ONLY IF (17) IS YES] Are you using this	01	00	96		 Knowiedge 			21. Have you ever used this technique in your study area?	01	00	1
			technique in your study area this year?			99					22. [ONLY IF (22) IS YES] Are you using this technique in your study	01	00	C
			 Heré again, pieasé answer yes, no, you're not sure, you believe the technique is not helpful, OR it doesn't apply. Do you think you will use this technique in your study area either next year or the year after? (a) if explanation alrear 	01 00 02 04 98	Yes No Not Sure No Help N/A	99					23. Answering year? 23. Answering year, no, you're not sure, you believe the technique is not helpful, it doesn't apply Do you think you will use this technique in your study area either next year or the year after?	01 00 02 04 98	Yes No Not Sure No Help N/A	
			And the background to your	r answer:	s is:		-				24. [(a) If explanation alread	dy provid	ed]:	IC
			[(b) If no explanation alread	ly provid	ed]:						And the background or reas	sons for y	our answe	irs is
				answere							(b) If no explanation alread And the background or reas	dy provid sons for y	ed]: rour answe	ers i
August 4, 1999		© Nar	scy Bateman 1999		21			August 4, 1999		© N	ancy Bateman 1999		22	
August 4, 1999 Theoretical Construct Action • Past	<u>Q</u> # 7.	© Na Prompt	toy Bateman 1999 Question The second last technique is to calculate a	Yes	21 <u>No</u>			August 4, 1999 Theoretical Construct Action • Past	<u>Q#</u> 7.	© N Prompt	ancy Bateman 1999 Question And the last technique is to distribute cattle	Yes	22 No	-
Theoretical Construct Action • Past • Attitude • Attitude • Attitude	<u>Q#</u> 7.	• Na	Question The second last technique Is to calculate a classification for the ecological condition or health of the ripartan zona	Yes	21 <u>No</u>			Theoretical Construct Action Past Action Construct Action Past Construct Action Past Construct Action Past Construct	<u>Q#</u> 7.	© N Prompt	Ancy Bateman 1999 Question And the last technique is to distribute cattle throughout the landscape to spread the grazing load. 29. Hany way must define	Yes	22 <u>No</u>	
Theoretical Construct Action Past - Attitude - Current - Intended Belief - Knowledge	Q# 7.	© Na	Question The second last technique is to calculate a classification for the store of the or health of the riparian zone. 25. Have you ever used this technique in your study an area?	Yes	21 No 00 00	99		Theoretical Construct Action • Past • Attitude - Current • Intonded <u>Belief</u> • Knowledge	<u>Q#</u> 7.	© N Prompt	And the last technique is to distribute cattle tho operation the integration load to spread the grazing load 29. Have you ever used this technique in your study area? 30. (ONU (F) (20) 9 YES)	Yes 01	22 <u>No</u> 00 00	
August 4, 1999 Theoretical Construct Action - Attivudo- - Current - Intended Belief • Knowledge	Q# 7.	© Na	Any Bateman 1999 Question The second last technique is to calculate a classification for the ecclogical condition or health of the riparian zone. 25. Have you ever used this technique in your study area in 1999?	Yes 01 01	21 No 00 00 00	_ 95 _ 96 _ 99		Theoretical Construct Action - Ratificato - Current - Intonded Bellet - Knowledge	<u>Q#</u> 7.	© N Prompt	Ancy Bateman 1999 Question And the last technique is to distribute cattle throughout the landscape to spread the grazing load. 29. Have you ever used this technique in your study 30. [ONLY IF (26) S YSB) technique in your study area in 1999?	Yes 01 01	22 <u>No</u> 00 00	
Theoretical Construct Asiana Asian Asian Asian Asian Asian Asian Asian Asia Asiana Asiana Asiana Asi	Q# 7.	© Na	Question The second last technique is to calculate a classification for the ecological condition or health of the riparian zone. 25. Hore you ever used that technique in your study area? 26. [ONLY IF (26) IS YES] Are you using this technique in your study area in 1999? 27. Answering yes, no, OR you're no sture, you believe the technique is not helpful, OR it doesn't apply Do you think you will use this	Yes 01 01 01 020 020 020 020 020 020 020 02	21 No 00 00 Ves No Sure No Here No No	96 99 99		Theoretical Construct Active Past • Antitude - Current • Intended Bellef • Knowledge	Q# 7.	Prompt	Ancy Bateman 1999 Question And the last technique is to distribute cattle throughout the landscape to spread the grazing load 28. Have you ever used this technique in your study area? 30. [ONLY IF (26) IS YES) Are you using this technique in your study area in 1999? 31. Once again, answering yes, OR no. OR you're not sure, OR you believe the technique is no theipful, OR t doesn't apply. Do you technique in your study	Yes 01 01 01 01 01 02 04 98	22 No 00 Yes No Vo Help N/A	I I I
August 4, 1999 Theoretical Construct Actions - Past - Matho - Mandot - Mathod - Mathodd - Mathoddd - Mathodd - Mathoddd - Mathoddd - Mathoddd - Mathoddd - Mat	Q# 7.	© Na	Question The second last technique is to calculate a condition of the ecological ecological condition or health of the riparina zone. 25. Have you ever used this technique in your study area? 20. De your Fr (26) By YES] Are you're not sure, you' believe the technique doesn't apply Do you tink you will use this technique in your study area in tapp? 27. Answering yes, no, OR you're not sure, you believe the technique doesn't apply Do you tink you will use this technique in your study area either next year or 28. ((a) if explanation alree	Yes 01 01 01 01 01 02 04 98 98 199 199 199 199 199 199	21 No 00 00 Yes No Sura No Help NA	995 966 999		Theoretical Control Control Co	<u>Q#</u> 7.	Prompt	Ancy Baleman 1999 Question And the last technique is to distribute eatility of distribute eatility of distribute eatility of the grazing load. 29. Have you ever used this technique in your study area in 1999? 30. [ONLY IF (26) IS YES] Are you using this technique in your study area in 1999? 31. Once again, answering yes, OR o, OR your buble is not helpful, OR it of the innet helpful, OR it of think you will use the technique in your study area in respiration your study area enternet. 32. (2014) Respiration of the year after? 32. (2016) Respiration after	Yes 01 01 01 02 04 04 98 04 y provice	22 <u>No</u> 00 00 No No No No No No No No No No	
