Evaluation of a Collaborative Model Using A Case Study Analysis of Watershed Planning in the Intermountain West

Gary Bentrup

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ABSTRACT

Evaluation of a Collaborative Model Using A Case Study Analysis
of Watershed Planning in the Intermountain West

by

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Utah State University, 1999

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Planning methods that involve collaboration are gaining popularity and currently being applied in a variety of resource management issues. Based on current planning theory, researchers have proposed a conceptual collaborative model for environmental planning and management. This thesis evaluates the usefulness of the model to describe the range of factors important for the establishment and operation of collaboration in environmental planning. This iterative model suggests that collaboration emerges from a series of antecedents and then proceeds sequentially through problem setting, direction setting, implementation, and monitoring and evaluation phases. The evaluation was based on three case studies of watershed-based planning efforts in the Intermountain West. Watershed planning efforts were selected because watersheds have been identified as a suitable
framework for addressing many environmental issues. In addition, watersheds frequently cross many political boundaries and therefore planning efforts in a watershed context often require collaboration between the various entities.

Based on the case study analysis, the model seems to realistically describe fundamental collaborative elements in environmental planning. Factors that proved to be particularly important include the involvement of stakeholders in data collection and analysis and the establishment of measurable objectives. Informal face to face dialogue and watershed field tours were critical for identifying issues and establishing trust among stakeholders. Group organizational structure also plays a key role in facilitating collaboration.

From this analysis, suggestions for refining the model are proposed. In addition, key elements that planners should consider when embarking on a collaborative effort are highlighted.
ACKNOWLEDGMENTS

This work is dedicated to the many people who have helped me along the way. First and foremost, I would like to extend my personal appreciation and gratitude to my committee members for their support and valuable input. I thank Dick Toth for challenging me to tackle disciplinary boundaries that prevent holistic and creative problem solving. Thanks to Craig Johnson, who offered unfailing encouragement for this project and patience in improving the quality of my writing. Thanks to Mark Brunson, whose support and belief in collaborative processes continually reaffirmed my efforts.

Sincere appreciation is also extended to those individuals who provided information for the case studies. These include Bill Simon (Animas River Stakeholder Group), Mike Allred (Little Bear River Group), and Scott Boettger and Cindy Deacon Williams (Willow Creek Project). Their commitment and dedication to watershed stewardship is inspiring and offers rays of hope. A special thanks to Jim Dobrowolski for reviewing this document.

Thanks also to the many friends who were always willing to listen. To my family, thank you for being my foundation.
## CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>iii</td>
</tr>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>v</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>vii</td>
</tr>
<tr>
<td>CHAPTER</td>
<td></td>
</tr>
<tr>
<td>I. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Background of the Problem</td>
<td>1</td>
</tr>
<tr>
<td>Collaboration-based Planning</td>
<td>1</td>
</tr>
<tr>
<td>Study Description</td>
<td>3</td>
</tr>
<tr>
<td>II. COLLABORATIVE MODEL FOR ENVIRONMENTAL PLANNING</td>
<td>10</td>
</tr>
<tr>
<td>Introduction</td>
<td>10</td>
</tr>
<tr>
<td>Antecedents</td>
<td>12</td>
</tr>
<tr>
<td>Problem Setting</td>
<td>14</td>
</tr>
<tr>
<td>Direction Setting</td>
<td>17</td>
</tr>
<tr>
<td>Implementation</td>
<td>20</td>
</tr>
<tr>
<td>Monitoring and Evaluation</td>
<td>22</td>
</tr>
<tr>
<td>III. CASE STUDIES</td>
<td>24</td>
</tr>
<tr>
<td>Methods</td>
<td>24</td>
</tr>
<tr>
<td>Animas River Stakeholder Group</td>
<td>29</td>
</tr>
<tr>
<td>Little Bear River Group</td>
<td>43</td>
</tr>
<tr>
<td>Willow Creek Project</td>
<td>59</td>
</tr>
<tr>
<td>IV. MODEL EVALUATION AND CONCLUSIONS</td>
<td>74</td>
</tr>
<tr>
<td>Introduction</td>
<td>74</td>
</tr>
<tr>
<td>Antecedents</td>
<td>76</td>
</tr>
<tr>
<td>Problem Setting</td>
<td>78</td>
</tr>
<tr>
<td>Direction Setting</td>
<td>80</td>
</tr>
<tr>
<td>Implementation</td>
<td>82</td>
</tr>
<tr>
<td>Monitoring and Evaluation</td>
<td>85</td>
</tr>
<tr>
<td>Model Refinement</td>
<td>87</td>
</tr>
<tr>
<td>Conclusion</td>
<td>92</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>94</td>
</tr>
<tr>
<td>Figure</td>
<td>Page</td>
</tr>
<tr>
<td>--------</td>
<td>------</td>
</tr>
<tr>
<td>1</td>
<td>Several key characteristics of collaboration-based and participatory planning.</td>
</tr>
<tr>
<td>2</td>
<td>Collaborative model for environmental planning.</td>
</tr>
<tr>
<td>3</td>
<td>Case study characteristics.</td>
</tr>
<tr>
<td>4</td>
<td>Upper Animas River Watershed.</td>
</tr>
<tr>
<td>5</td>
<td>View towards Silverton, CO.</td>
</tr>
<tr>
<td>6</td>
<td>Abandoned mine in the Animas River Basin.</td>
</tr>
<tr>
<td>7</td>
<td>Mine runoff in the Animas River Basin.</td>
</tr>
<tr>
<td>8</td>
<td>Animas River Stakeholder Group goals.</td>
</tr>
<tr>
<td>9</td>
<td>Animas River Stakeholder Group organizational diagram.</td>
</tr>
<tr>
<td>10</td>
<td>Antecedents – Animas River Stakeholder Group.</td>
</tr>
<tr>
<td>11</td>
<td>Problem setting – Animas River Stakeholder Group.</td>
</tr>
<tr>
<td>12</td>
<td>Direction setting – Animas River Stakeholder Group.</td>
</tr>
<tr>
<td>13</td>
<td>Implementation – Animas River Stakeholder Group.</td>
</tr>
<tr>
<td>14</td>
<td>Monitoring and evaluation – Animas River Stakeholder Group.</td>
</tr>
<tr>
<td>15</td>
<td>Little Bear River Watershed.</td>
</tr>
<tr>
<td>16</td>
<td>Little Bear River flowing through Cache Valley.</td>
</tr>
<tr>
<td>17</td>
<td>Animal operations along the Little Bear River.</td>
</tr>
<tr>
<td>18</td>
<td>Little Bear River Group organizational diagram.</td>
</tr>
<tr>
<td>19</td>
<td>Little Bear River Group goals.</td>
</tr>
<tr>
<td>20</td>
<td>Watershed field tour on the Little Bear River.</td>
</tr>
<tr>
<td>21</td>
<td>Antecedents – Little Bear River Group.</td>
</tr>
<tr>
<td>22</td>
<td>Problem setting – Little Bear River Group.</td>
</tr>
<tr>
<td>23</td>
<td>Direction setting – Little Bear River Group.</td>
</tr>
<tr>
<td>24</td>
<td>Implementation – Little Bear River Group.</td>
</tr>
<tr>
<td>25</td>
<td>Monitoring and evaluation – Little Bear River Group.</td>
</tr>
<tr>
<td>26</td>
<td>Willow Creek Watershed.</td>
</tr>
<tr>
<td>27</td>
<td>Redband Trout.</td>
</tr>
<tr>
<td>28</td>
<td>A reach on Willow Creek.</td>
</tr>
<tr>
<td>29</td>
<td>Willow Creek Project goals.</td>
</tr>
<tr>
<td>Figure</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>30</td>
<td>Major sediment input on a tributary of Willow Creek</td>
</tr>
<tr>
<td>31</td>
<td>Willow Creek Project organizational diagram</td>
</tr>
<tr>
<td>32</td>
<td>Antecedents – Willow Creek Project</td>
</tr>
<tr>
<td>33</td>
<td>Problem setting – Willow Creek Project</td>
</tr>
<tr>
<td>34</td>
<td>Direction setting – Willow Creek Project</td>
</tr>
<tr>
<td>35</td>
<td>Implementation – Willow Creek Project</td>
</tr>
<tr>
<td>36</td>
<td>Monitoring and evaluation – Willow Creek Project</td>
</tr>
<tr>
<td>37</td>
<td>Collaborative – participatory planning gradient</td>
</tr>
<tr>
<td>38</td>
<td>Antecedents – summary</td>
</tr>
<tr>
<td>39</td>
<td>Problem setting – summary</td>
</tr>
<tr>
<td>40</td>
<td>Direction setting – summary</td>
</tr>
<tr>
<td>41</td>
<td>Implementation – summary</td>
</tr>
<tr>
<td>42</td>
<td>Monitoring and evaluation – summary</td>
</tr>
<tr>
<td>43</td>
<td>Revised collaborative model for environmental planning</td>
</tr>
</tbody>
</table>
CHAPTER I
INTRODUCTION

Background of the Problem

Almost daily, news reports describe environmental planning efforts mired in controversy and conflict. Whether it be the development of a National Forest Service management plan or preparation of a county land-use plan, planners are experiencing difficult challenges due to an increasingly turbulent political and social climate. The following are some of the key features of the current socio-political environment within which planning occurs.

Diversity in Societal Roles. The environment of the planner is characterized by increasing diversity in societal roles. Roles are becoming more differentiated and specialized primarily due to technological advancement which requires higher levels of specialized skills (Freeman 1977). Historically, people occupied similar roles in an agrarian society, which often contributed to common life experiences. Responses to problems were similar due to this commonality between individuals (Freeman 1977). The recent explosion in occupational diversity has resulted in people occupying many different roles in society leading to a greater range of personal life experiences. The result is not only greater variability in responses to problems but also, how problems are defined in the first place. A land-use plan that seems rational to one group may seem irrational to another group viewing it from a different perspective. Rarely can the planner create a plan that will satisfy all parties.

Battle between Polar Issues. Planning is often viewed as a battle between polar issues such as uncontrolled development or no growth. In response, there has been the emergence of small groups dedicated to promoting a specific point of view. As Yaffee (1997, p. 333) noted "to survive, special interest groups must carve out a niche and defend it". Groups argue for extreme positions believing that the final result may be a compromise. If
the group is not satisfied with the outcome, the group can exercise substantial "veto power" over the planning process (Freeman 1977). Litigation is one of the most common forms of veto power that interest groups can exercise (Bingham 1986). Planning in this environment is often a no-win situation.

**Professional Specialization.** Our rapidly increasing knowledge base has contributed to an explosion in professional specialization (Freeman 1977). A natural resource planning effort could easily include disciplines such as entomologists, hydrogeologists, fluvial geomorphologists, recreation planners, fishery pathologists, etc. As a result of specialization, today's professionals have a greater understanding of their specific area of study though they also have less and less access to an overall understanding of ecological systems (Freeman 1977, Holling 1995). Comprehensive planning requires sharing of knowledge in order to assemble a more complete picture of the total system, and yet there are often barriers to the interaction between professionals because of the 'tacit infrastructure' each discipline imposes on its own profession (Bohm and Peat 1987). This infrastructure or paradigm restricts the discipline by controlling its' visual and verbal vocabulary, theories and knowledge (Adams 1974). As time passes, these specialized paradigms tend to become more restrictive and less interactive with ideas from other fields (Toth 1988). The result is a lack of communication and trust between parties, which prevents holistic, creative problem solving across disciplinary boundaries.

**Public Alienation from the Planning Process.** Traditional public involvement in the planning process is often encouraged only during the scoping phase at the beginning of a project and at the end when comments are requested on the various alternatives (Moote and McClaran 1997). The public often feels alienated from the process that occurs between these endpoints (Blahna and Yonts-Shepard 1989).
In addition, the lack of understanding and cooperation between resource professionals also contributes to the general public's feeling of alienation from the planning process. Not surprisingly, Tipple and Wellman (1989, p. 26) have noted that "in spite of professional specialization, the public is less willing than ever to entrust resource management decisions to agency personnel". Consequently, these factors create a fragmented planning environment that is characterized by lack of trust and cooperation between all parties involved (Yaffee 1997).

Although this list of factors is not inclusive, it does illustrate some of the issues affecting the planning environment. These problems permeate all levels of environmental planning, from the municipal level to management of federal lands (Bingham 1986). Planning conducted in this turbulent environment often results in "freezing" of the planning process where little to no progress can be achieved (Freeman 1977).

Consequently, conflicts over environmental management plans are increasingly resolved by administrative and judicial systems (Bingham 1986). More often than not, these approaches produce results that may not be equitable, efficient, or stable (Susskind and Ozawa 1985). Instead of producing a unified vision or plan, these traditional dispute resolution processes tend to exacerbate underlying conflicts and greatly increase the difficulty of future planning efforts. Even when environmental planning efforts do not end in the court system, the process may produce plans that may not have the public support to be fully implemented.

Collaboration-based Planning

To address these difficult issues, methods for integrating public involvement in planning have been evolving for some time. Arnstein's (1969) classic article, "A Ladder of Citizen Participation" established a hierarchy of public involvement in planning. At the top rungs of the ladder, collaboration emerges between the public and professionals (Arnstein 1969, Wondolleck et al. 1996). Collaboration can be defined as "a group of stakeholders of a problem domain who engage in an interactive process, using shared rules, norms, and structures, to act or decide on issues related to that domain" (Wood and Gray 1991, p. 146). Simply put, collaborative planning is people
pulling their resources together to solve problems they could not solve individually. Confusion often surrounds the concepts of participatory planning versus collaborative planning. Figure 1 illustrates some of the fundamental differences between collaboration-based planning versus traditional participatory planning as defined in this thesis.

<table>
<thead>
<tr>
<th>Collaboration-based Planning</th>
<th>Participatory Planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interdisciplinary Approach - cross disciplinary integration</td>
<td>Multidisciplinary Approach - compartmentalization of disciplines</td>
</tr>
<tr>
<td>Stakeholders educate each other</td>
<td>Education is believed only to be necessary for the public</td>
</tr>
<tr>
<td>Informal face to face dialogue among stakeholders</td>
<td>Over-reliance on public hearings and other formal input methods</td>
</tr>
<tr>
<td>Continuous stakeholder participation throughout the planning process</td>
<td>Participation of stakeholders only requested at certain points in the planning process</td>
</tr>
<tr>
<td>Stakeholder participation encouraged to create a holistic plan</td>
<td>Stakeholder participation generally encouraged only to create support for a plan</td>
</tr>
<tr>
<td>Joint information search used to determine facts</td>
<td>Science used to buttress positions and refute others parties data</td>
</tr>
<tr>
<td>Generally, consensus is used to make decisions</td>
<td>Generally, voting is used to make decisions</td>
</tr>
</tbody>
</table>

Figure 1. Several key characteristics of collaboration-based and participatory planning. Adapted from Gray 1989, Urban Land Institute 1994, Moote et al. 1997.
Modifying the Planning Environment. Because of the differences illustrated in Figure 1, collaboration-based planning approaches may be able to effectively address the previously described issues that define the planner's environment. In regards to the first issue of social structure diversity, collaborative planning attempts to bring the diversity of stakeholders to the planning process. During the process, a sense of interdependence begins to develop between the participants, where individuals begin to realize that to obtain their objectives, others' objectives will have to be addressed as well. Once the foundation of interdependence is laid, face-to-face dialogue between participants begins to breakdown the stereotypes of the stakeholders, allowing people to really hear other viewpoints for the first time. This mutual sharing and learning phase in collaboration-based planning is critical to creating a common definition of the planning issues. A unified vision for the landscape can then begin to emerge making sense to the different groups of participants.

