The Role of Interorganizational Networks in TMDL Implementation Planning

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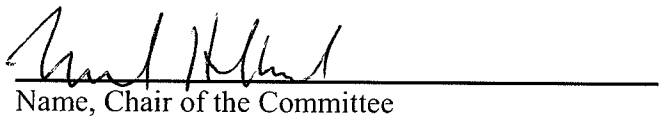

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Abstract

This project is a review and analysis of a regional, interorganizational approach to a specific water quality protection planning initiative. The rise of interorganizational approaches to planning, policy making, and project implementation is a current phenomenon noted by many scholars and practitioners. The network approach is being applied, formally and informally, to many of the problems facing society today including economic development, public safety, transportation, and a wide range of social services. Also, due to the broad scope and complexities of many natural resource issues, it is becoming a favored approach among natural resource academicians and professionals.

This project is an attempt to better understand how these emerging approaches, involving extensive networks of various types of organizations, work when applied to The Clean Water Act's Total Maximum Daily Load program implementation. It focuses on how this federal-level mandate gets implemented at the local level and how local organizations can optimize a cooperative process to meet these requirements.

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Introduction and Purpose

Overview

This project is a review and analysis of a regional, interorganizational approach to a specific water quality protection planning initiative. The project is timely in many ways. The rise of interorganizational approaches to planning and project implementation is a current phenomenon noted by many scholars and practitioners. The network approach is being applied, formally and informally, to many of the problems facing society today including economic development, public safety, transportation, and a wide range of social services. Also, due to the broad scope and complexities of many natural resource issues, it is becoming a favored approach among natural resource professionals (Loomis, 1993).

This project is an attempt to better understand how these emerging approaches, involving extensive networks of various types of organizations, work when applied to Total Maximum Daily Load implementation planning. It focuses on how this federal-level mandate gets implemented at the local level and how local organizations can optimize a cooperative process to meet these requirements.

The Federal Water Pollution Control Act, originally passed in 1948 and more commonly referred to as the Clean Water Act, was drastically amended by the Nixon administration in 1972. The amendments were the product of many years of dispute over how, or if, the federal government should intervene in setting water quality standards (Houck, 1999). The Act originally focused on point sources, which are the easiest sources to identify and control. After significant gains, progress stalled towards the stated Clean Water Act goal to, "restore and maintain the physical, chemical, and biological integrity of all waters of the nation" (DEQ, pg. 1-

3, 2004) To reinvigorate the effort to clean up the nation's waterways, the U.S. Environmental Protection Agency (EPA) is now focusing on the TMDL requirements in the Clean Water Act.

Total Maximum Daily Loads, TMDLs, are a component of the Clean Water Act as it was amended in 1977. TMDLs establish water quality targets with the goal of reducing non-point source pollution[1]. Although the Clean Water Act has been successful in reducing pollution from distinctly identifiable industrial and municipal discharges, known as point sources, non-point source pollution, the cumulative effect of many diffuse sources of pollution such as residential pesticide and fertilizer use, has continued to impair the nation's waterways. As of 1999 at least 40 percent of the nation's waterways remain impaired after technological fixes and point source pollution control. One author captures the difficulty of solving the non-point source pollution problem when he states, "Wiggling backwards from water quality impacts to a multiplicity of pollution sources, each of which believes it is already doing more than its share (or has ample excuses not to do its share), through the complexity of modeling, on-site assessments, monitoring, surveillance, proof, counter-proof, never-sufficient-proof, jawboning and appeals, and through the medium of reluctant and at times even co-opted state agencies, is very much like pushing on a rope" (Houck, pg. 165-166, 1999).

TMDLs are established by state environmental agencies as limits to the amount of pollution that a waterbody can receive and still meet water quality standards. The process begins when monitoring proves that the functions of a waterbody have been impaired by excessive levels of pollution. This waterbody is then placed on what is known as the 303(d) list, referring to the section of the Act where the list is defined. Once listed, waterways become targets for

[1] According to the U.S. Environmental Protection Agency, non-point source pollution, unlike pollution from industrial and sewage treatment plants, comes from many diffuse sources. NPS pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters, and even underground sources of drinking water (EPA, 2006)

environmental agencies to focus on as they develop TMDLs. After extensive water quality monitoring and hydrologic modeling efforts, TMDLs identify the maximum amount of a specific pollutant that can be present in a water body without violating water quality standards. This is known as the loading capacity. After extensive water quality monitoring and modeling efforts, TMDLs establish the difference between the loading capacity and the current pollutant load. TMDLs are expressed as numeric standards or percent pollutant reductions that need to be met to bring water bodies into compliance with water quality standards.