August 4, 1999 Theoretical Construct Past Action Past Action Past Action Action Current Intended Baied • Knowledge	<u>Q#</u> 7.	e Na	Question The second last technique is to calculate a classification for the ecological condition or health of the riparian zone. 25. Have you were used that chrique in your study area? 26. [ONLY IF (26) IS YES] Are you were used that technique in your study area in 1992? 27. Answering yes, no, OR you're no sure, you believe the technique is not helpful, OR It von the technique in your study area either next year or the technique in your study area either next year or the you area after? 28. [Old (# explanation alrea And the background to you OR	Yes 01 01 01 02 04 04 04 04 04 04 04 04 04 04	21 <u>Ne</u> 00 00 Vas swo Nor Halp Nor Halp	990 999 999		Theoretical Construct Action Past • Attlude - Current • Intended Bellet • Knowledge	Q.# 7.	Prompt	And the last technique is to distribute cattle throughout the landscape to spread the grazing load the grazing load 29. Have you ever used this technique in your study area? 30. [ONLY IF (26) IS YES] Are you using this technique in your study area in 1999? 31. Once again, answering yes, OR no, OR you're not sure, OR you believe the technique doesn't apply. Do you think you will use this technique in your study area either nost year or the grazing load doesn't apply. Do you the spread and and and and and the reasons or backgr was?	Yes 01 01 02 04 98 dy provid	No 00 Ves No No No No No No No No No No No No No	[
August 4, 1999 Theoretical Construct Construct Action Past Current Intended Baid With Construction Fiscanded Baid	<u>Q#</u> 7.	Prompt	Question The second last technique is to calculate a classification for the ecological condition or health of the riparian zone. 25. Have you ever used this technique in your study area? 26. [ONL YF (26) IS YES] Are you using this target and the second study area in 1989? 27. Answering yes, no, OR you're not sure, you believe the technique doesn't apply D you the hyper after? 28. (Q) If explanation alree And the background to you (B) If no explanation alree And the background to you	Yes 01 01 04 04 04 04 04 04 04 04 04 04	21 <u>No</u> 00 00 Yes No Help No Help fedf: rs is: dedf: rs is:	96 96 99 99		Theoretical Construct Action - Past - Attitude - Current - Intended Bellet - Knowledge	Q.# 7.	Prompt	And the last technique is to distribute eattle throughout the landscape to spread the grazho fload. (2). Have you ever used this technique in your study area? (3). (OKLY (20) 59 YES) technique in your study area? (3). (OKLY (20) 59 YES) technique in your study area? (3). (OKLY (20) 59 YES) technique in your study area? (3). (OKLS) (3) (4) (5) YES) technique in your study area? (4) (5) (7) (2) (5) (5) (5) (5) technique in your study area? (5) (2) (7) (2) (5) (5) (5) (5) (5) (5) (5) technique in your study area? (5) (2) (7) (2) (5) (5) (5) (5) (5) (5) (5) (5) (5) (5	Yes 01 01 01 01 01 04 04 04 04 04 04 04 04 04 04	No No Yes No No No No No No No No No No	
August 4, 1999 Theoretical Construct Construct Construct Ration Bailed • Knowledge	7.	Prompt	ncy Bateman 1999 Question The second last technique is to calculate a classification for the or the or the or health of the riparian zone. Classification for the or health of the riparian zone. Classification for the technique in your study area in 1999? Classification of the technique bilevent to technique in your study area in 1999? Classification of the technique bilevent to technique bilevent classification of the technique bilevent bilev	Yes	No No No No No No No No No No	999 999		Theoretical Construct Actou - Past - Attude - Currant Ealint - Knowledge	Q.# 7.	Prompt	And the last technique in Survey Balance in Surv	Yes 0 01 0 01 0 02 0 0 0 0	No O O Vas No No No Suro No No No Suro No No Suro No Suro No Suro No Suro No Suro No Suro No Suro No Suro Suro Suro Suro Suro Suro Suro Sur	

	0#	Promot	Question	-				ASK ONLY II	FAMILY OPERATION		-
her fluences	8.1	Which of the following	 20-29 years 30-39 		02 03	Other Influences.	11.2	And, how many generations	One, being yourself Two		01 02
		categories includes your	• 40-49 • 50-59		04 05	Family Structure.		actively take part in making	Three Four		03 04
		age?	• 60-69		06	-		decisions about grazing			
			 ru years or older 		99			management for your study			
Other Influences	9.1	Which of the following	Some or all of high scho Some post-secondary		01	Other	12.1	area? And could you	[Don't read categories, just		99
ducation.		categories describes the	A college, trade or technical diploma or		03	Influences. # of Years		estimate approximately	assign number of years as stated]:		
		highest level of	certificate		04			how many years you have	Less than 5 years		01
	1.00	have?	degree		05			personally had the greatest	 5 - 9 years 10 -19 years 		02
		-	 Or, some other type that haven't mentioned 	ti 🗆	97			influence for	 20 - 29 years 30 - 39 years 		04
			Specify:					kinds of	 40 - 49 years 50 years or more 		07
								management			
					99			we've talked about			
Other	9.2	ASK ON Is your degree	 Yes 		01			today/tonight, for your study			99
Influences. Education.		or diploma in the field of	• No		02			area?			