Collaborative planning may be able to reduce the battle between polar issues and diminish interest groups' desire to "veto" the planning process because their issues are now being incorporated into the process. In addition, the emergence of common concerns between the parties provides mutual points on which to build the natural resource or land-use plan. Participation in the creation of the plan enhances acceptance of the solution and increases the sense of ownership such that sabotaging the planning effort seems less attractive.

Problems with professional specialization and public alienation from the planning process may also be addressed by collaborative planning. This approach requires that a common language between participants be developed such that natural resource professionals and the general public can effectively communicate. Effective communication can begin to remove the barriers of specialized paradigms and promote the transfer of information between parties. Collaboration-based planning involves participants in inventory and analysis phases, thus increasing participants' understanding of the complexity of
natural resource systems. This translates into trust and support of the professionals involved and the process itself. The result is a more publicly supported and holistic problem solving approach that can bridge disciplinary boundaries.

In summary, collaborative planning approaches can offer several benefits:

- Relationships between stakeholders improve
- Broad analysis of the problem improves the quality of solutions
- Parties retain ownership of the solution
- Participation enhances acceptance of solution and willingness to implement
- The risk of impasse is minimized
- Cost-effectiveness may be improved
- Potential for innovative solutions increases benefits


Watershed-based Collaborative Efforts. In addition to the benefits described, interest in collaborative approaches to planning is also increasing due to the paradigm shift in resource management to the concept of ecosystem management. Collaborative planning is considered by some authors as one of the key principles of ecosystem management (Moote et al. 1994, Yaffee 1996, Grumbine 1997). "The very nature of ecosystems dictates that broad, cooperative, and integrated approaches to ecosystem management will have to be developed" (Gilbert 1988, p. 182).

Another principle of ecosystem management is to use appropriate biophysical boundaries for defining the planning area (Grumbine 1997). Watersheds have been identified as a suitable planning unit for many environmental planning issues, particularly for water resources (Williams et al. 1997). Many water resources such as water quality, water supply, and fish and wildlife habitat commonly extend beyond traditional jurisdictional boundaries. To address these issues often requires cooperation and coordination among the various entities in the watershed. Consequently, there is increasing interest in using collaboration in a watershed planning context. The Natural Resources Law Center (NRLC) at University of Colorado at Boulder recently
inventoried 76 collaborative planning efforts organized around watersheds in the western United States (NRLC 1996).

Despite the apparent benefits of collaboration, the Natural Resources Law Center’s report on watershed planning efforts eluded to a variety of problems facing these efforts (NRLC 1996). Collaboration can be hindered by a diversity of factors:

- When conflict is rooted in ideological differences
- When one stakeholder has power to take unilateral action
- When a suitable coordinator cannot be found.
- When the level of public concern is not enough to sustain a process
- When there is not enough time to work through a tough problem
- When participants feel they have better alternatives
- When circumstances change which alter the context of the common ground solution


One of the greatest barriers to this approach is that many groups consider collaboration with adversarial parties as an option that will lead to co-optation and will not participate in these efforts (Jones 1996). One of the main reasons that groups are unwilling to participate is the fear that their power base will be eroded away (McCloskey 1996).

Even when collaborative approaches are used, success is not guaranteed. The Owl Mountain Partnership in north central Colorado used collaborative planning to address big game and livestock issues (Chamberlin 1998). However, when the group attempted to address other more volatile issues, the collaborative effort broke down. Many planners are unsure of when or how to incorporate collaborative approaches in their planning effort.

Study Description

As pressures on natural resources multiply and the turbulent nature of the planning environment rises, the impetus for using collaborative approaches will most likely increase. Planners need a better understanding of collaborative planning to
make informed decisions about applying these approaches. In response to this need, a number of case study reports on collaboration in environmental planning have been published in the past several years (Wondolleck and Yaffee 1994, Dagget 1995, NRLC 1996, Yaffee 1996, Bernard and Young 1997). Most of these are journalistic in nature and primarily focus on intangible and tangible benefits of collaboration or stakeholder perceptions. While these reports serve a valuable purpose of describing these benefits, there is also a critical need to build a better understanding of the key elements that occur frequently in collaborative planning efforts (Andranovich 1995). By understanding the main elements in collaboration, planners can modify their traditional planning methodologies to create an environment that fosters cooperation.

Based on existing research, Selin and Chavez (1995a) developed a theoretical model for collaboration in environmental planning and management. The authors stress the necessity of evaluating the model in future research using interpretative case studies to fully capture the essence of collaboration in environmental management settings (Selin and Chavez 1995a, p. 194).

This thesis evaluates Selin and Chavez’s collaborative model using three case studies of watershed-based planning efforts. These case studies were selected because of the general consensus among the environmental planning community that watersheds are an appropriate planning unit for addressing water-based resources (NRLC 1996, Williams et al. 1997). In addition, watersheds frequently cross many political boundaries and therefore planning efforts in a watershed context often will require collaboration between the various entities.

Objectives. The objectives of this study are:

• To compare the Selin and Chavez’s model against three watershed-based collaborative planning projects using a case study analysis approach
• To assess whether the model encompasses the full range of considerations important to the establishment and operation of collaborative planning
• To identify any additional collaborative elements not originally described in the model
The overall goal of this thesis is to evaluate and refine Selin and Chavez's collaborative model for environmental planners. Because environmental planning is a process evolving from the unique characteristics of the place, any collaborative model will need to be tailored to meet the unique requirements of the situation.
CHAPTER II
COLLABORATIVE MODEL FOR ENVIRONMENTAL PLANNING

Introduction

As collaborative approaches become more commonplace in planning and management, researchers and practitioners have begun to synthesize the range of key issues involved in collaboration (Schein 1969, Friedmann 1973, Gray 1989, Waddock 1989, Urban Land Institute 1994). In general, there appears to be consensus among scholars about what it takes to get stakeholders to participate, explore, develop, and implement a plan (Gray 1989).

Synthesizing research, Selin and Chavez (1995a) propose a conceptual model for collaboration in environmental planning (Figure 2). Although this model appears linear, it is actually an iterative model with constant feedback loops as diagrammed on page 11.

The authors assert that the purpose of the model is not to replace other environmental planning methodologies but rather how to tailor existing methodologies to create a more cooperative planning environment (Selin and Chavez 1995a). To emphasize the collaborative elements in the model, common steps in traditional environmental planning methods such as inventorying resources are only addressed when collaborative elements influence these steps.

This model was selected for the case study analysis because the authors propose the model specifically for environmental planning and suggest testing the model in an environmental context using a case study format. The model is also based on some of the classic works in this field (McCann 1983, Gray 1985, Gray 1989, Waddock 1989).
Figure 2. Collaborative model for environmental planning. Adapted from Selin and Chavez 1995a and Gray 1989.
In addition, the model has been preliminary tested on tourism partnerships and seems to represent some of the key elements in collaboration (Selin and Chavez 1995b).

Because the original article lacks detailed information on specific components in the model, sources cited in the development of the model were reviewed to provide greater detail on the different components. In some cases, the terms and organization of Selin and Chavez's model were modified using Gray (1989) upon which their model was based. The author of this thesis accepts responsibility for any misinterpretation of Selin and Chavez's model. The following sections describe each of the model components.

**Antecedents**

It has been suggested that collaboration emerges out of an environmental context of antecedents before it can proceed toward more traditional planning steps (Waddock 1989). Antecedents provide the stimulus for collaborative planning such as incentives or a crisis. The importance of antecedents is often overlooked in traditional environmental planning methodologies, partly due to the fact that often planners cannot wait until antecedents become ripe for collaborative planning (Steiner 1991). Planners, however, should be aware of what may instigate a collaborative planning effort and in some cases, may be able to create the conditions necessary to move the planning effort forward. In this model, seven antecedents have been identified:

- Mandate
- Broker
- Leadership
- Common Vision
- Existing Networks
- Incentives
- Crisis

Collaboration can be mandated by legislation such as the National Forest Management Act, requiring public involvement in all phases of forest planning (Selin and Chavez 1995a). A second source of pressure can be derived from a third-party
broker or facilitator. This is illustrated by the non-profit group, Northern Lights Institute, which facilitated planning meetings on water resources in the Upper Clark Fork watershed in Montana (NRLC 1996). Visionary leadership can often lead to collaborative efforts. Two leaders of the Henry's Fork Watershed Council in Idaho have been cited as key factors for initiating and maintaining collaborative planning in that area (Johnson 1995). Collaboration can also result from a common vision or understanding that exists around an issue. In the early 1940’s, lobstermen on Monhegan Island, Maine, persuaded state government to allow a closed season on lobster in order to sustain the resource for future generations (Bernard and Young 1997).

Existing networks introduces stakeholders to each other and to the issues on which they may have common ground and be mutually dependent. Examples of networks include annual conferences on specific resource areas such as the South Platte River Forum, which seeks to improve communication and information sharing among parties with interests in the river basin (NRLC 1996). Incentives reward participants for working together, e.g. cost-share programs such as the Natural Resources Conservation Service’s Wetland Enhancement Program to restore wetlands on private lands.

A final antecedent is crisis, which can help focus parties to search for a solution. After major floods in the early 1990's, farmers along the Iowa River, Iowa started working with agencies on floodplain restoration issues (Johnson et al. 1999). Although these factors are not prioritized in the model, other researchers suggest crisis is often a necessary precondition for initiating collaborative efforts (e.g. Gray 1985, Waddock 1989). Evidence in environmental planning seems to support the idea that crisis is a main instigator for collaboration (Bingham 1986, Crowfoot and Wondolleck 1990, Bernard and Young 1997). Crisis resembles a double-edge sword and can either promote collaboration or cause parties to seek solutions through other means (Crowfoot and Wondolleck 1990).
Problem Setting

The primary goal of the problem setting phase is getting stakeholders to participate in the planning effort and is often the most difficult step in collaboration (Gray 1989). The model identifies several interrelated issues for this phase:

- Identify Stakeholders
- Consensus on Legitimate Stakeholders
- Recognize Interdependence
- Common Problem Definition
- Perceived Benefits to Stakeholders
- Perceived Salience to Stakeholders
- Identify Coordinator

Identify Stakeholders. Stakeholder identification is critical because a more comprehensive understanding of the issues can be achieved as more stakeholders share their perception of the issues and how the issues affect them (Friedmann 1973, Gray 1985). In addition, the lack of involvement from a particular group can sabotage the planning process at a later point (Friedmann 1977, Gray 1989). Planners should seek involvement from local individuals, different interest groups, and the various professional disciplines necessary to create a comprehensive picture of the situation. Efforts to convene all stakeholders simultaneously at the outset will likely be thwarted since planning issues evolve during the process. Inclusion of stakeholders should be viewed as an ongoing process (Gray 1985).

Consensus on Legitimate Stakeholders. Several researchers assert that part of the task of identifying stakeholders is determining who has a legitimate stake in the issues (Gray 1989). Stakeholders may disagree over who has legitimacy because of previous stereotypes and negative relationships with other stakeholders (Crowfoot and Wondolleck 1990). The planner's task is not to restrict stakeholder participation, but to develop awareness among the stakeholders of each other's legitimate stake in the planning process (Friedmann 1973, Susskind and Ozawa 1985).
Recognize Interdependence. There are usually two basic factors that influence stakeholder participation in collaborative planning efforts, interests and interdependence (Gray 1989, Logsdon 1991). The first factor affecting participation is that stakeholders must feel that the planning effort will bear directly on their interests. The second essential factor is stakeholders' perceived interdependence with other stakeholders. “Collaboration often requires a give and take among stakeholders that is designed to produce solutions that none of them working independently could achieve” (Gray 1989, p. 11). Planners can help promote stakeholder perception of interdependence by demonstrating how each others' concerns are intertwined (Gray 1989).

Perceived Benefits to Stakeholders. Closely related to interests and interdependence, stakeholders must perceive that the planning effort will result in positive outcomes for their interests in order to participate in the process (Fisher and Ury 1991). It has been suggested that stakeholders may also participate to minimize negative outcomes (Gray 1989).

Perceived Salience to Stakeholders. To proceed to the next level of collaboration, the issues must be salient enough for the stakeholders to maintain commitment to the planning effort (Waddock 1989). The stakeholders need to believe that the benefits will outweigh whatever costs are involved in participation (Gray 1985).

Common Problem Definition. Planners must find overlap in how the parties define the major issues of concern. A solid definition of the issues provides a foundation on which the plan alternatives can be developed (Gray 1989, Steiner 1991). Communication plays a central role in this process (Schein 1969, Friedmann 1973). Key elements for effective communication include face to face dialogue, common language, and mutual education (Friedmann 1973, Gray 1989).

Face to face dialogue. Face to face dialogue is a necessary component for effective communication (Friedmann 1973, Susskind and Ozawa 1985). Face to face dialogue can avoid the pitfalls that occur when stakeholders are not communicating directly with each other, such as leveling (simplification of information) and sharpening (exaggeration of
details) (Clark and Reading 1994). In addition, face to face dialogue between stakeholders is often essential for breaking down stereotypes between stakeholders (Carr et al. 1998). The planning process must be designed to allow for this dialogue through small group interaction (Gray 1989).

**Common language.** Terms used in any planning process can hold various meanings for different groups. To avoid miscommunication, key terms used in the planning effort should be defined at the onset of the project (Clark and Reading 1994). For instance, the term buffer zone can have many different meanings for stakeholders until the group defines the word for their specific use. In addition, over reliance on technical terms or jargon may confuse or alienate participants and should generally be avoided (Friedmann 1973).

**Mutual learning.** A primary goal of collaboration is to allow stakeholders to inform each other of their viewpoints because each stakeholder can only comprehend a few of the issues being addressed by the planning effort (Gray 1985). “In mutual learning, the planners and stakeholders learn from each other – the planner from the stakeholders’ personal knowledge, the stakeholder from the planner’s technical expertise” (Friedmann 1973, p. 185). From this interaction, a common definition of the issues can be created. However increased communication and joint learning may not always lead to collaborative solutions if significant value differences underlie the issues (Moote et al. 1997).

**Identify Coordinator.** In many environmental management efforts, the agency with the formal or legal authority for planning will lead the planning process. In other cases, particularly with ecosystem management or watershed planning, there may not be a clear leader since the planning area may cover several jurisdictional boundaries. In either case, characteristics of the designated coordinator play a key role in collaboration (Gray 1989). The coordinator must be acceptable to the stakeholders which often implies that the coordinator maintain a neutral position in the planning process (Carpenter and Kennedy 1988). The planner will often serve in the capacity of negotiator and mediator in controversial planning situations. He or she should be trained or familiar with conflict management techniques (Campbell and Floyd 1996). In addition, the
coordinator should be able to fabricate new and innovative approaches to problems (Westley 1995).

**Direction Setting**

After the problem setting phase, collaboration evolves into the direction setting phase where participants identify and develop a common sense of purpose (McCann 1983, Gray 1989, Selin and Chavez 1995a). From this common ground, plan alternatives are developed.

Key issues for this phase include:

- Set Ground Rules
- Establish Goals
- Joint Information Search
- Organize Sub-groups
- Explore Options
- Reach Agreement

**Set Ground Rules.** Because planning often addresses controversial issues, ground rules for meetings are often needed to guide participant conduct (Fisher and Ury 1991). Ground rules should promote honest but diplomatic dialogue that does not threaten stakeholder relationships (Gray 1989). For most situations, it is best to keep the rules simple so they promote the free exchange of information and ideas (Schwarz 1989).

**Establish Goals.** Establishing goals often involves two components; a vision statement, and goals or objectives (Maser 1996). The vision statement provides a concise description of what the participants believe should be the future condition of the pivotal environmental resources and must be agreed upon by everyone in the planning effort. Goals or objectives are specific statements describing how the desired future condition or vision will be achieved.
Maser (1996) offers several attributes of good objectives:

- Specify a specific outcome
- Specify a timeframe to reach the desired outcome
- Frame objectives in positive terms
- Make objectives specific and measurable for later evaluation
- Phrase objectives in a way that describes what is desired without prescribing a specific solution

Joint Information Search. An important ingredient in building a collaborative planning effort is reaching agreement on the scientific data underlying the issues and proposed solutions (Gray 1989). In many instances, technical data is used by stakeholders as an adversarial weapon against other stakeholders (McCreary et al. 1992). With adversary science, the focus is on undermining the credibility of the other group's data or experts in order to promote their group's position (McCreary et al. 1992).