Other	10.1	Agriculture?	Primarily a family-run of	r	99 01						
Influences. Business		operation?	family corporate operation. or		02						
Structure.			 Strictly a corporate business operation 		99						
	1	ASK ONLY IF	FAMILY OPERATION								
Other Influences	11.1	How many generations	One, being yourself Two		01 02						
amily		has this cattle	Three Eour		03 04						
		been in the family?	• Five		05						
	-	-			1.00						
wgust 4, 1999			© Nancy Bateman 1999		25	August 4, 1999			© Nancy Bateman 1999		-
ugust 4, 1999			Nancy Bateman 1999		25	August 4, 1999		Descent	© Nancy Bateman 1999		
wgust 4, 1999 Dither nfluences,	Q# 12.2	Prompt [IF CORPORATE]:	© Nancy Bateman 1999 Question To maintain the Operation as a		25 #1 -01 #2 - 02	August 4, 1999 Other	Q#	Prompt ASK ONLY The very last	© Nancy Bateman 1999 <u> Question</u> F <u>AMILY OPERATION</u> • 25% or less		01
August 4, 1999 Difter nfluences. Goals	Q# 12.2	Prompt [/F CORPORATE]: And, this is the unculate	Nancy Bateman 1999 Ouestion To maintain the operation as a working ranch To conserve and To conserve and		25 #1-01 #2 - 02 All others	August 4, 1999 Other Influences. Operational	Q# 13.1	Prompt ASK ONLY. The very last question is, which of the	© Nancy Bateman 1999 <u>Question</u> F FAMILY OPERATION 25% or less 26 - 50% 51 - 75%		01 02 03
ugust 4, 1999 Dther Iffuences, ioals	Q# 12.2	Prompt [JF CORPORATE]: And, this is the very last question:	Nancy Bateman 1999 Ouestion To maintain the operation as a working ranch To conserve and protect natural resources		25 #1 -01 #2 - 02 All others not	August 4, 1999 Othor Influences. Operational Income.	<u>Q</u> #	Prompt ASK ONLY The very last question is, which of the following categories	© Nancy Bateman 1999 <u>Question</u> <i>FAMILY OPERATION</i> • 25% or loss • 26 - 50% • 51 - 75% • 76 - 100%		01 02 03 04
August 4, 1999 Difher nfluences, Goals	<u>Q</u> # 12.2	Prompt [JF CORPORATE]: And, this is the very last question: [JF FAMILY, JUST	Nancy Bateman 1999 Ouestion To maintain the overking ranch To conserve and protect natural resources To provide the primary source		25 #1-01 #2 - 02 All others not selected - 03	August 4, 1999 Other Influences Operational Income.	<u>Q</u> # 13.1	Prompt ASK ONLY The very last question is, which of the following categories indicates approximately	© Nancy Bateman 1999 P FAMILY OPERATION • 25% or tess • 26 - 50% • 51 - 75% • 76 - 100%		01 02 03 04
August 4, 1999 Dther nfluences, Goals	Q# 12.2	Prompt [JF CORPORATE]: And, this is the very last question: [JF FAMILY, JUST USTNUE W0TH-	Nancy Bateman 1999 Ouestion To maintain the operation as a tro color procent To provide the primary sources fo income or revenue		25 #1 -01 #2 - 02 All others not selected - 03	August 4, 1999 Other Influences. Operational Income.	Q# 13.1	Prompt ASK ONLY: The very last question is, which of the rategoing indicates approximately the percentage of the family's	© Nancy Bateman 1999		01 02 03 04
August 4, 1999 Dither Difuerces, Goals	Q# 12.2	Prompt [JF CORPORATE]: And, this is the very last question: [JF FAMILY, JUST COMTINUE WITH]: This is the	Nancy Bateman 1999 Ouestion To maintain the operation as a working ranch af Torotect natural resources To provide the primary source of income or revenue To provide your of provide your to baality rural		25 #1-01 #2 - 02 All others not selected - 03	August 4, 1999 Other Influences. Operational Income.	0#	Prompt ASK ONLY: The very last following indicates approximately the percentage of the family's that is derived from actived	© Nancy Bateman 1999 Question FFAMILY OPERATION • 25% or less • 26 - 50% • 51 - 75% • 76 - 100%		01 02 03 04
August 4, 1999 Dither Influences, Goals	Q# 12.2	Prompt [JF CORPORATE]: And, this is the vary last inter- vary last inter-	Nancy Bateman 1999 Ouestion To maintain the operation as a working ranch To conserve and primary source of income or revenue To provide the primary source of income or revenue To provide your children with a healthy rural ouesting		25 #1-01 #2 - 02 All others not selected - 03	August 4, 1999 Other Influences. Operational Income.	<u>Q</u> # 13.1	Prompt ASK ONLY: The very last question is, which of the approximately the percentage of the family's total income that is derived production in this operation?	© Nancy Bateman 1999 Question FFAMILY OPERATION • 25% or less • 26 - 50% • 51 - 75% • 76 - 100%		01 02 03 04 99
Luguest 4, 1999 Dither Influences, Goals	Q# 12.2	Prompt (IF CORPORATE): And, this is the question: (IF FAMILY, JUST CONTINUE WITH: This is the second last question.] I realize you	Nancy Bateman 1999 Ouestion To maintain the operation as a working ranch ad rooscientural r		25 #1-01 #2 - 02 All others selected - 03	August 4, 1999 Other Influences, Operational Income.	<u>Q</u> # 13.1 14.1	Prompt ASK ONLY. The very last question is, which of the following categories indicates nately the parcentage of the family's total income that is derived from cattle production in this operation's Enter so.	© Nancy Bateman 1999 Question FFAMILY OPERATION • 25% or less • 26: 50% • 51: 75% • 76 - 100% • Male • Male • Famile		01 02 03 04 99 99 90 1 01
ther Ruences, pals	Q# 12.2	Prompt (IF CORPORATE): And, this is the vary last question: (IF FAMLY, JUST COMMULE WITH): This is the second last question.] Trails oyou may have several goals	Nancy Bateman 1999 Ouestion To maintain the operation as a working ranch To conserve and presources To provide the primary source of income or revenue To provide the primary source for income or revenue To provide the primary source for an anti-an heithyr rural environment and experience To maintain mineritance by your children		#1-01 #2-02 All others not selected -03	August 4, 1999 Other Influences. Operational Income.	<u>Q</u> # 13.1 14.1	Prompt ASK ONLY. The very last question is, which of the following categories indicates approximategories indicates approximategories total income that is derived from cattle production in this operation? Enter sex.	© Nancy Bateman 1999 Question FFAMILY OPERATION • 25% or less • 26 - 50% • 51 - 75% • 76 - 100% • Male • Male • Female		01 02 03 04 99 99 99 99 99
ugust 4, 1999 Dther Afluences, Totals	Q# 12.2	Prompt UF CORPORATEJ: And, this is the very last question: (UF FAMILY, JUST CONTINUE WITTI): This is the second last question.] I realize you may have several goals for the future of your operation.	Nancy Bateman 1999 Ouestion To maintain the operation as a working ranch To conserve and protect natural ro provide the primary source of income or revenue To provide the primary source for income or revenue To provide the primary source for income or revenue To provide the primary source for income or revenue To provide the primary source for income or revenue for one one or revenue		#1 -01 #2 - 02 All others not selected - 03	Other Influences. Operation Income.	<u>Q#</u> 13.1 14.1	Prompt ASK ONLY. The SY Pist useful is, which of the following categories indicates approximately the percentage total income that is derived from cattle production in this operation? Enter sex.	© Nancy Bateman 1999 Question FFAMILY OPERATION 225% or less 26 - 50% 51 - 75% 51 - 75% 76 - 100% • Male Female ch. We'ye completed the must		01 02 03 04 99 99 91 01 02 99
August 4, 1999 Difter Rifuences, Soals	Q# 12.2	Prompt (IF CORPORATE): And, this is the very last question: (IF FAMILY, JUST CONTINUE WITH]: This is the second last question.] I realize you may have for the future of your operation. I'm going to read a short list	Nancy Bateman 1999 Ouestion To maintain the operation as a working ranch To conserve and protect natural resources tha of income or revenue To provide your children with a healthy rural nd oxparience To more that in ownership for inheritane by your children gaal have it mentioned Specify:		25 #1-01 #2-02 All others not selected - 03	Other Influences. Operational Income.	Q# 13.1 14.1 14.1	Prompt ASK ONLY 1 The very last question fs, following categories indicates approximately the parcentage of the family production in this operation? Enter sex.	Anncy Bateman 1999 Counstion FAMILY OPERATION 25% 50% 76 - 100% Male Female ch. We've completed the quest ms or other comments now that	ionnaire.	01 02 03 04 99 01 02 99 91 I really
August 4, 1999 Difter Offuences, Goals	Q# 12.2	Prompt (JF CORPORATE): And, this is the very last question: (JFFAMILY, JUST CONTINUE WITH]: This is the second last question.] I realize you may have several goals several goals of your operation. I'm going to read a short list oposible goals and then	Nancy Bateman 1999 Ouestion To maintain the operation as a working ranch To conserve and protect natural resources To provide trans To provide trans To provide sour children with a healthy rural environment and to maintain ownership for inheritane by your children Gr, some other goal havent Specify:		25 #1-011 #12-02 Ail others selected - 03	August 4, 1999 Chinarcoas Influencoas Operational Income. Other Influencoas Sex. Sex. Read: tign off.]	0# 13.1 14.1 14.1	Prompt ASK ONLY 1 The very last question is, wollowing categories indicates approximately the percentage total income total income tota	Question FFAMILY OPERATION • 25% or tess • 25% or tess • 25 - 50% • 57 - 70% • 78 - 100% • Male • Female cch. We've completed the quests or other comments now that	ionnaire.	01 02 03 04 99 91 01 02 99 91 01 02 99 91 1 really
August 4, 1999	Q# 12.2	Prompt (JF CORPORATE): And, this is the very last question: (JFFAMILY, JUST CONTINUE WITHJ: This is the second last question.) I realize you may have several goals for the future of yfm going to read a short list of possible goals and then ask you to one of the	Nancy Bateman 1999 Outstion To maintain the operation as a working ranch To conserve and protect natural resources To provide the provide sour children with a healthy rural environment and orperiners To or, some other goal I haven't mentioned Specify:		25 #1-01 #2-02 All others selected -03	August 4, 1999 Other Influences Growtional Income. Other Influences. Sex. Read: tign off.] INDICATE	0.# 13.1 14.1 14.1 14.1	Prompt ASK ONLY The very last question is, which of the categories indicates approximately the percentage of the factors of the factors that is derived from catties production in this operation? Enter sex.	Vancy Bateman 1999	ionnaire.	01 02 03 03 04 99 99 91 01 02 99 99 1 really
August 4, 1999	<u>Q#</u> 12.2	Prompt [JF CORPORATE]: CORPORATE]: And, this is the very last question: [JF FAMILY, JUST CONTINUE WITH]: This is the second last question.] I realize you may have several goals for the future of your operation. Tread a short list of possible goals and then ask you to chocse two with all of isarily with you to chocse two with all of isarily with you to chocse two with all of isarily with you to chocse two with you to chocse the you t	Nancy Bateman 1999 Ouestion To maintain the operating ranch To conserve and protect natural resources To provide the primary source or Yoursen To provide your children with a healthy rural environment and experience To maintain Cor, some other goal haven't mentine Specify:		25 H -01 #2 -02 All others selected - 03	August 4, 1999 Other Influences, Operational Income. Operational Income. Sex. Sex. Read: time and ha sign off.]	Q# 13.1 14.1 14.1 14.1	Prompt ASK ONLY: The very last question is, which of the following indicates approximately the percentage of the family's that is derived from actived from actived from active production in this operation' Enter sex.	Vancy Bateman 1999	ilionnaire.	01 02 03 04 99 91 01 02 99 1 really really NDIDA
ugust 4, 1999	<u>Q#</u> 12.2	Prompt [JF CORPORATE]: And, this is the very last question: [JF FAMILY, JUST CONTINUE WITH]: This is the second last question.] I realize you may have several goals for the future of your operation. I realize you may have several goals for the future of your operation. Not all of them ask you to choose two. Not all of them this responding.	Nancy Bateman 1999 Ouestion To maintain the oportion as b ro conserve and protect natural resources To provide the primary source of income or monitain experience To maintain ownership for your children Yor, some other goal haven't mealty:		25 #1-01 #2-02 #0 others selected - 03	August 4, 1999 Other Influences. Operational Income. Other Influences. Sex. Sex. NDICATE I	0# 13.1 14.1 14.1 14.1	Prompt ASK ONLY: The very last question is, which of the following categories approximately the percentage of the family's total income thom attle production in this operation? Enter sex.	Vancy Bateman 1999 Question FAMILY OPERATION 25% or less 26 - 50% 51 - 75% 76 - 100% Hale Famale Ch. We've completed the quest may or other comments now tha DUNDS LIKE A GOOD FOCUS OF	ionnaire.	01 02 03 04 99 99 91 01 02 99 91 I really