Joint information search may help avoid the problem with adversary science (Susskind and Ozawa 1985, Gray 1989, McCreary et al. 1992). From the beginning, the group should discuss and agree upon what kind of technical knowledge is pertinent to the specific planning project (Ozawa 1996). In addition, assumptions, boundaries, and methods used to collect the information should be established and agreed upon before inventorying resources. By participating in the collection of the information, stakeholders are less likely to disagree over the data because there is a better understanding of the information and how it was derived (McCreary et al. 1992, Ozawa 1996). This process usually ensures that data is presented in an accessible and understandable format and improves the overall scientific basis used in environmental planning (Manring 1995). In addition, the participants can better guarantee the information will be oriented specifically for plan development and decision-making and can avoid problems associated with "collecting data for data's sake" (McCreary et al. 1992).
Organize Sub-groups. Sub-groups may need to be created if the number of issues to be discussed is large or the number of stakeholders exceeds the 12 to 15 member limit for effective group functioning (Gray 1989). This is a likely occurrence in environmental planning since the group may be tackling several issues. Organizing sub-groups allows the group to focus on several issues simultaneously.

Explore Options. Exploring options and developing plan alternatives is a fundamental step in any environmental planning process (McHarg 1969, Friedmann 1973, Steiner 1991). Because environmental planning can raise sensitive issues, stakeholders tend to focus on positions rather than interests or concerns when exploring options (Fisher and Ury 1991). A group's position may be a no-growth policy, although their real interests and concerns are about water quality problems from faulty septic tank systems, untreated runoff from impervious cover, etc. associated with development. “Behind opposed positions lie shared and compatible interests as well as conflicting ones” (Fisher and Ury 1991, p. 42). The planner’s task is get to the interests that define problems so that the compatible underlying concerns can be determined. From this common foundation, plan alternatives that provide mutual gains for all stakeholders can theoretically be developed (Fisher and Ury 1991).

Reach Agreement. After plan alternatives have been developed, the group will need to establish criteria for evaluating and selecting the preferred alternative (Fisher and Ury 1991, Urban Land Institute 1994). The alternatives should be compared to benchmark conditions to evaluate their ability to solve problems, meet quality standards and stakeholders' objectives (Steiner 1991). Matrices with objective criteria are a visually understandable and efficient method of comparing alternatives (Toth 1972, Steiner 1991, Johnson et al. 1999). Because ecological and social systems are complex and dynamic, plan alternatives should also support an adaptive management approach (Toth 1972, Grumbine 1997). Stakeholder agreement on the selected plan will probably be more resilient around a plan that incorporates adaptive management (Westley 1995).
Final selection of the preferred plan will depend on the specific context and may be either the responsibility of a particular agency/stakeholder or the group as a whole. Research on collaboration suggest that consensus should often be utilized to make planning decisions (Carpenter and Kennedy 1988, Innes 1996). Consensus does not imply that everyone agrees with all aspects of the plan, but that they do not disagree enough to warrant opposition to the overall plan selected (Carpenter and Kennedy 1988). Each party retains the right to veto the plan but bears the responsibility to provide alternative components for the disputed issues (Susskind and Cruikshank 1987). The goal of consensus decision-making is to select a plan supported by all stakeholders thereby increasing the probability the plan can be successfully implemented (Carpenter and Kennedy 1988). Other evidence suggest that consensus can be a major stumbling block in collaborative planning efforts. Consensus may result in the lowest common denominator that the group can agree upon which rarely benefits the resources (Moote et al. 1997). The group needs to determine which decision-making method is appropriate for their planning effort and agree to it (Gray 1989).

Implementation

Carefully forged plans can fall apart after agreement is reached unless attention is given to several issues during the implementation phase (Gray 1989). These issues include:

• Formalizing Relationships
• Dealing with Constituencies
• Assigning Roles
• Elaborating Tasks

Formalizing Relationships. Research on collaborative planning processes suggests that effective groups typically adopt some formalized structure during the implementation phase (McCann 1983, Gray 1989). This may be particularly true for grassroots planning efforts that initially emerge without a structured framework (NRLC 1996). This can include creating a formal charter, a memorandum of agreement (MOA) or other less formal structures.
Formalization serves several key purposes (McCann 1983):

- It demonstrates to the general public that this is an organized group of stakeholders with a specific function
- It helps to maintain a sense of shared direction among participants
- It generates a sense of responsibility and commitment to the planning process; such that participants tend to feel an obligation to accomplish objectives
- It is often necessary to acquire grants and other sources of funding

Dealing with Constituencies. Participants in environmental planning projects are formal or informal representatives of larger interest groups (Gray 1989). These representatives must continually inform their constituencies of the planning effort so that the larger group understands the rationale leading to the preferred alternative (Carpenter and Kennedy 1988, Gray 1989). Describing all of the dynamics (interdependence, mutual learning, etc.) that occurred during the planning effort can be a difficult task for participants (Westley 1995). However, uniformed constituents can be puzzled by the selected alternative and often they will offer little support during implementation (Carpenter and Kennedy 1988).

Roles Assigned. Individuals and groups sometimes avoid responsibility for implementation as a way of limiting accountability and liability to themselves and their constituents (Yaffee 1997). However, information on collaboration implies that responsibility for plan implementation must be shared by all stakeholders to promote successful implementation (Tipple and Wellman 1989, Kemmis 1990, Potapchuk 1991). When specific roles are assigned to stakeholders, a sense of ownership and accountability for the plan is created (Carpenter 1991).

Tasks Elaborated. Tasks for the various stakeholders must be clearly communicated and elaborated upon because ambiguous tasks are less likely to be completed (Waddock 1989). In most cases, tasks and responsible parties should be identified in writing (Gray 1989).
Monitoring and Evaluation

Some of the more generic collaboration models ignore the crucial steps of monitoring and evaluation and the subsequent adjustment of the problem definition, vision statement, objectives, and plans based on the results (McCann 1983, Gray 1989, Urban Land Institute 1994). In environmental planning, many of the interacting variables are not always understood, and therefore, plans often need to be adjusted based on monitoring and evaluation data which Selin and Chavez termed as "Outcomes" in their model. The "Outcomes" component was renamed Monitoring and Evaluation, which is familiar terminology for planners and better connotes the concept of an on-going cyclic process.

Key components of this phase include:

- Implementation Strategies and Impacts
- Compliance
- Adaptive Management

Implementation Strategies and Impacts. Stakeholders need to come to an agreement on the methods to monitor and evaluate the implementation strategies in the plan. Implementation strategies are the techniques used to implement the plan such as zoning regulations, cost sharing, conservation easements, cluster development to list a few. The planning group needs to evaluate the effectiveness of these strategies to determine if these measures are achieving the group's objectives. Monitoring and evaluation protocols need to be established prior to implementation or else there may be a tendency to modify the monitoring and evaluation protocols to capture the positive elements of the implemented plan and ignore the less successful elements.
Compliance. A system of monitoring and ensuring compliance with the plan must be developed that is acceptable and realistically enforceable (Carpenter and Kennedy 1988, Gray 1989). During implementation, the plan may be susceptible to collapse if compliance is not ensured, especially if relationships among stakeholders have been historically characterized by a lack of commitment and mistrust (Gray 1989, Wondolleck and Yaffee 1994).

In many instances, compliance will be required on two levels. Compliance will be necessary to meet any regulatory standards affecting the planning effort. In addition, some type of compliance may be required for other group-initiated objectives that are not influenced by regulations. Compliance measures may include a variety of methods including regulations, fines, and incentives (Steiner 1991).

Adaptive Management. Because ecological and social systems are complex, adaptive management is often considered necessary in environmental planning to incorporate new information, as it becomes available (Grumbine 1997). This is the key step where information gained from the monitoring and evaluation program is funneled back into the planning process to adjust the problem definition, vision statement, objectives, and plan components as necessary (Friedmann 1973).

In addition, there are certain periods when systems are more susceptible to influence such that planners can increase their effectiveness by understanding the concept of timing (Holling 1995). Some implementation techniques may gain or lose acceptability after a series of events. For instance, as open space is encroached upon, a community may be more willing to move from a regulatory role of relying on zoning measures to protect open space to a more active role involving acquisition of parcels. The adaptive nature of this model suggests that the planning group can respond to and take advantage of these changes.
Methods

The case study analysis in this chapter seeks to evaluate the usefulness of Selin and Chavez's model described in Chapter II to illustrate collaborative elements in environmental planning. Yin's (1993, 1994) work on case study methodology provided a foundation for this study and has been utilized in building other case studies in environmental planning (Averitt et al. 1994). To test the applicability of the model in different environmental planning efforts, a multi-case study approach was selected. The main question this analysis seeks to answer is:

- Does Selin and Chavez's model encompass the full range of considerations important for the establishment and operation of collaborative planning within the case studies selected?

Criteria for Group Selection. A criteria-based procedure was developed to select existing planning projects to be used for case studies. The criteria included:

- Willingness to participate
- Projects that incorporate collaborative elements
- Regional proximity with the Intermountain Region
- Watersheds used as planning boundaries
- Mixed land ownership
- Planning issues involve water-related resources

Planning projects within the Intermountain Region were selected to provide a similar geographic context and to facilitate data collection. Watershed-based projects with mixed land ownership were selected because they often cross several political boundaries. Consequently, watershed-based projects often require collaboration because there is rarely one single
entity that has complete jurisdiction for decisions made in a watershed. In addition, watersheds are recognized as suitable planning units for addressing many environmental issues particularly water resources (NRLC 1996, Williams et al. 1997). To enhance the ability to draw comparisons between the individual case studies, planning efforts involving water-related resources were used as another unifying element.

General information was collected on twelve watershed-based planning efforts in the Intermountain Region through a literature search and recommendations provided by various planning professionals. From this initial sample, three planning efforts were chosen for case studies based on the selection criteria:

- Animas River Stakeholder Group, CO
- Little Bear River Group, UT
- Willow Creek Project, ID

Data Collection and Analysis Methods. During the fall and winter of 1998-1999, the author visited each watershed to collect data on the collaborative planning effort. Data collection principles used in this analysis included:

- Multiple sources of data
- Triangulation or cross referencing of data
- Chain of evidence

Sources of data were derived from meeting summaries, newspaper articles, letters, planning documents, and interviews with the coordinators of each planning effort. An interview approach was selected instead of a survey method for several reasons. A survey method has the primary advantage of allowing for large sample sizes but tends not to reveal detailed information for each element surveyed. In contrast, an interview approach is more intensive and time-consuming thus not readily allowing for large sample sizes. However, interviews do provide for a richness of information that can not be easily gained in a survey approach. Interviews were determined to be the most effective data collection method to capture the range of elements that are
important in collaborative planning. A total of four interviews were conducted, each lasting an average of 60 minutes. This limited interview sample was deemed appropriate since the thesis is focusing on issues that most directly affect a person coordinating a watershed planning effort.

Multiple sources of information allowed for triangulation or cross-referencing of the data, which help verify conclusions and control for possible biases caused by the researcher being the sole observer. The collected data was compiled into individual case study databases to keep information organized for a thorough and efficient analysis. As suggested by standard protocols for case study analysis, a 'chain of evidence' was maintained by referencing each step in the collaborative model with the specific data sources; i.e., interviews, planning meeting summaries, etc. (Yin 1993). This technique was utilized to provide a clear connection between the analysis conclusions and the data these conclusions were based upon.

Evaluation of Individual Case Studies. Figure 3 provides a comparison of key characteristics between the individual case studies. In the following sections, each study is presented separately in the following format:

- State location and watershed map
- Stakeholder list
- Background narrative
- Evaluation figures of steps in the collaborative model
- Summary

In the evaluation figures, each element in the collaborative model (Figure 2) was given a level of importance ranking of low, moderate, or high. These rankings record the importance that specific variable contributed to the particular planning effort. These rankings were based on several analysis techniques.
Pattern matching was used in the data analysis which involves comparing an empirically based pattern with a predicted one (Miles and Huberman 1984). The collaborative model provided a pattern to compare the date derived empirically from the case study. If the patterns coincide, the results strengthen the validity of the model to represent that particular element of collaboration. These variables were given a higher ranking.

Another method involved tabulating the frequency a particular element occurred in the different sources of data. A higher ranking was given to variables that occurred frequently in the data sources. A higher ranking was also given to elements that were present in more than one data source.

Some data sources were given a stronger weight in the analysis. Comments from the planners' interviews were given additional weighting since the thesis is focused on revealing information that is important for persons coordinating collaborative planning efforts.

In the evaluation figures, the primary references are listed upon which the rankings were based. Preceding each figure is a simplified diagram of the collaborative model with the specific planning phase referenced by shading.

In Chapter IV, the evaluation figures will be summarized and comparisons between case studies developed. Based on these case studies, it will be determined if the model describes the full range of considerations important for collaboration in environmental planning. Modification of the model will be provided in Chapter IV.
<table>
<thead>
<tr>
<th>Issue</th>
<th>Animas River Stakeholder Group</th>
<th>Little Bear River Group</th>
<th>Willow Creek Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year Started</td>
<td>1994</td>
<td>1989</td>
<td>1996</td>
</tr>
<tr>
<td>Project Initiators</td>
<td>CO Dept. of Health and Environment</td>
<td>Blacksmith Fork Soil Conservation District and Bear River RC&amp;D</td>
<td>Private Landowner Pacific Rivers Council</td>
</tr>
<tr>
<td>Coordinators</td>
<td>1 full-time coordinator – non agency</td>
<td>2 full-time coordinators – agency</td>
<td>No employed coordinator</td>
</tr>
<tr>
<td>Watershed Size</td>
<td>248,952 acres in upper watershed</td>
<td>196,432 acres</td>
<td></td>
</tr>
<tr>
<td>Land Use</td>
<td>Cropland-10%, Forestry-45% Grazing-25%, Pasture-10% Mining-5%, Urban-5%</td>
<td>Cropland-40%, Forestry-10% Grazing-40%, Pasture-10%</td>
<td>Cropland-5%, Grazing-90% Pasture-4% Mining-1%</td>
</tr>
<tr>
<td>Land Ownership</td>
<td>Federal-88%, State-1%, Private-11%</td>
<td>Federal-15%, State-5%, Private-80%</td>
<td>Federal-70%, State-2%, Private-28%</td>
</tr>
<tr>
<td>Population¹</td>
<td>564</td>
<td>12,000</td>
<td>50</td>
</tr>
<tr>
<td>Major Focus</td>
<td>Water quality</td>
<td>Water quality</td>
<td>Watershed restoration and education</td>
</tr>
<tr>
<td>Primary Problems</td>
<td>Heavy metals from historic mines</td>
<td>Streambank erosion, nutrients and bacteria from animal feeding operations</td>
<td>Sediment inputs, degraded riparian condition</td>
</tr>
<tr>
<td>Secondary Focus</td>
<td>Wildlife habitat, recreation, fisheries</td>
<td>Wildlife habitat, recreation, fisheries</td>
<td>Water quality</td>
</tr>
<tr>
<td>Financial Support</td>
<td>Local-20%, State-10%, Federal-50%, Private-20%</td>
<td>Federal-70%, Private-30%</td>
<td>Federal-40%, Private-60%</td>
</tr>
<tr>
<td>Amount Spent¹</td>
<td>$2 million</td>
<td>$5 million</td>
<td>$123,000</td>
</tr>
</tbody>
</table>

¹ Approximate Number

San Juan County, CO

Cache County, UT

Camas County, ID

Figure 3. Case study characteristics.
LEGEND

- National Forest Service - 71%
- Bureau of Land Management - 17%
- State Land - 1%
- Private Lands - 11%

Note: Not all of San Juan County is shown in watershed map

Figure 4. Upper Animas River Watershed. Adapted from BLM Surface Management Status Map: Silverton. 1993.
Participants Involved in Animas River Stakeholder Group:

- U.S. Bureau of Land Management
- U.S. Bureau of Reclamation
- U.S. Corps of Engineers
- U.S. Environmental Protection Agency
- U.S. Forest Service
- U.S. Geological Survey
- CO Division of Public Health and Environment
- CO Division of Minerals and Geology
- CO Division of Wildlife
- CO Geological Survey
- Southern Ute Tribe
- San Juan County Commissioners
- San Juan County Historical Society
- Town of Silverton
- Silverton Public Schools
- Southwest Colorado Water Conservation District
- Friends of the Animas River
- CO River Watch
- Silver Wing Mining
- Sunnyside Gold
- Private landowners and citizens

Bold type indicates stakeholders with continuous involvement.