ther Ruences. pals	Q# 12.2	Prompt (IF CORPORATE): And, this is the vary last question: (IF FAMILY, JUST This is the second last question.] Trails opum may have several goals for the future of your operation. Tread a short list of possible goals and then sak you to of possible goals and then the future of possible the future of the same that the one that	Nancy Bateman 1999 Ouestion To maintain the operation as a working ranch To conserve and presources To provide the primary source of income or revenue To anistain environment and experience To anistain inberitance by your children or, some other goal I haven't mentioned Specify:		25 #1-01 #2-02 All others selected - 03	August 4, 1999 Other Influences. Operational Other Influences. Other Influences. Sex. Sex. Nime and h sign off. INDICATE I INDICATE I	0.# 13.1 14.1 14.1 19. Do yo	Prompt ASK ONLY. The very last question is, which of the following categories insproximately the percentage of the family's total income that is derived from catile that	Nancy Bateman 1999 Question FrAMLY OPERATION 25% or less 26 - 50% 51 - 75% 76 - 100% Male Female ch. We've completed the quest ms or other comments now that DUNDS LIKE A GOOD FOCUS O	ionnaire.	011 02 03 04 99 99 91 01 02 99 91 I really Inte? [If
ugust 4, 1999	Q# 12.2	Prompt (IF CORPORATE): And, this is the very last question: (IF FAMILY, JUST CONTINUE WITTI): This is the second last question.] I realize you may have several goals for the future of your operation. I'm going to real the future of the possible goals and then ask you to choose two. Most all of theily apply to you, That's OK, in responding, just consider the ones that the ones that the ones that the other of the other other the ones that the other other other other the ones that the other other other other the ones that the other other other other other the ones that the other other other other other the ones that the other other other other other other other the ones that the other other other other other other the ones that the other other other other other other other the ones that the other other other other other other other the ones that the other other other other other other other other the other other other other other other other other other the other other other other other other other other the other other other other other other other other other the other other other other other other other other other the other	Nancy Bateman 1999 Ouestion To maintain the operation as a working ranch To conserve and protect natural protect natural to provide the primary source of income or revenue To provide the primary source for one or revenue To provide the primary source for anistain ownership for your choiren or, some other goal I haven't mentioned Specify:		25 H -07 H2 - 02 All oth 20 solucited - 03	Other Undercos, Operational Income.	0.# 13.1 14.1 14.1 14.1	Prompt ASK ONLY. The very last question is, which of the following categories indicates nately abe parcentage of the family's total income that is derived from cattle production in this operation' Enter sex.	A Nancy Bateman 1999 Counstion FAMLY OPERATION 25% or 15% 51 - 75% 76 - 100% Male Female ch. We've completed the questions or other comments now that country LIKE A GOOD FOCUS O	ionnaire.	01 02 03 04 99 90 01 02 99 91 really ne? [If
Uther fifuences, soals	<u>Q#</u> 12.2	Prompt (JF CORPORATE): And, this is the very last question: (JF FAMILY, JUST CONTINUE WITH]: This is the second last question.] I realize you mean a short list ogoals and then value of the several goals for the future of the future of choose two. Not all of them will necessarily ust consider the ones that do apply. So, in your operation. I you and the operation. The several goals for the future of the ones that the ones that the ones that the ones that the ones that the one of the operation. I your opera	Nancy Bateman 1999 Outestion To maintain the operation as a working ranch To conserve and protect natural rources the of income or revenue To provide your children with a environment and experience To maintain ownership for inheritance by yo, some other goal haven't mentioned Specify:		25 #1-07 #2-02 All others states - 03	Other Influences. Sperational Income. Other Influences. Sex. Read: sign off.] INDICATE I	0# 13.1 14.1 14.1 14.1 14.1	Prompt ASK ONLY The very last question is, we have a set of the set following categories indicates approximately the family total income that is derived from cattle production in the operation Enter sex.	A Nancy Bateman 1999 FAMILY OPERATION 25% of 1695 25% of 1695 25% of 1695 76 - 100% Male Female Male Female Mule Female DUNDS LIKE A GOOD FOCUS O	ionnaire.	01 02 03 04 99 90 01 02 99 91 1 really ne? [If
Uther Ther Theres, ioals	12.2	Prompt (IF CORPORATE): And, this is the very last question: (IF FAMIL Y, JUST CONTINUE WITH]: This is the second last question.] I realize you may have your operation. I'm going to read a short list of possible going to read a short list of possible of the future of possible possible of the future of horized a short list of possible of the will necessarily the consider the ones that do apply. So, in managing your operation. Wrom the following list	Nancy Bateman 1999 Ouestion To maintain the operation as a working ranch To conserve and protect natural resources tha of income or revenue To provide your children with a healthy rural nd experience To mointain ownership for inheritance by your children Specify:		25 #1-07 #2 - 02 All others soluciou - 03	August 4, 1999	0# 13.1 14.1 14.1 14.1	Prompt ASK ONLY The very last question is, which of the categories indicates approximately the percentage total income total income tot	Vancy Bateman 1999 FAMILY OPERATION 25% of ress 26 - 50% 57 - 70% 76 - 100% Male Female c.h. We've completed the question or other comments now tha	ilionaire.	01 02 03 04 99 91 01 02 99 91 01 02 99 91 01 02 99 91 01 02 99 91 01 02 04
August 4, 1999	122	Prompt (JF CORPORATE): And, this is the very last question: (JFFAMILY, JUST CONTINUE WITH]: This is the second last question.] I realize you may have goals and then several goals of possible goals and then scond last of possible goals and then while the second possible of the second the second last of possible goals and then who have the second the second last of possible goals and then who have the second the second the second the second possible goals and then who have the second the second the second possible goals and then while the second the second	Nancy Bateman 1999 Ouestion To maintain the operation as a working ranch To conserve and protect natural resources To provide the of income or revenue To provide your children with a healthy trual environment and ownership for inheritane by your children Or, some other goal havent Specify:		25 #1-01 #2-02 All others selected - 03	Cother Influences, Ground and American Influences, Sex. Read: Influences, Sex. Influences, Sex.	Q# 13.1 14.1 14.1 14.1 14.1	Prompt ASK ONLY The very last question is, which of the guestion is, which of the rategories indicates approximately the percentage of the family from active from active from active from active production in this operation? Enter sex.	Vancy Bateman 1999	ionnaire.	01 02 03 04 99 91 01 02 99 91 01 02 99 91 01 02 99 91 01 02 04