Background. The Animas River Basin is located in southwestern Colorado and encompasses the communities of Durango and Silverton (Figure 4 and 5). The river originates in the San Juan Mountains and flows south into New Mexico where it joins the San Juan River. For many years, elevated levels of zinc, cadmium, copper, aluminum, iron, and other heavy metals have degraded water quality in many reaches of the upper basin above Silverton (Broetzman 1996).

The water quality problem was identified as being related to historic mining and natural mineralization in the area (Besser et al. 1998).

Figure 5. View towards Silverton, CO.
Photographer: ARSG
The upper Animas River Basin has a long history of metal mining with many of the mines dating back to the 1800's (Figure 6). Historically, the entire economy in San Juan County was based on mining. Mining peaked in the early 1900's and slowly decreased over the following decades and is now being replaced by tourism (Broetzman 1996). In 1991, the last large mining operation closed. It was the only large facility in the area that was regulated under a state-issued point discharge permit. Most mines in the area are abandoned and predate the discharge permit system (Broetzman 1996).

Due to the lack of detailed information on the water quality impacts within the upper basin, the Water Quality Control Division (WQCD), a division of the Colorado Department of Public Health and Environment (CDHE), monitored the area from 1991 through 1993 (NRLC 1996). Biological and water quality sampling revealed that most of the upper basin was devoid of fish life and suffered from toxic concentrations of metals, particularly zinc and copper (Besser et al. 1998) (Figure 7). In addition, even though the water quality improves on the main stem of the river downstream of Silverton, sampling results showed limited levels of aquatic life for much of the distance towards Durango (Broetzman 1996).

Figure 6. Abandoned mine in the Animas River Basin. Source: ARSG

Figure 7. Mine runoff in the Animas River Basin. Source: ARSG
Group Beginning. With this information, WQCD faced the challenge of developing a cleanup strategy. The extensive and complex nature of the heavy metals sources, the complex ownership of lands, and lack of a clear regulatory mechanism, made it clear to the WQCD that a simple, top down solution was not feasible (Broetzman 1996). Instead, WQCD decided to use a cooperative approach that would involve stakeholders in the Basin. In fall of 1993, WQCD asked the Colorado Center for Environmental Management (CCEM) to form a stakeholders group for the purpose of addressing the metal contamination problem (Draper 1994a).

CCEM is a nonprofit organization devoted to finding workable approaches to environmental restoration and hazardous waste issues (CCEM 1997). Operating with grant funds from the U.S. Department of Energy, CCEM convened the first meeting of interested parties in February 1994, which evolved into the Animas River Stakeholder Group (ARSG). An acrimonious mood prevailed during the early sessions due to apprehension and distrust with CCEM and Colorado Department of Public Health and Environment. In addition, there was significant fear of EPA, which could impose regulatory action in the Basin (Belsten 1996). In spite of these concerns, local interests felt obligated to participate in the planning process because of their fear that 1) the State would proceed with or without their involvement and/or that 2) EPA would designate the area as a Superfund site (Broetzman 1996, Draper 1994b).

Over the next few months, the group hammered out their goals and objectives (Figure 8). By September 1994, ARSG was ready to address the Colorado Water Quality Control Commission (Commission) at their triennial hearings to review water quality standards for the Animas River (Draper 1994c). ARSG requested that Commission not impose more restrictive changes in water quality standards until ARSG had the opportunity to more thoroughly analyze the problems and develop solutions.
Goals:

1) To monitor the water quality and aquatic habitats of the Animas River and its tributaries and provide access to the public of this information.

Objectives for Goal 1:
   a) Determine which parameters presently limit aquatic life and habitats
   b) Determine levels of reduction necessary to substantially improve aquatic life.

2) To analyze all water quality information within the Upper Animas watershed to determine the extent and effects of metal contamination from natural, geologic processes and historic mining, and identify major source locations.

3) To determine the feasibility of remediation of sites discovered to be major contributors of metals or related contaminants.

4) To use information from monitoring and feasibility determinations to develop a basin wide remediation plan consisting of cost estimates, possible technologies, and probable candidate sites.

Objectives for Goal 4:
   a) To reduce metal concentrations in the Animas River to a level which will maximize aquatic life while maintaining costs acceptable to the general public.
   b) To remain flexible in allowing prioritization of sites to change in response to technological developments, availability of funds, owner cooperation, regulatory changes, and other factors which may be beyond the control of ARSG.

5) To encourage private and public entities to reduce the amount of contaminates entering the Animas River from abandoned mine sites through the following means:

Objectives for Goal 5:
   a) Educating the public concerning environmental issues involved
   b) Assisting in the development of cost effective remediation technologies
   c) Encouraging the implementation of demonstration technologies
   d) Assisting in the procurement of funds necessary to attain the goals and objectives of ARSG, including funds for voluntary site remediation.

6) To affect changes in current regulations and permitting procedures which would encourage voluntary approaches to remediation.

Figure 8. Animas River Stakeholder Group goals.
In February 1995, the Commission adopted stricter water quality standards but deferred implementation of these standards until March 1998 to allowed ARSG to develop a basin strategy for cleanup of mine-related sites.

**Planning Overview.** During late 1995, CCEM turned over leadership responsibilities to a recently hired local watershed coordinator. Under the guidance of the coordinator, ARSG initiated a three-step watershed process of monitoring, feasibility and site characterization, and implementation (Broetzman 1996) (Figure 9). Three open work groups were established which meet on a monthly basis to coordinate their activities. The monitoring group coordinates water quality data collected by a variety of participants including Silverton Schools through a Riverwatch Program. The feasibility group prioritizes sites for cleanup and reviews remediation techniques that may work in the area. The implementation group is working with several landowners to cleanup mine sites. The group is also seeking to add a "Good Samaritan" clause in the Clean Water Act, minimizing liability exposure when a third party group, such as ARSG enters an abandoned site to make environmental improvements (ARSG 1998b).

Although there are workgroups, there is no hierarchical structure in ARSG. As a result of the frequency of meetings and the lack of a rigid hierarchical group structure, interaction between the various groups is substantial and productive (Simon 1998). In addition, the coordinator for the effort promotes an interdisciplinary problem-solving approach by questioning participants about how their information or research is related to each other’s data. This questioning process forces stakeholders to think more holistically and helps avoid problems with compartmentalization of information.

ARSG is funded from a variety of sources at the local, state, and federal levels including EPA Section 319 and Headwater Mine Waste grants (Broetzman 1996). Federal agencies such as the Forest Service (FS), Bureau of Land Management (BLM), and United States Geological Survey (USGS) are contributing services and technical support (NRLC 1996). In addition, ARSG convinced the Department of Interior to allow their Abandoned Mined Land Initiative funds to be
used for studies and remediation on private lands that impact FS and BLM lands (Simon 1998). This change in federal land policy is significant since it illustrates a change in focus from a project scale to a watershed scale.

In November of 1997, the Commission granted ARSG a three year extension of ambient water quality conditions in support of the group’s effort, thus allowing additional time to complete current studies and make final recommendations to the Commission by the year 2001 (Draper 1997). At that time, the Commission will use the findings to prepare water quality standards and stream classifications for the Animas River. Remediation activities will be an ongoing process, as funding and other resources become available.

**Model Evaluation.** On the following pages, Figures 10 through 14 address each phase of the collaborative model in relation to the Animas River Stakeholder Group planning process.

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Figure 9. Animas River Stakeholder Group organizational diagram.
<table>
<thead>
<tr>
<th>Antecedents</th>
<th>Primary References</th>
<th>Level of Importance</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandate</td>
<td>Broetzman 1996 Draper 1994a</td>
<td><img src="icon.png" alt="High" /></td>
<td>Although, the Water Quality Control Department did not mandate collaboration, they did strongly support it.</td>
</tr>
<tr>
<td>Broker</td>
<td>Draper 1994a Broetzman 1996</td>
<td><img src="icon.png" alt="Moderate" /></td>
<td>Colorado Center for Environmental Management (CCEM) served as a neutral, third party broker during the first two years.</td>
</tr>
<tr>
<td>Leadership</td>
<td>Broetzman 1996</td>
<td><img src="icon.png" alt="Moderate" /></td>
<td>Initially, CCEM also served in a leadership role. A local watershed coordinator was selected later.</td>
</tr>
<tr>
<td>Common Vision</td>
<td>Draper 1994b</td>
<td><img src="icon.png" alt="Low" /></td>
<td>Common vision was not present initially during the formation of the group.</td>
</tr>
<tr>
<td>Existing Networks</td>
<td></td>
<td><img src="icon.png" alt="Low" /></td>
<td>Did not appear to be a key factor.</td>
</tr>
<tr>
<td>Incentives</td>
<td>Belsten 1996 Broetzman 1996</td>
<td><img src="icon.png" alt="Moderate" /></td>
<td>There was a strong incentive to work collaboratively to avoid Superfund designation and a potentially more costly cleanup approach.</td>
</tr>
<tr>
<td>Crisis</td>
<td>Broetzman 1996</td>
<td><img src="icon.png" alt="Low" /></td>
<td>Water quality was degraded enough to be a crisis, however, not critical enough to force an immediate attempt at a solution.</td>
</tr>
<tr>
<td>Other- Lack of Data</td>
<td>Draper 1994c</td>
<td><img src="icon.png" alt="Moderate" /></td>
<td>The only issues participants agreed on in the beginning were the lack of data and understanding of the problems in the watershed.</td>
</tr>
<tr>
<td>Other- Threat of Regulations</td>
<td>Draper 1994a Broetzman 1996</td>
<td><img src="icon.png" alt="High" /></td>
<td>The Water Quality Control Commission had authority to regulate water quality and the Animas River was due for a reclassification. The potential threat of regulatory action prompted stakeholders to participate in the planning process.</td>
</tr>
</tbody>
</table>

Level of Importance:  ![High](icon.png) High  ![Moderate](icon.png) Moderate  ![Low](icon.png) Low

Figure 10. Antecedents – Animas River Stakeholder Group.
Recognizing interdependence was a key factor, which developed over time as the group worked together.

The coordinator purposefully brings in new stakeholders to ensure that a diversity of viewpoints is expressed.

Stakeholders initially wanted to limit the group to participants who were at the first couple of meetings. Some participants also questioned other’s involvement in the process. In both cases, the coordinator was able to convince the group to keep the participation process completely open.

The main perceived benefit is the ability to participate in the process and have a voice in the determination of water quality standards and stream classifications.

The importance of water quality appeared to be a moderately salient issue with many of the participants since everyone relies on clean water.

Face to face dialogue and common language allowed stakeholders to see the problems from each other’s perspective.

A non-agency coordinator was considered essential in this example due to contentious nature of the issues. It was also believed that the coordinator should have some type of formal or informal training in mediation and consensus.

Level of Importance:  
- High 
- Moderate 
- Low

Figure 11. Problem setting – Animas River Stakeholder Group.
Ground rules were initially resisted by the group but were later adopted. The rules were moderately important during the early stages of the process but became less necessary later on as stakeholders began to trust and respect each other more.

The mission statement and goals were important for establishing purpose and credibility with people not directly involved in the process.

Due to the intensity of data collection in this project, joint data collection was essential to avoiding arguments over results. Sampling methods are agreed upon before data collection. Also, the group carefully decides beforehand what type of data would be important for decision-making purposes.

ARSG created three sub-groups to facilitate their three-step watershed planning approach.

ARSG is developing criteria to prioritize sites for remediation, but not remediation plans since each site is different.

Consensus is considered essential to the process and prevents stakeholders from trying to stack the odds in their favor as with a voting type of process. Consensus also helps maintain a manageable group size.

<table>
<thead>
<tr>
<th>Issues</th>
<th>Primary References</th>
<th>Level of Importance</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Ground Rules</td>
<td>Simon 1998, Belsten 1996</td>
<td>●</td>
<td>Ground rules were initially resisted by the group but were later adopted. The rules were moderately important during the early stages of the process but became less necessary later on as stakeholders began to trust and respect each other more.</td>
</tr>
<tr>
<td>Establish Goals</td>
<td>ARSG 1998b, CCEM 1995</td>
<td>●</td>
<td>The mission statement and goals were important for establishing purpose and credibility with people not directly involved in the process.</td>
</tr>
<tr>
<td>Joint Information Search</td>
<td>ARSG 1998a, Simon 1998</td>
<td>●</td>
<td>Due to the intensity of data collection in this project, joint data collection was essential to avoiding arguments over results. Sampling methods are agreed upon before data collection. Also, the group carefully decides beforehand what type of data would be important for decision-making purposes.</td>
</tr>
<tr>
<td>Organize Sub-groups</td>
<td>Simon 1998, ARSG 1998a</td>
<td>●</td>
<td>ARSG created three sub-groups to facilitate their three-step watershed planning approach.</td>
</tr>
<tr>
<td>Explore Options</td>
<td>Simon 1998, ARSG 1998a</td>
<td>●</td>
<td>ARSG is developing criteria to prioritize sites for remediation, but not remediation plans since each site is different.</td>
</tr>
<tr>
<td>Reach Agreement</td>
<td>Simon 1998, CCEM 1997</td>
<td>●</td>
<td>Consensus is considered essential to the process and prevents stakeholders from trying to stack the odds in their favor as with a voting type of process. Consensus also helps maintain a manageable group size.</td>
</tr>
</tbody>
</table>

Level of Importance: ● High  ○ Moderate  ○ Low

Figure 12. Direction setting – Animas River Stakeholder Group.
After the first meeting, the Animas River Stakeholder Group (ARSG) was formed. Organizing into a formal group was essential to convince the WQCC that ARSG could effectively deal with the water quality issues. Formalization also was necessary to secure grants.

Initially, ARSG was criticized by not keeping the larger public and other constituencies informed who did not attend the regular meetings. ARSG responded by holding informal discussions at the public library and tried to encourage more public participation in the general meetings by keeping the issues more policy orientated while delegating the technical issues to the work groups. The group recently initiated a web site to promote communication and feedback.

Through the working groups, individuals were assigned specific tasks. The working group sessions often closed with a clarification of what tasks were to be accomplished by the next meeting. This seems to keep participants focused since meetings are monthly.