August 4, 1999	0.9	Prompt (JF CORPORATE): And, this is the very last question: (JF FAMIL Y, JUST CONTINUE WITTY]: This is the second last question.) I realize you may have several goals for the future of, ym going to read a short list of possible goals and then ask you to obvise se Wham will necessarily solve as who will necessarily poly to you, That's OK, in responding, Just consider to apply to you, That's OK, in responding, Just consider to apply. So, In managing your operation, which goal from the following list consider your highest priority, and	Nancy Bateman 1999 Ouestion To maintain the operation as a working ranch To conserve and protect natural resources royprovide the primary source or vorovide your children with a healthy rural environment and oxparince To onvership for inheritnee by your children Specify:		25 ##-01 #2-02 others selected - 03	August 4, 1999 Other Influencess Operational Income Sox. Read: tinguencess Sox. Read: sign off.]	Q# 13.1 14.1 14.1 14.1	Prompt ASK ONLY: The very last question is, which of the following following indicates approximately the percentage of the family's total in derived from catived production in this operation? Enter sex.	Vancy Bateman 1999	ionnaire.	011 02 03 04 99 91 01 02 99 01 02 99 01 02 99 01 02 99 01 02 99
August 4, 1999	0#	Prompt (IF CORPORATE): And, this is the vory last question: (IF FAMILY, JUST CWTH): WITH): Second last question.] I realize you may have second last question.] I realize you may have several goals for the future of possible goals and then sak you to ANN to a short list of possible goals and then sak you to Not all of them Will necessarily apply to you, That's OK, in rhat's OK, in the const all of them Will necessarily apply to you, That's OK, in the const all of them the ones that do you to consider your from the following list do you consider your by ou consider	Nancy Bateman 1999 Ouestion To maintain the operation as a working ranch To conserve and presources To periods the primary source of income or menue or anistain environment and experience To anistain children with a healthy rural environment and experience To some other goal I haven't mentioned Specify:		255	August 4, 1999 Other Influences. Operational Income. Other Influences. Sex. Read: sign off.] INDICATE	0#	Prompt ASK ONLY: The very last question is, which of the following approximately the percentage of the family's total income throm cattle production in this operation? Enter sex.	Vancy Bateman 1999 Guestion FAMILY OPERATION 25% or less 26.50% 51.75% 76.100% Hale Female Ch. We've completed the questions or other comments now than outputs LIKE A GOOD FOCUS OF	ionnaire.	01 02 03 04 99 90 01 02 99 1 really ne? [if
August 4, 1999	9#	Prompt (IF CORPORATE): And, this is the very last guestion: (IF FAMLY, JUST CONTINUE WITTI): This is the second last question.] I realize you may have several goals for the future of your operation. Tread a short list of possible goals and then sak you to choose two will necessarily apply to you, That's OK, in responding, just consident do apply. So, in managing your operation, from the do you list do you list do you consider which goal from the list possider your to possider your operation, thighest priority, and your operation thighest	Nancy Bateman 1999 Ouestion To maintain the operation as a working ranch To conserve and protect narrail protect narrail protect narrail protect narrail protect narrail conversity for to another the second se		25 #1-07 #2-02 All others selected - 03	Other Influences. Other Influences. Other Influences. Seat Income. Read: Imme and he sign off.] INDICATE	0.#	Prompt ASK ONLY. The very last question is, which of the following categories important of the paper of the family's total income that is derived fror duction in this operation? Enter sex.	Vancy Bateman 1999 Guestion FrAMLY OPERATION 25% or less 26 - 50% 51 - 75% 76 - 100% Male Female Male Guestion Ch. We've completed the quest ms or other comments now that Guestions of the completed the quest ms of the	ionnaire.	01 02 03 04 99 99 01 02 99 01 02 02 02 02 02 04 04 07 02 02 04 04 04 04 04 04 04 04 04 04 04 04 04
ugust 4, 1999	9#	Prompt UF CORPORATEJ: And, this is the very last question: (UF FAMILY, JUST CONTINUE WITTH: This is the second last question.] I realize you more than the second last question. I'm going to read a short list goals and then your operation. I'm going to read a short list goals and then will you to choose two. Not all of themy will you to choose two. Not all of themy your operation, the goal from the following list d you consider your operation, prior the priority, and which goal do you consider priority.2	Nancy Bateman 1999 Outestion To maintain the operation as a working ranch To conserve and protect narrai To provide the primary source of income or revenue To provide your children with a benvironment and experience To maintain ownership for inheritance by or, some other goal I haven't mentioned Specify:		25 #1-07 #2-02 All others second -03 99 99	Other Influences. Other Influences. Sex. Read: Influences. Sex. Influences. Sex. Influences.	0# 13.1 14.1 14.1 14.1	Prompt ASK ONLY. The very last question is, we have a set of the set of the following categories indicates approximately the percentage total income that is derived from cattle production in this operation? Enter sex.	A Nancy Bateman 1999 FAMILY OPERATION 25% of 16% 25% of 16% 25% of 16% 25% of 16% 76 - 100% Male Female Male Female DUNDS LIKE A GOOD FOCUS O	ionnaire.	01 02 03 04 99 97 07 02 99 07 02 97 07 02 97 07 02 97 07 02 99 90 7 07 02 99 90 7 07 02 99 90 7 04
ugust 4, 1999	12.2	Prompt (IF CORPORATE): And, this is the very last question: (IF FAMILY, JUST CONTINUE WITH): This is the second last question.] I realize you may raise for the future of your operation. I'm going to read a short list of pape hate of pape hate of the future of pape to your operation. I'm going to read a short list of pape hate of pape hat	Nancy Bateman 1999 Ouestion To maintain the operation as a working ranch To former of the ouestion To provide your children with a heilty roat and experience To any the ouestion of the ouestion the ouestion the ouestion of the ouestion the ouestion the ouestion of the ouestion of the ouestion the ouestion of the ouestion the ouestion of the ouestion of the ouestion of the ouestion the ouestion of th		25 #1-07 #2-02 All others solitore -03 99 99	August 4, 1999	0# 13.1 14.1 14.1 14.1 14.1	Prompt ASK ONLY The very last question is, which of the categories indicates approximately the percentage total income that is derived from cattle production in this operation? Enter sex.	Vancy Bateman 1999 FAMILY OPERATION 25% or ress 26 - 5% 57 - 70% 76 - 100% Male Female c.h. We've completed the question or other comments now that	ionnaire.	99 99 01 04 99 99 99 90 1 04 04 04 04 04 04 04 04 04 04 04 04 04

EXPOSURE DOMAIN NAMEPersonal Contact-FieldCommunity- BasedSpecial TargetIntroductory Comm'sNational MediaEIGENVALUE * V VARIANCE CUMULATIVE %7.2161.6511.2491.000.943.943% VARIANCE CUMULATIVE %42.49.77.35.95.5	COMPONENT #	1	2	3	4	5	
DOMAIN NAME Contact-Field Based Target Comm's Media EIGENVALUE * 7.216 1.651 1.249 1.000 .943 % VARIANCE 42.4 9.7 7.3 5.9 5.5 CUMULATIVE % 42.4 52.2 59.5 65.4 70.9 TOOL COMPONENT LOADING ALITY ** Program .761 .310 78% Representatives .379 77% 63% Site Tours .758 .379 77% Profile Producers .746 63% 63% Stockmens' Range .714 63% 63% Mgmt Course .600 .388 61% Display Booth .600 .388 61% Green Zone: .383 .388 61% Riparian Areas and Grazing Mgmt .788 79% 79% Workshops .752 .428 84% Presentations .700 78% 78%	EXPOSURE	Personal	Community-	Special	Introductory	National	
EIGENVALUE * 7.216 1.651 1.249 1.000 .943 % VARIANCE 42.4 9.7 7.3 5.9 5.5 CUMULATIVE % 42.4 52.2 59.5 65.4 70.9 TOOL COMPONENT LOADING ALITY ** Program .761 .310 78% Site Tours .758 .379 77% Profile Producers .746 68% 68% Stockmens' Range .714 63% 61% Display Booth .600 .388 61% Caring for the .568 .383 .388 61% Green Zone: .833 .388 61% 63% Morkshops .752 .428 84% Presentations .752 .428 84%	DOMAIN NAME	Contact-Field	Based	Target	Comm's	Media	
% VARIANCE CUMULATIVE % 42.4 9.7 52.2 7.3 59.5 5.9 65.4 5.5 70.9 TOOL COMPONENT LOADING COMMUN- ALITY ** Program Representatives .761 .310 78% Site Tours .758 .379 77% Profile Producers .746 68% Stockmens' Range Mgmt Course .714 68% Display Booth .600 .444% Green Zone: Riparian Areas and Grazing Mgmt .383 .388 61% Riparian Areas and Grazing Mgmt .788 .383 84% Riparian Presentations .752 .428 84% Community Health .700 .78%	EIGENVALUE *	7.216	1.651	1.249	1.000	.943	
CUMULATIVE % 42.4 52.2 59.5 65.4 70.9 TOOL COMPONENT LOADING COMMUN- ALITY ** Program Representatives .761 .310 78% Site Tours .758 .379 77% Profile Producers .746 68% 68% Stockmens' Range .714 63% 63% Mgmt Course 600 44% 63% Display Booth .600 44% 61% Caring for the Green Zone: .568 .388 61% Riparian Areas and Grazing Mgmt .788 79% 84% Day .752 .428 84% Presentations .700 78% 78%	% VARIANCE	42.4	9.7	7.3	5.9	5.5	
TOOLCOMPONENT LOADINGCOMMUN-ALITY **Program Representatives.761.31078%Site Tours.758.37977%Profile Producers.74668%Stockmens' Range Mgmt Course.71463%Display Booth.60044%Caring for the Green Zone: Riparian Areas and Grazing Mgmt.38361%Health Ass't Field.833.379Day.752.42884%Community Health.70078%	CUMULATIVE %	42.4	52.2	59.5	65.4	70.9	
TOOLCOMPONENT LOADINGALITY **Program Representatives.761.31078%Site Tours.758.37977%Profile Producers.74668%Stockmens' Range Mgmt Course.71463%Display Booth.60044%Caring for the Green Zone: Riparian Areas and Grazing Mgmt.38861%Riparian Workshops.788.38884%Riparian Workshops.752.42884%Community Health.70078%.78%							COMMUN-
Program Representatives.761.31078%Site Tours.758.37977%Profile Producers.74668%Stockmens' Range Mgmt Course.71463%Display Booth.60044%Caring for the Green Zone: Riparian Areas and Bay.568.388Riparian Areas and Bay.83384%Day.788.79%Workshops.752.42884%Community Health.70078%	TOOL		COMP	ONENT LOAD	ING		ALITY **
Representatives.758.37977%Site Tours.758.37977%Profile Producers.74668%Stockmens' Range Mgmt Course.71463%Display Booth.60044%Caring for the Green Zone: Riparian Areas and Grazing Mgmt.38861%Health Ass't Field.83384%Day.752.42884%Presentations.75078%	Program	.761	.310				78%
Site Tours.758.37977%Profile Producers.74668%Stockmens' Range Mgmt Course.71463%Display Booth.60044%Caring for the Green Zone: Riparian Areas and Grazing Mgmt.38861%Health Ass't Field Day.83384%Day.78879%Workshops.752.42884%Community Health.70078%	Representatives						
Profile Producers.74668%Stockmens' Range Mgmt Course.71463%Display Booth.60044%Caring for the Green Zone: Riparian Areas and Grazing Mgmt.568.388Health Ass't Field Day.83384%Riparian Workshops.78879%General Presentations.752.42884%Community Health.70078%	Site Tours	.758	.379				77%
Stockmens' Range Mgmt Course.71463%Display Booth.60044%Caring for the Green Zone: Riparian Areas and Grazing Mgmt.568.38861%Health Ass't Field Day.83384%Riparian Workshops.752.42884%General Presentations.70078%	Profile Producers	.746					68%
Mgmt CourseImage: Second s	Stockmens' Range	.714					63%
Display Booth.60044%Caring for the Green Zone: Riparian Areas and Grazing Mgmt.568.38861%Health Ass't Field Day.833.84%Riparian Workshops.78879%General Presentations.752.42884%Community Health.70078%	Mgmt Course						
Caring for the Green Zone: Riparian Areas and Grazing Mgmt.568.38861%Health Ass't Field Day.833.84%Riparian Workshops.78879%General Presentations.752.42884%Community Health.70078%	Display Booth	.600					44%
Green Zone: Riparian Areas and Grazing Mgmt833Health Ass't Field Day.833Riparian Workshops.788General Presentations.752.42884%Community Health.700	Caring for the	.568			.388		61%
Riparian Areas and Grazing MgmtRiparian<	Green Zone:						
Grazing MgmtHealth Ass't Field Day.833Riparian Workshops.788General Presentations.752.42884%Community Health.700	Riparian Areas and						
Health Ass't Field Day.83384%Riparian Workshops.78879%General Presentations.752.42884%Community Health.70078%	Grazing Mgmt						
DayImage: Constraint of the second secon	Health Ass't Field		.833				84%
Riparian Workshops.78879%General Presentations.752.42884%Community Health.70078%	Day						
Workshops.428General Presentations.752Community Health.70078%	Riparian		.788				79%
General.752.42884%Presentations.70078%	Workshops						
Presentations 700 78%	General		.752		.428		84%
Community Health .700 78%	Presentations						
	Community Health		.700				78%
Ass't Process	Ass't Process						
Website .841 76%	Website			.841			76%
Cows, Fish, Cattle .738 .314 66%	Cows, Fish, Cattle			.738		.314	66%
Dogs and Kids	Dogs and Kids						
Along the Water's 66%	Along the Water's			.696			66%
Edge (video)	Edge (video)						
Introductory .325 .759 75%	Introductory			.325	.759		75%
Pamphlet	Pamphlet						
General Media .377 .663 63%	General Media		.377		.663		63%
Foster (video) .820 74%	Foster (video)					.820	74%
Suzuki (video) .339 .748 72%	Suzuki (video)			.339		.748	72%

APPENDIX I Exposure Domain Names and Component Scores

* Eigenvalues for components 6 through 17 ranged from .828 to .119. They do not represent distinct exposure domains because their variables explain less variance together than any one variable within the component explains on its own.