<table>
<thead>
<tr>
<th>Issues</th>
<th>Primary References</th>
<th>Level of Importance</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formalizing Relationships</td>
<td>ARSG 1998a, Simon 1998</td>
<td>•</td>
<td>After the first meeting, the Animas River Stakeholder Group (ARSG) was formed. Organizing into a formal group was essential to convince the WQCC that ARSG could effectively deal with the water quality issues. Formalization also was necessary to secure grants.</td>
</tr>
<tr>
<td>Dealing with Constituencies</td>
<td>Broetzman 1996, Simon 1998, ARSG 1998a</td>
<td>•</td>
<td>Initially, ARSG was criticized by not keeping the larger public and other constituencies informed who did not attend the regular meetings. ARSG responded by holding informal discussions at the public library and tried to encourage more public participation in the general meetings by keeping the issues more policy orientated while delegating the technical issues to the work groups. The group recently initiated a web site to promote communication and feedback.</td>
</tr>
<tr>
<td>Roles Assigned</td>
<td>ARSG 1998a</td>
<td>•</td>
<td>Through the working groups, individuals were assigned specific tasks.</td>
</tr>
<tr>
<td>Tasks Elaborated</td>
<td>ARSG 1998a</td>
<td>•</td>
<td>The working group sessions often closed with a clarification of what tasks were to be accomplished by the next meeting. This seems to keep participants focused since meetings are monthly.</td>
</tr>
</tbody>
</table>

Level of Importance:  
- • High  
- ○ Moderate  
- ○ Low  

Figure 13. Implementation – Animas River Stakeholder Group.
### Issues

<table>
<thead>
<tr>
<th>Implementation Strategies and Impacts</th>
<th>Simon 1998</th>
<th>Level of Importance</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><img src="#" alt="High" /></td>
<td>ARSG is using both biological and chemical monitoring methods to establish a very comprehensive baseline. ARSG is also devising a menu of remediation techniques that can be applied to specific sites. The impacts of these techniques will be assessed by the water quality monitoring program that is already in place.</td>
</tr>
</tbody>
</table>

| Compliance                           | ARSG 1998b | ![High](#)           | Final water quality standards and stream classifications will be established when ARSG submits its' report to the WQCC. Enforcement of these standards will be the responsibility of the WQCD. In addition, ARSG hopes that working together for several years has created a vested interest in seeing the remediation projects implemented. Indeed, this may be the case since some volunteer projects have been implemented and other landowners are interested in doing volunteer remediation projects. |

| Adaptive Management                   | Simon 1998 | ![High](#)           | Adaptive management is deemed necessary by ARSG because the technology for the passive treatment and remediation of mine sites is still in its infancy. Monitoring and evaluation will be essential to determine which remediation options are the most effective. |

#### Level of Importance:

- ![High](#) High
- ![Moderate](#) Moderate
- ![Low](#) Low

Figure 14. Monitoring and evaluation – Animas River Stakeholder Group.
Summary. Some of the accomplishments to date include:

- Department of Interior selected the Animas as one of two national model watersheds for the Abandoned Mined Land Initiative Program
- Characterized all major inputs from mine sources
- Prioritized sites for remediation in the Mineral Creek drainage
- Developed several studies to determine the limiting factors and biological potential for aquatic life in the Animas basin
- Developed programs to monitor results from implemented remediation projects
- Assisted several landowners with voluntary cleanup of their properties

Water quality in the Animas River has not changed dramatically since only three mine sites have been remediated. However, there is some biological evidence that aquatic conditions are improving since the first ever “young of the year” (naturally reproducing) trout have been recorded both in the upper and lower Animas River (Draper 1997, Simon 1998).

Obstacles to progress. According to ARSG participants, a major disruptive force in the process has been the continual “threat” that EPA may utilize the Superfund program in the basin (Simon 1998). While the EPA sees the Superfund program as a potential positive factor in the clean-up process, ARSG has significant fears that Superfund would hinder their work because it could add another bureaucratic level to the process. In particular, ARSG is concerned with the cost recovery aspect of Superfund since landowners may have to pay for clean-up even if they were not part of the cause (Silverton Standard 1998). Recognizing this perception, the Region 8 EPA director assured the group that as long as it was making progress, Superfund would be kept out of the basin (Silverton Standard 1998).
Conclusion. ARSG still has a lot to accomplish before the final report is submitted to WQCC by the year 2001. The main strengths of this effort seem to be based on an interdisciplinary approach, continuity of participation and use of consensus in decision-making. Based on the coordinator’s observations, there appears to be a strong desire among stakeholders to stay committed to the process (Simon 1998). Even after the report is submitted, the coordinator for the effort believes that some form of ARSG will continue, representing a permanent transition toward watershed stewardship. While it will be a few more years before this effort can be fully assessed, it does appear that the planning effort is accomplishing their goals (Figure 8).
Figure 15. Little Bear River Watershed.
Participants Involved in Little Bear River Project:

- Natural Resource Conservation Service
- U.S. Forest Service
- US. Bureau of Reclamation
- U.S. Geological Survey
- Ag. Stabilization and Conservation Service
- Utah Division of Wildlife Resources
- Utah Division of Water Rights
- Utah Division of Water Resources
- Utah Division of State Lands
- Utah Department of Health
- Utah Department of Environmental Quality
- Utah State University
- Utah State University Extension
- Bear River Association of Governments
- Blacksmith Fork Soil Conservation District
- Bear River Resource Conservation and Development
- Cache County
- Utah Association of Conservation Districts
- City of Paradise
- City of Hyrum
- City of Mendon
- City of Wellsville
- Cache Wildlife Federation
- Sierra Club
- Audubon Society
- Cache Society of Fisheries
- South Cache Middle School Green Team
- Private landowners and citizens

Bold type indicates continuous involvement by stakeholders.

Background. The Little Bear River watershed encompasses 196,432 acres and is a complex network of streams, reservoirs, irrigation canals, and municipal water systems (Figure 15 and 16). Agriculture is the dominant land use and is geared primarily toward livestock feed production. The area lays claim to being one of the nation's leading cheese production centers with 100 dairies and associated feedlots within the watershed.
During the late 1980's, landowners along the Little Bear River were becoming increasingly concerned with streambank erosion. Major floods during 1983 and 1984 resulted in severe channel erosion due to already unstable conditions caused by poor land management practices in the watershed (NRCS 1992). In 1988, the Little Bear River watershed was also identified by the Utah Non-point Source Pollution (NPS) Task Force as a high priority watershed in Utah needing treatment to resolve NPS impacts (Gunnell 1988).

The Task Force report identified five major sources of non-point pollution in the Little Bear River watershed:

- Sediment inputs due to high rates of streambank erosion
- Gully erosion in several tributary drainages
- Nutrient and coliform inputs from confined animal operations (Figure 17)
- High phosphorous input into reservoirs causing accelerated eutrophication
- Shoreline erosion at Hyrum Reservoir

Figure 16. Little Bear River flowing through Cache Valley. Photographer: Dick Rol

Figure 17. Animal operations along the Little Bear River. Photographer: Mike Allred
Group Beginning. In response to landowner concerns and the NPS report, the Blacksmith Fork Soil Conservation District and the Bear River Conservation and Development Council convened local landowners and organizations in 1989 to form the Little Bear River Steering Committee (Steering Committee) (NRCS 1992). During the same time period, Congress appropriated funds to the Natural Resources Conservation Service (NRCS) for addressing non-point source pollution. The Steering Committee submitted an application to the NRCS and in 1990, received funding for planning and implementation of best management practices to improve water quality.

Planning Overview. Following the framework set forth in the "Utah Coordinated Resource Management and Planning Guidelines", a three-tiered planning and decision-making structure was created consisting of a Steering Committee, Technical Advisory Committee, and five work groups (Figure 18) (Banner et al. 1989).

The 17 member Steering Committee provides overall direction for the planning effort and includes representatives from:
- Towns of Mendon, Wellsville, Paradise, Hyrum
- Cache County
- Bear River Resource Conservation and Development Council (RC&D)
- Utah State University Extension
- Utah Association of Soil Conservation Districts
- Blacksmith Fork Soil Conservation District
- Cache Wildlife Federation
- Natural Resource Conservation Service
- Agriculture Stabilization and Conservation Service
- Utah State University
- Private landowners
The Steering Committee established the Technical Advisory Committee for the purposes of inventorying, evaluating, and developing conservation treatment alternatives. This committee consists of 27 members from various state agencies, NRCS, Utah State University, and Bear River RC&D. The Technical Advisory Committee offers recommendations to the Steering Committee; which makes the final decision for the effort. The Technical Advisory Committee, in turn, coordinated five work groups that addressed the issues shown in Figure 18. The work groups ranged in size from 9 to 21 members from state/federal resource agencies and Utah State University. The purpose of the workgroups was to provide an assessment and recommendations to the Technical Advisory Committee.
Initial planning efforts focused on identifying stakeholders’ concerns and interests in the watershed. Two individuals, one from Utah State University Extension and one from the Natural Resources Conservation Service were selected as project coordinators. The coordinators recorded concerns and interests for a year and a half from a variety of sources such as public meetings, telephone calls, and personal contacts in the field or office (NRCS 1992). Issues were summarized and presented to the public for feedback and refinement in January 1991 (NRCS 1992).

As concerns and interests were being recorded, the work groups gathered existing biophysical data and conducted additional studies to characterize resources. Although water quality is the primary issue, baseline sampling of water quality parameters was limited because of funding. A significant portion of the funding was earmarked for implementation measures and not for inventorying and analysis (Allred 1998). Consequently, the lack of a good baseline of data made it difficult to prioritize restoration efforts within the watershed.

As Figure 18 illustrates, the hierarchical structure of the planning effort tended to limited interaction between the different work groups, thus diminishing the opportunity for interdisciplinary problem solving. In 1992, the work groups completed several plan alternatives for each of the five resource categories:

- River corridors
- Rangeland
- Cropland and farmsteads
- Fish and wildlife
- Recreation

While each of the plans for the different resources were fairly well developed, the interconnectedness between resources was not as well refined. For example, there was a strong emphasis placed on modifying physical conditions within the river corridor with limited attention of how the other resource issues were connected to river corridor processes (NRCS 1992). This shortcoming may be attributed to limited interaction between work groups.
Utilizing the plan alternatives and information gathered from stakeholders' concerns, the Steering Committee and Technical Advisory Committee refined the project's goals and objectives (Figure 19) (Allred 1993, NRCS 1997). Following the submittal of the plans to the Technical Advisory and Steering Committees, the work groups were dissolved.

The committees and the project coordinators prioritized problem areas and potential project sites based on cooperative landowner participation and areas with significant pollution problems determined by the limited monitoring program. Realizing the need to apply holistic solutions, the coordinators initiated a ranking system where higher priority was given to projects that incorporated a management system rather than a single practice. For instance, a low priority would be given to a rancher that only wanted to install a single streambank erosion control practice. A higher priority would be given to the operator who wants to develop a grazing management system with proper grazing utilization, fence critically eroding areas, and develop alternative water sources that would protect the streambanks from trampling (NRCS 1992).

Once sites were selected, the project coordinators and Technical Advisory Committee members worked with individual landowners designing and implementing a variety of best management practices (BMPs) to improve water quality. A few of these structural and management measures included:

- Animal waste management systems
- Conservation tillage
- Streambank stabilization
- Filter strips
- Riparian exclosure fencing
- Conservation cropping sequence
- Instream grade control structures
- Proper grazing management

In addition to reducing NPS pollution, many of these practices also have beneficial effects on the fisheries, wildlife, and recreation (Johnson et al. 1999).
Goals:
1) Reduce streambank erosion by 80 percent and rangeland erosion by 70 percent on acreage identified as critical.

2) Reduce nutrient and sediment water pollution impacts coming from cropland, pastureland, farmsteads, confined animal feeding operations, and rangeland to both surface and ground waters to meet Utah's water quality standards.

3) Improve the quality of water within the Little Bear River system to augment fish and wildlife habitat, enhance the aesthetics, recreational, and agricultural and municipal water quality.

4) Inform and educate all individuals associated with the project area of the need to manage the resource within the watershed in such a way as to maintain and improve water-related resources.

Objectives:
1) Reduce sediment from streambank erosion by restoring the stability of 84,480 feet of streambank along the Little Bear River and its tributaries.

2) Install 30 animal waste management systems in critical treatment areas.

3) Reduce impacts from livestock grazing by restricting channel access and providing alternative sources of water.

4) Reduce sediment and nutrient inputs from cropland by applying irrigation water management and installing improved irrigation systems to increase efficiency and reduce runoff.

5) Prepare multi-media presentations for use within and outside the project area including a newsletter.

6) Develop and conduct training sessions for the purpose of improving water quality in the Little Bear River Watershed.

Figure 19. Little Bear River Group goals.
Cost-share funding for these practices was provided through the Agricultural Stabilization and Conservation Service (ASCS) and Environmental Protection Agency (EPA). Funding from the EPA was through Section 319 of the Clean Water Act, which provides federal matching funds to states for NPS projects. Agencies provide approximately 75% of the cost while landowners pay 25% for the implemented practices (NRCS 1992). Volunteer hours spent on water quality projects could be used to provide an in-kind match for the landowners' share of the costs. Other USDA programs and the Bureau of Reclamation (BOR) provided additional funding.

In addition to implementation of BMPs, the Little Bear River Group has also dedicated significant resources to increasing the public's awareness of water quality issues. Field trips, workshops, and newsletters are some of the outreach methods used to inform school groups, landowners, and community leaders about water quality (Allred 1993).

The NRCS and USU Extension coordinators also relied on peer education by involving landowners that had already implemented BMPs as speakers on field trips and workshops for other landowners (Figure 20). Many landowners were more receptive to hearing the information from their neighbors about improving water quality (Allred 1998). Other projects in agricultural settings have also reported the benefits of using peer education (Garitone 1997).

**Model Evaluation.** On the following pages, Figures 21 through 25 address each phase of the collaborative model in relation to the Little Bear River Group planning process.

Figure 20. Watershed field tour on the Little Bear River. Photographer: Mike Allred
**Figure 21. Antecedents – Little Bear River Group.**

<table>
<thead>
<tr>
<th>Antecedents</th>
<th>Primary References</th>
<th>Level of Importance</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandate</td>
<td>UDEQ 1996</td>
<td>⬤</td>
<td>Although not a formal mandate, the establishment of a state nonpoint source pollution program added impetus to address water quality problems.</td>
</tr>
<tr>
<td>Broker</td>
<td></td>
<td>●</td>
<td>Did not appear to be a key factor.</td>
</tr>
<tr>
<td>Leadership</td>
<td>Allred 1998</td>
<td>●</td>
<td>Both the Natural Resources Conservation Service and Utah State University Extension Program provided strong leadership roles.</td>
</tr>
<tr>
<td>Common Vision</td>
<td>NRCS 1992 Allred 1998</td>
<td>●</td>
<td>Landowners expressed a common concern over streambank erosion. This common concern was partly the result of major flood events two years earlier.</td>
</tr>
<tr>
<td>Existing Networks</td>
<td></td>
<td>○</td>
<td>Did not appear to be a key factor.</td>
</tr>
<tr>
<td>Incentives</td>
<td>NRCS 1992 Allred 1998</td>
<td>●</td>
<td>Cost sharing programs for implementation of best management practices was a strong incentive to participate.</td>
</tr>
<tr>
<td>Crisis</td>
<td>NRCS 1992 Gunnell 1988</td>
<td>●</td>
<td>Water quality was degraded enough to be a crisis situation, however, not critical enough to force an immediate attempt at a solution.</td>
</tr>
<tr>
<td>Other- Lack of Data</td>
<td>NRCS 1992</td>
<td>●</td>
<td>Although many of the water quality problems were already identified, sources of the problems were not understood.</td>
</tr>
<tr>
<td>Other- Threat of Regulations</td>
<td>Allred 1998 NRLC 1996</td>
<td>●</td>
<td>State water quality standards were in place prior to the project and were being exceeded. The potential threat of regulatory action prompted stakeholders to participate in the planning process. The effectiveness of this threat has been limited since few violations have been issued.</td>
</tr>
</tbody>
</table>
Interdependence was moderately important, however, it was primarily developed by one on one interaction with the landowner and project coordinator. One and half years were spent identifying stakeholders and their concerns and interests. There was no real need for consensus on participation of stakeholders. This may be due to the fact that the issues were not extremely contentious nor were the stakeholders significantly polarized. Some landowners were willing to install measures to improve water quality even though they did not see a direct benefit to themselves. However, cost sharing was necessary to encourage these landowners to implement those measures. The importance of water quality was a moderately salient issue with many of the participants. The initial problem identified was streambank erosion. However, as the group worked together, it became apparent that other problems were more significant. Agency coordinators were deemed essential because they could allocate their full-time efforts toward working on the project. Since the issues were not extremely contentious, there was not a significant problem with a government agency spearheading the project.
### Antecedents

#### Problem Setting

##### Antecedents

- **Set Ground Rules**
  - Allred 1998
  - Ground rules were not considered necessary since issues were not extremely contentious.
- **Establish Goals**
  - Allred 1993
  - NRCS 1997
  - Although quantifiable goals and objectives were developed, they were not directly related to specific water quality parameters.
- **Joint Information Search**
  - NRCS 1992
  - Toth 1998
  - There was a joint information search within each work group, although not necessarily across the entire group structure.
- **Organize Sub-groups**
  - NRCS 1992
  - Five work groups were created to address different resource issues.
- **Explore Options**
  - NRCS 1992
  - Allred 1993
  - Allred and Hardman 1999
  - The work groups developed several plan alternatives for different resource categories. Site specific conservation plans were developed later with willing private landowners.
- **Reach Agreement**
  - NRCS 1992
  - Allred 1998
  - Allred 1993
  - Consensus was used in developing conservation plans with the individual landowners. Peer education using landowners that had already developed conservation plans was valuable in convincing other landowners to participate in the program.