** Loading values < 0.3 were suppressed. When squared, the loading indicates the percentage of variance in that variable explained by the component. The communality percentage is the variance in the variable explained across all of the components.

APPENDIX J JCSEE Evaluation Standards

ATTRIBUTE/	PRINCIPLE
Attributo:	Definition
Utility	Ensures an evaluation serves the information needs of intended users.
Standards: U1. Stakeholder	Persons involved in or affected by the evaluation are identified so that their needs can be addressed.
identification	
U2. Evaluator credibility	Persons conducting the evaluation are trustworthy and competent so that the findings achieve maximum credibility and acceptance
U3 Information	Information collected is broadly selected to address pertinent questions about
scope and selection	the program.
U4. Values	The perspectives, procedures and rationale used to interpret the findings are
identification	carefully described so that the bases for judgments are clear.
U5. Report clarity	Reports clearly describe the program, including context, purposes, procedures and findings, so that essential information is provided and easily understood.
U6. Report timeliness and dissemination	Significant interim findings and reports are disseminated to intended users for use in a timely fashion.
U7. Evaluation	Evaluations are planned, conducted and reported to encourage follow-through
impact	by stakeholders so that the likelihood of evaluation use is increased.
Attribute:	Definition:
Feasibility	Ensures that an evaluation is realistic, prudent, diplomatic and frugal.
F1. Practical	Procedures are practical to keep disruption to a minimum while needed
procedures	information is obtained.
F2. Political viability	The evaluation is planned and conducted with anticipation of the different positions of various stakeholders, so that their co-operation is obtained in
F0_0	order to curtail bias or misapplication of evaluation results.
F3. Cost	The evaluation is efficient and produces information of sufficient value so that
Attributo:	Definition:
Propriety	Ensures that an evaluation is conducted legally, ethically and with due regard for the welfare of those involved and those affected by results.
P1. Service orientation	The evaluation is designed to assist organizations to be effectively serve the needs of targeted participants.
P2. Formal agreements	Obligations of the parties to an evaluation are agreed to in writing so that these parties are obligated to adhere to the conditions of the agreement or formally to renegotiate it.
P3. Rights of human subjects	The evaluation is designed and conducted to respect and protect the rights and welfare of human subjects.
P4. Human	The evaluator respects the human dignity and worth of other persons
interactions	associated with the evaluation so that participants are not threatened or harmed.
P5. Complete and	The evaluation is complete and fair in its examination and recording of the
fair assessment	strengths and witnesses of the program being evaluated.
P6. Disclosure of findings	Parties to the evaluation should ensure that full evaluation findings, along with pertinent limitations, are accessible to the persons affected by the evaluation and any others with legal rights to receive the results.
P7. Conflict of interest	Should be dealt with openly and honestly so that it does not compromise the evaluation processes and results.
P8. Fiscal responsibility	The evaluator's expenditure of resources reflects sound accountability and is prudent and ethically responsible.

ATTRIBUTE/	PRINCIPLE
STANDARD	
Attribute Accuracy	Definition: Ensures that an evaluation reveals and conveys technically adequate information about the features that determine worth or merit of the programming being evaluated.
A1. Program documentation	The program being evaluated is described and documented clearly and accurately so that the program is clearly identified.
A2. Context analysis	The context in which the program exists is examined in enough detail so that its likely influences on the program are identified.
A3. Described purposes and procedures	Purposes and procedures are described in sufficient detail so that they can be assessed and identified.
A4. Defensible information sources	Sources of information are described in enough detail so that the adequacy of the information can be assessed.
A5. Valid information	Information gathering procedures are chosen or developed and then implemented to assure that the interpretation arrived at is valid for its intended use.
A6. Reliable information	Information gathering procedures are chosen or developed and then implemented to assure that the information obtained is sufficiently reliable for its intended use.
A7. Systematic information	Information collected, processed and reported is systematically reviewed and errors corrected.
A8. Analysis of quantitative information	Quantitative information is appropriately and systematically analyzed so that the evaluation questions are answered effectively.
A9. Analysis of qualitative information	Qualitative information is appropriately and systematically analyzed so that the evaluation questions are answered effectively.
A10. Justified conclusions	Conclusions are explicitly justified so that the stakeholders can assess them.
A11. Impartial reporting	Reporting procedures guard against distortion caused by a bias of any party to the evaluation, so that evaluation reports reflect the evaluation findings fairly.
A12. Meta-evaluation	The evaluation itself should be formatively and summatively evaluated against these standards, so that its conduct is appropriate and, on completion, stakeholders can examine its strengths and weaknesses.