#### Level of Importance

- **High**
- **Moderate**
- **Low**

---

**Figure 23.** Direction setting – Little Bear River Group.
A formal group structure was established from the beginning. Organizing into a formal group was essential to acquire funding as well as to establish credibility within the watershed.

Newsletters, newspaper articles, and field trips were used to promote information flow back to the constituencies. Field tours led by the landowners were probably the group's strongest communication method.

A specific annual plan of operations was developed for each year with specific responsibilities for the different participants on the Committees.

Action tasks were detailed and specifically tied to the project's goals and objectives.

<table>
<thead>
<tr>
<th>Issues</th>
<th>Primary References</th>
<th>Level of Importance</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formalizing Relationships</td>
<td>NRCS 1992</td>
<td>⚫</td>
<td>A formal group structure was established from the beginning. Organizing into a formal group was essential to acquire funding as well as to establish credibility within the watershed.</td>
</tr>
<tr>
<td></td>
<td>Allred 1998</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dealing with Constituencies</td>
<td>NRCS 1992</td>
<td>⚫</td>
<td>Newsletters, newspaper articles, and field trips were used to promote information flow back to the constituencies. Field tours led by the landowners were probably the group's strongest communication method.</td>
</tr>
<tr>
<td></td>
<td>NRCS 1993</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roles Assigned</td>
<td>NRCS 1992</td>
<td>⚫</td>
<td>A specific annual plan of operations was developed for each year with specific responsibilities for the different participants on the Committees.</td>
</tr>
<tr>
<td></td>
<td>NRCS 1993</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tasks Elaborated</td>
<td>NRCS 1993</td>
<td>⚫</td>
<td>Action tasks were detailed and specifically tied to the project's goals and objectives.</td>
</tr>
</tbody>
</table>

Level of Importance: ⚫ High  ⚫ Moderate  ⚫ Low

Figure 24. Implementation – Little Bear River Group.
Although water quality monitoring was initiated at the beginning of the project, an ineffective methodology has hindered results. In addition to water sampling, computer models and vegetation indices are being used to evaluate the BMPs. Also, a survey is in the process of being conducted to determine changes in landowner knowledge and attitudes on water quality issues.

Water quality standards and regulations will ensure final compliance, however, at this point, voluntary participation is still the primary method.

An adaptive management process has been incorporated in the project. Best management practices that show the most benefits received higher priority for implementation of future projects.

<table>
<thead>
<tr>
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<th>Primary References</th>
<th>Level of Importance</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation Strategies and Impacts</td>
<td>Allred 1993, Allred 1998, NRCS 1997, Allred and Hardman 1999</td>
<td>⬤</td>
<td>Although water quality monitoring was initiated at the beginning of the project, an ineffective methodology has hindered results. In addition to water sampling, computer models and vegetation indices are being used to evaluate the BMPs. Also, a survey is in the process of being conducted to determine changes in landowner knowledge and attitudes on water quality issues.</td>
</tr>
<tr>
<td>Compliance</td>
<td>Allred 1998</td>
<td>⬤</td>
<td>Water quality standards and regulations will ensure final compliance, however, at this point, voluntary participation is still the primary method.</td>
</tr>
<tr>
<td>Adaptive Management</td>
<td>Allred 1998, NRCS 1992, NRCS 1999</td>
<td>⬤</td>
<td>An adaptive management process has been incorporated in the project. Best management practices that show the most benefits received higher priority for implementation of future projects.</td>
</tr>
</tbody>
</table>

Level of Importance: ⬤ High, ⬤ Moderate, ⬤ Low

Figure 25. Monitoring and evaluation – Little Bear River Group.
Summary. Some of the accomplishments to date include:

- 4.5 miles of riparian exclosure fencing
- 6 acres of filter strips
- 36 animal waste management systems under contract
- Cleanup of McMurdie Hollow which had been an illegal dumping ground for over 50 years
- Improved vegetation and grazing management on 7500 acres of rangeland, resulting in an estimated reduction of 3.25 tons/acre of net sediment yield per year
- 2.6 miles of various streambank protection methods

Obstacles to progress. Despite the numerous practices implemented, changes in water quality parameters have been inconclusive (Allred 1998). In some places, significant improvements have been measured; however, other areas have remained the same. Part of the reason for these inconsistencies has been an ineffective monitoring program, which originally had sampling points at the head and bottom of the watershed. Half way through the project, it was determined that there were several point sources of pollution in the watershed; consequently, the monitoring program was revised (Allred and Hardman 1999).

Another reason for inconsistency may be that over half of the manure containment systems are still under construction (Allred and Hardman 1999). In addition, the watershed is experiencing high levels of residential development which may be affecting water quality since some of these developments are on septic systems in shallow groundwater areas (Allred 1998). However, the lack of significant improvement in overall water quality is not surprising when considering the effect of small incremental projects integrated over the complete watershed.

Another significant problem identified by the coordinators is the strong push by agencies to designate most of the funding for “on-the-ground” measures with very limited funding for planning and monitoring (Allred 1998). Implemented projects are often considered great public relations tools while funding for planning and monitoring tasks is not as popular.
(Napier 1998). It is possible that these funding priorities may be the result of agencies attempting to justify their purpose and existence (Allred 1998).

The voluntary nature of the program may have also limited its effectiveness. Some landowners with significant pollution problems have not participated in the project (Allred and Hardman 1999). Although the potential threat of water quality violations has motivated some landowners to participate, few fines for violations have been issued. Consequently, landowners do not perceive this as a threat significant enough to encourage participation.

**Conclusion.** Results are mixed regarding the overall effectiveness of the Little Bear River Project. Apparent shortcomings in the planning process included limited baseline data and subsequent difficulty in prioritizing efforts. The hierarchical organizational structure of the group tended to minimize interdisciplinary interaction and holistic problem solving.

Positive elements included the use of peer education and one-on-one interaction with landowners and project coordinators (Allred 1998). While an overall change in water quality has not yet been attained, the incremental projects have improved conditions at specific locations within the watershed and offer some hope that long-term benefits may be realized.
Figure 26. Willow Creek Watershed. Adapted from BLM Surface Management Status Map: Fairfield. 1993.
Participants Involved in Willow Creek Project:

- U.S. Bureau of Land Management
- U.S. Forest Service
- National Fish and Wildlife Foundation
- Idaho Fish and Game
- Idaho Dept. of Environmental Quality
- Camas County Soil District
- Camas County High School
- Pacific Rivers Council
- Wood River Land Trust
- Private Landowners and Livestock Grazing Permittees

Bold type indicates stakeholders with continuous involvement.

Figure 27. Redband Trout.
Photographer: Scott Boettger

Background. The Willow Creek Project is located in south-central Idaho and encompasses 40,658 acres (Figure 26). The rural watershed is home to a variety of wildlife species including the state and federally listed redband trout (Figure 27). In addition, much of the BLM land in the watershed has been designated as an Area of Critical Environmental Concern because it provides critical elk winter range (BBN 1996).

The watershed has moderate to steep slopes consisting of granitic, Idaho Batholith soils that are highly erodible. Livestock grazing is the primary land use. Due to the fragility of the soils, the watershed has historically been susceptible to accelerated erosion from overgrazing (BBN 1996). Mining has also left a permanent mark on the watershed. In 1990, a tailings pond failed, releasing a large amount of fine sediment into a tributary of Willow Creek (Williams 1997). Although no mining activities have occurred since, fine sediment from the spill is still evident in the stream channel.
During the early 1990's, an avid outdoorsman purchased property along Willow Creek to serve as a private nature reserve (Figure 28). Over the next several years, the landowner invested time and money into fencing and several habitat restoration projects. It became clear to the new landowner that impacts on his property were originating upstream on U.S. Forest Service (USFS) and Bureau of Land Management (BLM) land and were limiting the success of the private landowner's restoration efforts. To address these issues on a watershed scale, the landowner requested assistance from the Pacific Rivers Council (PRC); a non-profit group dedicated to river conservation in the Pacific Northwest (Williams 1999). Together, the landowner and an Idaho-based employee of PRC decided to apply for a "Bring Back the Natives" grant offered by National Fish and Wildlife Foundation. The goal of this federal grant program is to restore the health of riverine systems and their native fish species.

Group Beginning. To prepare the grant application, the PRC coordinator contacted local representatives of the USFS, BLM, Idaho Fish and Game, and Camas County Soil Conservation District who were quite interested in participating in a watershed scale restoration project (Williams 1999, Williams 1997). In a little over a month, this loose coalition prepared and submitted a grant proposal to the National Fish and Wildlife Foundation (BBN 1996). Because the federal agencies were the primary landowners, BLM and USFS served as the project sponsors.
The primary goal of the grant proposal was to restore habitat for native aquatic and terrestrial species in the watershed through changes in land management and other restoration measures (BBN 1996). The project would also provide an educational opportunity for school children in the area to learn about watersheds (BBN 1996) (Figure 29). In addition, specific restoration tasks were outlined in the proposal based on tasks previously identified in other agency plans. The participants, however, realized that these tasks would need to be refined as additional baseline data was collected during the following summer months.

Planning Overview. While the proposal was being reviewed, the Willow Creek Project proceeded with organizational and planning efforts. Participants envisioned the grant proposal as a catalyst for a more formal and permanent approach towards watershed stewardship (Williams 1999). With PRC providing leadership and coordination, this loose coalition worked on preparing a watershed workshop that was to serve as the kick-off event for creation of a formal watershed group (WCWG 1996).

During the next couple of months, considerable effort was spent planning for this workshop, including development of an agenda, compilation of a mailing list, and drafting of a press release and letter of invitation (Williams 1997). At the request of the USFS, this meeting was rescheduled several times and was ultimately canceled because the USFS priorities were focused on other issues such as Forest Plan revisions and water rights adjudication (Williams 1999).

Although a formal watershed group was not created, the project continued to hold informal meetings with PRC serving as an ad hoc coordinator of the planning effort. These meetings brought the federal agencies in regular contact with the Camas Soil Conservation District, Idaho Fish and Game, Camas County High School teachers, landowners and permittees, and PRC to discuss restoration needs and educational opportunities (Williams 1997).
Goals:

1) Implement land management practices on USFS and BLM lands that contribute to watershed restoration.

2) Implement restoration projects on public and private lands within the watershed that address the ecological causes of watershed degradation.

3) Increase cooperation and coordination among the various agencies and individuals managing lands within the Willow Creek Watershed.

4) Provide a learning experience for the students of local public and private schools that increases their understanding of the ecological and social benefits of a functioning watershed and knowledge of the threats to watershed function and provides hands-on experience in watershed restoration.

5) Improve the condition of the watershed, including water quality and quantity, so that the native aquatic and terrestrial species and community complexes benefit and the status of native species within the watershed improves.

Figure 29. Willow Creek Project goals.
Five months after the proposal was submitted, the Willow Creek Project was notified that it had received a challenge grant of $123,000. This amount represented $48,000 from the National Fish and Wildlife Foundation (NFWF) and $75,000 from private sources, which the group would be responsible for acquiring. With funding, the group now proceeded to conduct several field reviews with nationally recognized experts in watershed restoration.

Although the group had some data from inventories and assessments in the watershed, the group decided to consult with outside experts for additional input. Four individual field reviews were held with Dr. Charles Dewberry (PRC's watershed restoration specialist), Wayne Elmore (BLM), Patrick Joos (NFWF) and by the USFS/BLM National Riparian Team (Williams 1997). Private landowners, permittees, and agency personnel were invited to participate in the reviews. The field visits allowed a number of people interested in Willow Creek management decisions to tour the watershed and come to a common understanding of the biological and physical system dynamics as well as the problems and issues (Williams 1997).

Key problems identified during these reviews were sediment input from roads and mine tailings and a unusually high bedload volume of unknown sources originating in the upper watershed (Figure 30) (Elmore et al. 1996). In addition, the reviews identified several areas where grazing was mismanaged. Agreement on these problems was easily obtained since the issues were addressed in the field (Williams 1999). The field tours also facilitated interdisciplinary problem solving because the various stakeholders gathered at the site were able to develop restoration alternatives.

The field tours and subsequent interaction provided the means to refine the previously defined restoration tasks and priorities. These tasks included road and mine restoration as well as several riparian and upland fencing projects.
Most of the restoration tasks on federal lands are not currently being implemented. The project's goal of providing educational opportunities for local school children was carried out by using students to monitor conditions in the watershed (Williams 1997). Local high school students spent one day learning about proper sampling protocols and two more days collecting data on riparian condition, water chemistry, fish population, and invertebrate populations. During the following spring, participants in the Willow Creek Project presented data interpretation workshops to the students so they could analyze their data. This data will serve as a baseline to monitor future progress in restoring the watershed.

Figure 31 illustrates the organizational structure of the Willow Creek Project. The lack of lines connecting the various entities signify the informal and almost non-existent structure of this group which contrasts with the other case studies (Figures 9 and 18).

During 1996 and 1997, restoration tasks were implemented on private property, at the landowner's initiative. However, implementation on federal administered lands was significantly hampered by a lack of federal effort to delegate time and resources to these projects (Williams 1999). Although the district BLM and USFS representatives wanted to pursue these tasks, their priorities were focused elsewhere by their supervisors (Williams 1999).
Hence, this planning effort is described as a loose coalition in this thesis. This informal quality helped create a non-confrontational environment by avoiding a hierarchical structure. However, the lack of a more structured organization created some ambiguity over who was responsible for implementing the grant proposal. For instance, PRC provided coordination tasks, yet ultimately the BLM and USFS were the project sponsors. This problem was compounded by the agencies’ inability to dedicate time and resources to the project.

Model Evaluation. On the following pages, Figures 32 through 36 address each phase of the collaborative model in relation to the Willow Creek Project planning process.
### Antecedents

<table>
<thead>
<tr>
<th>Antecedents</th>
<th>Primary References</th>
<th>Level of Importance</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandate</td>
<td>Williams 1999</td>
<td>○</td>
<td>No formal mandate was present.</td>
</tr>
<tr>
<td>Broker</td>
<td>WCWG 1996, Williams 1997</td>
<td>●</td>
<td>Pacific Rivers Council served as a third-party broker since they did not directly control land management within the watershed.</td>
</tr>
<tr>
<td>Leadership</td>
<td>BBN 1996, Williams 1997</td>
<td>●</td>
<td>Pacific Rivers Council also served in a leadership role and as financial coordinator of the Bring Back the Natives Grant.</td>
</tr>
<tr>
<td>Common Vision</td>
<td>Williams 1997</td>
<td>●</td>
<td>The vision and enthusiasm of one private landowner was able to motivate other stakeholders to share in the same vision of creating a healthy watershed.</td>
</tr>
<tr>
<td>Existing Networks</td>
<td>BBN 1996</td>
<td>○</td>
<td>Did not appear to be a factor.</td>
</tr>
<tr>
<td>Incentives</td>
<td>BBN 1996</td>
<td>●</td>
<td>The Bring Back the Natives Grant provided financial incentive to participate in a collaborative planning effort.</td>
</tr>
<tr>
<td>Crisis</td>
<td>BBN 1996</td>
<td>○</td>
<td>Although the watershed was degraded, none of the problems facing the watershed were at a crisis level.</td>
</tr>
<tr>
<td>Other- Lack of Data</td>
<td>BBN 1996</td>
<td>●</td>
<td>There was agreement among participants that there was a lack of data and understanding of the problems in the watershed.</td>
</tr>
<tr>
<td>Other- Threat of Regulations</td>
<td>Williams 1997</td>
<td>○</td>
<td>There were no specific regulations that were used to encourage collaboration.</td>
</tr>
</tbody>
</table>

**Level of Importance:**
- ● High
- ○ Moderate
- ○ Low

Figure 32. Antecedents – Willow Creek Project.
The private landowner recognized his interdependence with others from the beginning of the project. Others developed a sense of interdependence, particularly through the field reviews. Group spent considerable time to ensure that all stakeholders were invited to participate in the field reviews. From the beginning, there was immediate support for any stakeholder that wanted to participate in the process. There was no real animosity toward participants, only healthy skepticism that dissolved during the field reviews. The primary stakeholders perceived direct benefits for their own goals and objectives that they were willing to participate in the grant proposal. The issues were important to all of the stakeholders, however, other demands on agency resources significantly limited implementation of restoration efforts. Face to face dialogue on the watershed tours was extremely valuable in facilitating an understanding of the problems. In addition, it provided a good forum for discussing and prioritizing solutions to the problems. Pacific Rivers Council served as a coordinator, which was important because the Forest Service and BLM could not dedicate full-time personnel to the project. However, this created some confusion as to who was responsible for administering the grant since the agencies were the project sponsors.

<table>
<thead>
<tr>
<th>Issues</th>
<th>Primary References</th>
<th>Level of Importance</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognize Interdependence</td>
<td>Boettger 1999</td>
<td>Moderate</td>
<td>The private landowner recognized his interdependence with others from the beginning of the project. Others developed a sense of interdependence, particularly through the field reviews.</td>
</tr>
<tr>
<td></td>
<td>Williams 1999</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify Stakeholders</td>
<td>Williams 1997</td>
<td>Moderate</td>
<td>Group spent considerable time to ensure that all stakeholders were invited to participate in the field reviews.</td>
</tr>
<tr>
<td></td>
<td>WCWG 1996</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consensus on Legitimate</td>
<td>Williams 1999</td>
<td>Low</td>
<td>From the beginning, there was immediate support for any stakeholder that wanted to participate in the process. There was no real animosity toward participants, only healthy skepticism that dissolved during the field reviews.</td>
</tr>
<tr>
<td>Stakeholders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Benefits to Stakeholders</td>
<td>BBN 1996</td>
<td>Moderate</td>
<td>The primary stakeholders perceived direct benefits for their own goals and objectives that they were willing to participate in the grant proposal.</td>
</tr>
<tr>
<td>Perceived Salience to Stakeholders</td>
<td>Williams 1997</td>
<td>Moderate</td>
<td>The issues were important to all of the stakeholders, however, other demands on agency resources significantly limited implementation of restoration efforts.</td>
</tr>
<tr>
<td>Common Problem Definition</td>
<td>Elmore et al. 1997</td>
<td>Moderate</td>
<td>Face to face dialogue on the watershed tours was extremely valuable in facilitating an understanding of the problems. In addition, it provided a good forum for discussing and prioritizing solutions to the problems.</td>
</tr>
<tr>
<td></td>
<td>Williams 1999</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify Coordinator</td>
<td>Williams 1997</td>
<td>Moderate</td>
<td>Pacific Rivers Council served as a coordinator, which was important because the Forest Service and BLM could not dedicate full-time personnel to the project. However, this created some confusion as to who was responsible for administering the grant since the agencies were the project sponsors.</td>
</tr>
<tr>
<td></td>
<td>Williams 1999</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Boettger 1999</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Level of Importance:  ● High  ○ Moderate  ○ Low

Figure 33. Problem setting – Willow Creek Project.
<table>
<thead>
<tr>
<th>Issues</th>
<th>Primary References</th>
<th>Level of Importance</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Ground Rules</td>
<td>Williams 1999</td>
<td>◯</td>
<td>Ground rules were not considered necessary since issues were not extremely contentious.</td>
</tr>
<tr>
<td>Establish Goals</td>
<td>BBN 1996</td>
<td>•</td>
<td>Goals were necessary for the grant proposal, however, measurable objectives were not developed because baseline had not yet been collected.</td>
</tr>
<tr>
<td>Joint Information Search</td>
<td>Williams 1997, Elmore et al. 1996</td>
<td>•</td>
<td>The four field reviews provided a means for basic joint data collection. The field reviews were invaluable for gathering an understanding of the watershed that everyone could agree upon.</td>
</tr>
<tr>
<td>Organize Sub-groups</td>
<td>Williams 1999, WCWG 1996</td>
<td>◯</td>
<td>The group initially hoped to organize a more formal watershed group that would include sub-groups addressing certain issues. However, this was not accomplished.</td>
</tr>
<tr>
<td>Explore Options</td>
<td>Williams 1997, Elmore et al. 1996, Williams 1999</td>
<td>•</td>
<td>Options were explored during the four field reviews with experts and stakeholders. Being in the field was critical because the options were tied to specific sites and were not discussed in an abstract manner.</td>
</tr>
<tr>
<td>Reach Agreement</td>
<td>Williams 1997, Williams 1999</td>
<td>•</td>
<td>Consensus was used to prioritize restoration projects.</td>
</tr>
</tbody>
</table>

Level of Importance:  
- ◯ High  
- • Moderate  
- ◯ Low

Figure 34. Direction setting – Willow Creek Project.
The Willow Creek Project primarily operated as a loose coalition without any formal group structure. Participants desired to create a more formal group, however, agency priorities hindered this development.

Although the group tried to keep the larger public informed about the project, limited resources hindered this effort. For instance, there was never a local newspaper article on the project.

In the original grant proposal, specific tasks were delegated to different stakeholders. After the field reviews, the tasks were redefined.

Tasks were kept rather basic without much elaboration since the task list was essentially developed in the field.

Figure 35. Implementation – Willow Creek Project.
### Issues

<table>
<thead>
<tr>
<th>Issues</th>
<th>Primary References</th>
<th>Level of Importance</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation Strategies and Impacts</td>
<td>Williams 1997, Williams 1999</td>
<td>○</td>
<td>The baseline data collected by the high school students will be used to evaluate restoration efforts that have occurred on private land. Since little implementation occurred on the federally administered lands, there is no monitoring program on federal lands.</td>
</tr>
<tr>
<td>Compliance</td>
<td>Williams 1997, BBN 1996</td>
<td>○</td>
<td>Compliance would have normally been required to meet the conditions outlined in the Bring Back the Natives grant. However, since most of the tasks were not completed and the grant money was returned, there is no real means for compliance. Any additional restoration work in the watershed will be voluntary in nature.</td>
</tr>
<tr>
<td>Adaptive Management</td>
<td>Williams 1999</td>
<td>●</td>
<td>The coordinator acknowledges that adaptive management is a vital component of the watershed restoration plan. However, since the project did not accomplish its main tasks, adaptive management was not applied.</td>
</tr>
</tbody>
</table>

**Level of Importance:**

- ● High
- ○ Moderate
- ○ Low

**Figure 36. Monitoring and Evaluation – Willow Creek Project.**
Summary. Some specific accomplishments included:

Private land accomplishments.

- Maintenance of 5.5 miles of riparian fencing
- Reforested several acres of uplands
- Active riparian restoration along 2 miles of creek

Watershed scale accomplishments.

- Identification of watershed problems
- Prioritization of watershed restoration tasks
- Baseline monitoring by school group

The Willow Creek Project was also selected as one of six projects to be incorporated in the BLM Project Aurora Watershed Restoration Training Program (Williams 1999). Project Aurora is a multimedia CD-ROM training tool that will be used to showcase watershed restoration case studies.

Obstacles to progress. During September 1997, PRC ended their role in the Willow Creek Project since they felt that there was not enough progress being made to warrant their continued participation (Williams 1999).

In addition, an Idaho senator asserted that federal grant money such as the NFWF grant should not be available to projects that involved parties that were or had been involved in federal litigation (Williams 1999). Since PRC was involved in a prior lawsuit with the federal government, it was decided that oversight responsibility of the grant should be turned over to the Wood River Land Trust for the remaining duration of the grant (Boettger 1999). Because several of the tasks outlined in the proposal were not implemented, most of the grant money was returned to the National Fish and Wildlife Foundation (Boettger 1999).

The most obvious obstacle to progress was lack of agency commitment and resources for the project. In hindsight, the original coordinator for PRC acknowledged that the group should have involved the regional supervisors for the federal land management agencies during the initial development of the proposal (Williams 1999). By involving them in the beginning, the
group may have gained their support for the project. If not, at least the group would have realized early on that pursuing the project would be difficult.

**Conclusion.** In many ways, the Willow Creek Project was relatively unsuccessful because restoration tasks on the federal lands are currently placed on hold. This is unfortunate because there was a strong desire among most of the stakeholders to restore the watershed (Williams 1999). However, this case study illustrates the difficulty of applying collaborative processes in environmental planning. Even though many of the components of a collaborative process were present, the absence of one key element such as the lack of agency support can derail efforts.

Although the project did not accomplish all of its goals, it has at least identified watershed problems and restoration tasks that may be accomplished when the other agency priorities are completed. In addition, the Wood River Land Trust will continue to use the restoration on the private lands as a demonstration project for other landowners in the area (Boettger 1999). They also plan to use the area as an educational tool for schoolchildren and other groups.
CHAPTER IV
MODEL EVALUATION AND CONCLUSIONS

Introduction

As described in Chapter I, there are important characteristics distinguishing participatory planning from collaborative planning (Figure 1). In many ways, the transition from participatory planning to collaborative planning can be viewed as an evolutionary process. Not surprisingly, some of the watershed groups in this thesis still retained characteristics of a participatory planning process. Because there are many variations between participatory planning and collaborative planning, we can view this as a gradient or continuum (Figure 37). The case studies can be plotted along this gradient relative to each other, offering a general assessment of how close these planning efforts came to achieving a collaborative planning environment.

The Animas River Stakeholder Group came the closest to achieving collaborative-based planning based on the characteristics described in Figure 1. The Little Bear River Group also incorporated collaborative elements, however elements of participatory planning were still present. For instance, their planning effort tended towards multidisciplinary rather than interdisciplinary interaction. Continuous stakeholder participation was also not maintained since most of the workgroups were dissolved in the Little Bear River Group. The Willow Creek Project appears to be somewhere between the other two planning efforts. However, since this project was not able to proceed with many of its restoration projects, it is shown below the gradient line to indicate this shortcoming. The Willow Creek Project illustrates that collaborative planning efforts do not necessarily guarantee success. Even though
many of the components of collaborative planning were present, the absence of one key element such as the lack of agency support can derail efforts.

Despite this diversity in the groups, common elements were present reconfirming the idea that there are fundamental factors in collaborative planning. The purpose of this study was to evaluate Selin and Chavez's (1995a) collaborative model for environmental planning and management. In this chapter, the evaluation figures from Chapter III are summarized and key considerations highlighted. From this analysis, it will be determined whether the model includes the range of considerations important for the establishment and operation of collaborative planning. Modifications to the model will be presented along with suggestions for additional research.

Figure 37. Collaborative – participatory planning gradient.
Antecedents

The authors of the model do not elaborate on the number of antecedents necessary to begin collaborative planning. However, based on these case studies, it is clear that several antecedents are often required to initiate a collaborative effort. In fact, five to seven factors for each group received a moderate to high ranking. This indicates that the initial stimulus requires a variety of factors to converge at the same time before a collaborative environment can begin to evolve.

Analysis of these studies revealed two additional antecedents not previously identified in the model; lack of data and threat of regulations. For two of the case studies, these were fairly important factors. Lack of data creates a sense of uncertainty, which can pull people together. Threat of regulatory action can also bring stakeholders together. To encourage participants to work together requires some flexibility in how regulations are applied. For instance, the postponing of new water quality standards for the Animas River

<table>
<thead>
<tr>
<th>Antecedent</th>
<th>Animas River Stakeholder Group</th>
<th>Little Bear River Group</th>
<th>Willow Creek Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandate</td>
<td>○</td>
<td>●</td>
<td>○</td>
</tr>
<tr>
<td>Broker</td>
<td>●</td>
<td>○</td>
<td>●</td>
</tr>
<tr>
<td>Leadership</td>
<td>●</td>
<td>○</td>
<td>●</td>
</tr>
<tr>
<td>Common Vision</td>
<td>○</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Existing Networks</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Incentives</td>
<td>●</td>
<td>●</td>
<td>○</td>
</tr>
<tr>
<td>Crisis</td>
<td>○</td>
<td>●</td>
<td>○</td>
</tr>
<tr>
<td>Other - lack of data</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Other - Threat of Regulations</td>
<td>●</td>
<td>●</td>
<td>○</td>
</tr>
</tbody>
</table>

Level of Importance: High ● Moderate ○ Low ○

Figure 38. Antecedents – summary.

Shaded boxes indicate an issue that received a high ranking for all three groups.
gave ARSG a chance to work together to develop a cleanup strategy. When solutions do not address the issue, regulations will need to be enforced. Otherwise the motivational stimulus provided by regulations will be strongly diminished as in the Little Bear River Group. As Broetzman and Smit (1998, p. 60) assert, “collaborative processes should convert scenarios into ones where laws and regulations can be used more efficiently and appropriately to move solutions along.”

Although only two additional antecedents were identified, other factors may be described as being important in different planning efforts. For instance, fear could possibly be considered another antecedent. However, in these studies, fear seems to be a part of other antecedents such as crisis and regulations.

Only the leadership antecedent was given a high importance ranking for all three groups. This may suggest that leadership is a universal antecedent that needs to always be present, which intuitively is not surprising. What is interesting, however, is that the source of leadership can come from different sources depending on the context of the situation.

This issue is discussed in greater detail in the analysis of the problem-setting phase.

These case studies also suggest that the higher the number of antecedents a group has at the beginning, the stronger likelihood that the group will evolve beyond the fledging stage of group development. This may be due to the fact that there are more pressure points on the group, which encourages them to continue with the collaborative planning effort.

In summary, three key points can be drawn from the analysis of antecedents:

- Several antecedents are required to initiate a collaborative effort
- Leadership is a key antecedent
- The higher the number of initial antecedents, the stronger probability that the group will have impetus to move forward and remain committed to the effort
Problem Setting

In general, the model parameters in problem setting seem to be important and necessary based on these three case studies. Consensus on legitimate stakeholders was the only factor with significantly dissimilar rankings. This may be attributed to the contentiousness of the planning environment. In the Animas River Stakeholder Group, the initial context was quite hostile with significant disagreements over who should be participating in the group (Simon 1998). In the other cases, the issues were significantly less volatile and thus actively seeking consensus on stakeholders was not necessary.

Three factors were given high rankings for all three case studies. Identification of stakeholders is a fundamental factor in collaborative planning that is an ongoing process. In ARSG, the coordinator considered it important to replace stakeholders who could no longer participate to make sure that a diversity of viewpoints was always maintained within the group (Simon 1998).
Coming to agreement on the problems and issues was also a significant parameter. In particular, informal face to face dialogue during the problem identification stage was necessary to establish trust among stakeholders and to move the planning effort forward. This is in direct opposition to typical planning processes that rely on formalized public hearings and other similar methods, which do not facilitate true dialogue (Friedmann 1973). In addition, significant time was spent in the field looking at the watershed issues and problems. All three coordinators cited this as a critical step because it removed the issues from an ambiguous context and placed them in a real setting. Again, typical planning processes rarely allow for this type of interaction to occur.

The analysis also revealed the importance of coordinator identification. The issue of who should lead the effort appears to depend on two key variables, contentiousness of issues and availability of resources.

In the case of ARSG, it was essential that the leader was not associated with a government agency because of the volatility of the issues and general distrust. In contrast, it was not a problem for stakeholders that the Little Bear River coordinators were from agencies because the issues were not as volatile. The other interrelated variable is who has the time and money to dedicate to being a coordinator. In the Little Bear River Group, the project proceeded due to the full-time commitment of the coordinators who were supported by their agencies. In contrast, tasks in the Willow Creek Project were not completed partly due to the lack of a full-time coordinator (Williams 1999).

In summary, key problem setting elements include:

- Seeking consensus on stakeholders may be necessary if issues are contentious
- Identification and integration of stakeholders is an ongoing process
- Face to face dialogue and field reviews are essential for problem identification
- Identification of a suitable coordinator is dependent on issues and resource availability
The model appears to depict the range of important collaborative elements in direction setting except for ground rules. Ground rules were not considered an important factor except for ARSG. Ground rules are primarily a tool to maintain a productive working environment in contentious group settings (Gray 1989). Because ARSG was the only group with highly contentious issues, they were the only group that developed ground rules. Coordinators will need to recognize when it is appropriate to establish ground rules.

All groups recognized the need to establish clear goals yet some lacked measurable objectives. Although the Little Bear River Group was focused on water quality problems, none of their objectives included measurable water quality parameters such as fecal coliform or phosphorus levels. Achieving consensus on measurable objectives is a difficult task in a diverse group setting; avoiding it will only create problems for the group later in the planning effort.
In all three case studies, joint information search was valuable in helping stakeholders agree upon data. Based on the coordinators' observations, valuable insight was since most of the stakeholders were involved in this information search. Typical planning procedures tend to prevent collective gathering of information. Traditional stakeholder involvement in the planning process is often only encouraged during scoping and at the end when comments are requested on the various alternatives (Moote and McClaran 1997). Not surprisingly, these types of planning efforts rarely result in plans that have the support necessary to be fully implemented. Planners need to recognize these issues and adjust their planning procedures accordingly.

Exploring options and selecting plans are at the crux of direction setting, though just ensuring that these steps are collaborative does not necessarily guarantee good results. For instance, small demonstration projects can be beneficial to building and maintaining support of the groups' efforts but the group must not overlook the task of creating an overall management plan. This guiding plan will help prevent haphazard implementation of projects that are often only band-aid approaches to the real problems.

Some of the groups in the case studies had trouble with this issue. Often this was the result of agencies supplying funds for on-the-ground measures and not for planning, e.g. the Willow Creek and the Little Bear River Projects. In contrast, ARSG turned away implementation funds at the beginning of the project because they did not have a clear understanding of the watershed or where to apply remediation efforts (Simon 1998).

In summary, key factors to consider during the direction setting phase include:

- Ground rules may only be necessary in high-conflict situations
- Measurable objectives related to the specific problems and issues are essential
- Planning processes need to allow for joint information search
- An overall management plan needs to be created to avoid haphazard implementation of projects
Implementation

Although the implementation phase in the model was realistically described, the issue of formalizing relationships should be reexamined based on these case studies. The authors of the model placed formalizing relationships in this phase because they viewed this task as creating a contract (Gray 1989). This contract between stakeholders is to ensure that plans are implemented. Although this purpose is important, formalizing relationships also served several other key purposes in these case studies:

- It demonstrated to the general public that these were organized groups of stakeholders with specific functions
- It helped to maintain a sense of shared direction among participants
- It was often necessary to acquire grants and other sources of funding

For these reasons, formalizing relationships needs to occur earlier in collaborative planning. In all of these studies, creating an organizational framework for stakeholder
interactions was one of the first steps that occurred after the stakeholders began to meet. With these factors in mind, it is suggested that formalizing relations be moved to the direction setting phase (Figure 43).

Although an organized framework is necessary, a bureaucratic structure should be avoided because many steps in the collaboration can not thrive in a rigid organizational format. An example of this is informal face to face dialogue during problem identification. Organizational structure in the Little Bear River Group seemed to be too rigid and hierarchical to allow for informal dialogue or creative interdisciplinary problem solving (Figure 18). For instance, interaction between the workgroups was not facilitated or promoted.

By contrast, the Willow Creek Project was a loose coalition with no apparent structure or organization (Figure 31). Although this format help create a non-confrontational environment, the lack of a more structured organization created some ambiguity over who was responsible for carrying out the grant proposal. Ironically, stakeholders in the Willow Creek Project initially wanted to create a structured watershed council but were unable due to low prioritization by federal agencies.

The Animas River Stakeholder Group appears to have achieved the best balance between rigid and flexible organizational structures (Figure 9). The use of sub-groups within a non-hierarchical framework provided enough structure to facilitate carrying out tasks efficiently, without creating a cumbersome planning process. Planners need to be aware of the impacts that group organizational structure can have on the collaborative planning effort.

Dealing with constituencies is a key component that continually needs to be monitored and adapted. In the case of ARSG, the group was criticized for not keeping the general public better informed. ARSG responded by holding informal discussions at the public library. In addition, they encouraged additional public participation in the general meetings by keeping the issues more policy orientated while delegating the technical issues to the work groups.
In regards to assigning roles and elaborating upon tasks, these simple steps are critical because they help ensure ownership and accountability. Responsibility for implementation must be shared by a majority of the stakeholders or sustaining commitment to the planning effort will be greatly hindered, e.g. the Willow Creek Project. To formalize these steps, the Little Bear River Group tied roles and tasks of the various stakeholders to specific goals and objectives and included this format in their planning document.

In summary, important considerations in the implementation phase include:

- Start the process of formalizing relationships earlier in the planning effort
- Create an organizational framework that promotes characteristics of collaborative planning
- Continue to respond to the need for information by constituents
- Ensure that roles and tasks are shared by a majority of stakeholders
- Tie roles and tasks to specific goals and objectives
Monitoring and Evaluation

Based on these case studies, the steps in the monitoring and evaluation phase appear to be essential in the collaborative model, however, it was also one of the most difficult areas for the groups to adequately address due to several factors.

Establishment of baseline data prior to restoration efforts was poorly developed in both the Little Bear River and Willow Creek Projects. Stakeholders did not seem to perceive the importance of having an accurate baseline for future monitoring and evaluation efforts. There was also considerable impetus in these groups to begin implementation prior to the establishment of baseline data (Allred 1998, Williams 1999). These groups wanted to implement on-the-ground projects to demonstrate their effectiveness as a planning group. The groups often did not want to wait while baseline data was being collected and as a result, attention was diverted away from developing a detailed baseline.
Another factor directly related to baseline data is the development of measurable objectives. Although this task occurs in the direction setting phase, the importance of this task emerges during monitoring. Even when quantifiable objectives were developed, they often were poor surrogates for evaluating the real problems and issues identified. In addition, a critical but difficult aspect of monitoring and evaluation is the development of a system that can evaluate the effectiveness of individual plan elements. Without this level of detail in the monitoring program, it is impossible to assess what elements were successful and which ones should be modified or discarded.

In addition, the coordinators expressed difficulty in acquiring resources for these tasks. Sharing responsibility among stakeholders for monitoring tasks was one way that ARSG maximized efficient use of their financial resources. Sharing responsibility for these tasks also helped maintain stakeholder commitment and increased the thoroughness of the analysis. Quality control of data can be an issue; ARSG coordinates the monitoring sub-groups beforehand to ensure compliance with sampling protocols and to calibrate sampling equipment.

The main method of compliance for all three case studies is based on volunteerism. All three groups share the hope that a sense of stewardship will be developed, providing a desire to comply with the various aspects of the watershed plan. While this may apply to some stakeholders, it is probably unrealistic to expect all stakeholders to feel this way. Other research on watershed-based soil and water conservation efforts have shown that volunteerism is not always an effective technique for ensuring compliance even when combined with education and financial incentives (Napier 1998, Napier and Johnson 1998). In two of the case studies, a final measure for ensuring compliance will be water quality regulations. Consequently, it may be the most realistic to have a multi-tiered compliance program that relies on volunteerism as a foundation but also has the capacity for other more formal methods of accountability.
Adaptive management is dependent on an effective monitoring and evaluation program to funnel information back into the iterative planning process. All of the coordinators acknowledged the importance of adaptive management. However, due to either the group's stage in the planning process or to an inadequate monitoring and evaluation program, good examples of adaptive management could not be identified in any of the case studies.

In summary, key considerations in monitoring and evaluation include:

- Establishing a baseline prior to implementation
- Developing a detailed monitoring program capable of assessing individual plan elements
- Acquiring resources for monitoring and evaluation
- Developing a multi-tiered compliance program
- Establishing an effective monitoring and evaluation program to carry out adaptive management

**Model Refinement**

Based on these case studies, Selin and Chavez's model seems to encompass the range of considerations important for the establishment and operation of collaborative planning. However, a few refinements (shown in italics) are proposed for the model (Figure 43). Lack of data and threat of regulations are added as additional factors in the antecedent phase. Formalizing relationships was moved from the implementation phase to the direction setting phase as discussed in the preceding section.

*Establishing Baseline Data* is a step added to the direction setting phase to emphasize the necessity of having a solid database on which to build the monitoring and evaluation program. In collaborative planning, development of a baseline may be unintentionally overlooked because coordinators are often occupied with other tasks in maintaining a cooperative working environment.
Figure 43. Revised collaborative model for environmental planning. Modifications are shown in italics.
Acquiring or Redirecting Resources is an another step added to the overall structure of the model. This component was added to highlight the importance of acquiring funding and other types of resources throughout the entire planning process. As some of the case studies illustrated, funding may be acquired for implementation tasks but not for other planning tasks.

In some situations, acquiring new sources of funds and other resources will not be necessary. Redirection of existing resources may occur if more efficient alternatives are proposed. In the case of ARSG, funds that were normally earmarked by mining companies for environmental litigation were now being redirected toward more proactive mined land remediation (Simon 1998).

In addition, volunteerism is a resource that can be tapped to minimize external costs. Some of the most effective work completed by the Little Bear River Group was done with volunteers such as the cleanup of McMurdie Hollow, which involved well over 400 volunteer hours. Ironically, when significant financial resources were available, it sometimes had an adverse effect by not forcing the groups to prioritize their efforts. For instance, significant funding from the EPA 319 grant program seemed to encourage the Little Bear River Group to undertake a substantial number of small, incremental projects throughout the watershed. Limited funding as in the Willow Creek Project tends to force groups to prioritize their efforts, which may lead to more realistic goals and objectives.

It is important to note that all three case studies were primarily restoration projects. Most likely this influenced the results found in this thesis. In general, restoration is a popular and easier task to rally public support, therefore making collaboration more feasible (Williams et al. 1997). Usually, restoration only becomes contentious if blame for the damage must be determined or responsibility for restoration costs established. This was one of the reasons why the Animas River Stakeholder Group was highly contentious at the beginning of their planning effort. Other planning efforts that involve distribution of limited resources are significantly more contentious, such as determining areas appropriate for recreation activities versus timber harvest (Bingham 1986).
These types of planning efforts may not be as conducive to collaborative planning and may follow a different sequence of steps than outlined in the Selin and Chavez's model.

As with any model, it is only an abstract representation of key elements. Additional elements not identified in this model may prove to be important in other planning situations. The model should also be used only as a guide for collaboration and not as a formula for success. Planners should be flexible when applying this model and should always respond to the local context.

**Barriers to Collaborative Planning.** In these case studies, two significant barriers to the collaborative planning were present:

- Existing laws
- Agency priority

Existing laws and regulations can prove to be significant barriers as illustrated in the Animas River Stakeholder Group case study. The lack of a good samaritan provision in the Clean Water Act is preventing voluntary cleanup of mine sites because ARSG is afraid that it will incur liability for the cleanup.

In the Willow Creek Project, agency priority was a major obstacle to collaboration. Although the local representatives of federal land management agencies supported the project, their time and resources required them to address what they perceived to be more pressing issues. This example suggests that efforts spent convincing agencies of the need for collaborative efforts may be ineffective and unnecessary. Other researchers who have examined agency acceptance of collaboration support this conclusion (Carr et al. 1998). Instead, the real issue may be to address limited agency resources and prioritization procedures.
Gray (1989) identified other obstacles to collaborative planning and suggests that collaboration is not effective in three types of situations:

- Disagreement over rights
- Struggle over power
- Disagreement over values and morals

Although these issues may not be resolvable by collaborative planning, based on these case studies it appears that some of these issues may be adequately managed. For instance, disagreements over property rights issues were present in some of the studies but the coordinators were able to work through these issues. Related to power struggles, the groups did not ask stakeholders to abdicate their final decision making authority on lands they either owned or had responsibility for managing. Consequently, power struggles were not evident in these studies.

Because data were not collected from individual stakeholders regarding their values and perceptions, conclusions could not be drawn about disagreements over values and morals. However, other research suggests that this may be the toughest and most unrealistic issue to address in collaborative efforts (Moote et al. 1997). Consequently, planners should evaluate the real basis for disagreement to determine if change may be possible.

**Future Areas of Research.** A growing body of literature has been documenting the emergence of collaborative planning efforts. For instance, a University of Wyoming graduate student recently completed a thesis on three different collaborative groups in the western United States (Chamberlin 1998). Although this thesis did not evaluate a specific collaborative model, the conclusions offer support for the findings in this thesis. Other published works have also established a solid foundation for collaborative planning (Gray 1989, Urban Land Institute 1994).
The next generation of research on collaborative planning needs to move beyond the basics and build on this foundation by asking tougher, more precise questions. New research is starting to tackle specific issues such as stakeholders' perception of fairness in collaborative efforts (Richardson 1998). Future research should also address some of the following topics:

- Additional detail and refinement of specific collaborative elements
- Management of barriers to collaborative planning
- Determining appropriate group organization structures that facilitate collaboration

Conclusion

Ensuring that a planning effort is collaborative will not necessarily guarantee that good planning will result. Careful attention still needs to be given to the technical aspects of environmental planning. Inadequate inventories and analysis and unimaginative synthesis will still result in poorly developed plans even in a collaborative environment. We need to move beyond the warm and fuzzy aspects of collaborative planning. Proponents of collaborative planning espouse improved dialogue as a main measure of success of these efforts (Propst 1997). While improved civility and dialogue are important intangible measures of success, the acid test will be if these efforts can improve management of natural resources in an equitable manner. While evidence seems to suggest that this is possible, we must not be blinded by our optimism but instead must continually critique and improved upon these efforts.
Interestingly, all of the case studies involved schoolchildren in various aspects of the projects. The real benefit of these efforts may emerge down the road when these future leaders realize that cooperation is often a better model for getting things accomplished. Maybe then we will have created a society to match the scenery.

"Angry as one may be at what careless people have done and still do to a noble habitat, it is hard to be pessimistic about the West. This is the native home of hope. When it finally learns that cooperation, not rugged individualism, is the pattern that most characterizes and preserves it, then it will have achieved itself and outlived its origins. Then it has a chance to create a society to match the scenery."

Wallace Stegner
The Sound of Mountain Water
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