The difference between the current pollution load and the loading capacity is known as excess load (DEQ, 2004). The excess load is split up between the different sources of pollution according to their contribution to the overall pollution load. Any difference between the waterway's loading capacity and the current pollutant load must be mitigated by pollution reduction activities. The DEQ develops wasteload allocations for point sources such as wastewater treatment plants and industrial discharges. They develop load allocations for non-point pollution from agricultural, urban, and forestry lands such as erosion, animal wastes, and stormwater. The state environmental agency releases TMDL documentation, assigns specific load reductions to various sources of the pollutant, and designates responsible entities (Designated Management Agencies, or DMAs) to develop plans to reduce pollutant loads and meet standards. DMAs are responsible for organizing an effort to implement pollution control strategies in the areas they have jurisdiction.

In Oregon, there are five necessary components of a TMDL Implementation Plan. Once the final TMDL is released, DMAs have 18 months to submit a plan that:

- Identifies management strategies the DMA or other responsible entity will use to achieve load allocations and reduce pollutant loading;

- Provides a timeline for implementing management strategies and a schedule for completing measurable milestones;
- Provides for performance monitoring with a plan for periodic review and revision of the implementation plan
- Provides evidence of compliance with applicable statewide land use requirements; and
- Provides any other analyses or information specified in the Water Quality Management Plan (Oregon Administrative Rule 340-042-0080).

It is at this point, the *implementation* of TMDLs, that this project focuses. The intricacies of establishing TMDLs and the processes used will not be discussed as the focus of the project is to examine how this information is used to plan water quality protection efforts at the local level. Specifically, the focus is the implementation of TMDLs by local municipal and county governments.

The pressing question when examining the propriety of an interorganizational approach should be whether or not the use of such an approach will lead to better outcomes than individual efforts could attain (Bardach, 1998). It is in that light that the core goal of this project is to distinguish which aspects of TMDL implementation can be most effectively addressed with an interorganizational approach and which aspects may need to remain local and autonomous. From the specific knowledge about interorganizational approaches to TMDL planning, lessons will be drawn out that have implications for other planning efforts.

Problem Discussion

There has been considerable attention paid to the growing complexity of environmental problems (Bressers and Rosenbaum, 2000). Since the rise of the environmental movement in the late 1960s, the interaction between civil society, legislators, the general public, and public agencies has increased dramatically. This increase in interaction has brought an increase in the

complexity of environmental planning and decision-making (Bressers and Rosenbaum, 2000). One of the most pressing environmental issues facing the United States, and indeed the world, is the prevention of water pollution and the preservation of water quality (UNESCO, 2006).

Because it is such a complicated and pressing issue there have been a wide variety of institutional structures established in the effort to address water resource problems. As prior arrangements prove ineffective, new arrangements are created, often without clearing up the maladies of the prior. This is strikingly clear in the federal government's management (or mismanagement) of the nation's water resources. Rogers (pg. 15-16, 1993) illustrates the complexity of institutional arrangements within the federal government;

> *"Today there exist 34 federal agencies making water decisions, including 11 independent federal agencies in 10 cabinet departments, four agencies in the Executive Office of the President, five river basin commissions, the federal courts, and two bureaus. There are at least 25 separate water programs, governed by more than 200 sets of federal rules, regulations, and laws…The nation's primary water policy-making body, Congress, is equally fragmented. By the 102nd Congress, there were 14 House committees with 102 subcommittees, plus 13 Senate committees with 82 subcommittees, exercising responsibility over some aspect of water resources. Seventy-six separate congressional appropriations accounts for water have been identified. It is no surprise that the legislation enactments over the years have exhibited overlap, duplication, and even inconsistency."*

This description provides good background on the ways that water resource initiatives, due to their interjurisdictional nature, the existence of competing uses, and the relationship with

many different activities, can result in complicated arrangements and ineffectiveness. This research examines one approach to a specific water quality project in light of this broader confusion on how to best deal with water resource issues with the intent of drawing out lessons from this local example that can be considered in improving efficacy across all levels of government.

Small cities and predominantly rural counties have limited resources to address the uncertainties surrounding these complex problems and many other issues are competing for the attention of local staff and decision-makers. One of the major advantages to addressing a shared issue collectively is the supposed increase in efficiency. A coordinating entity can oversee a process to eliminate duplication and share information. The advantages during the planning stages can also lead to benefits during the implementation stage. This project considers these suppositions and critiques this planning process to determine their reliability.

Project Context

The Oregon Department of Environmental Quality finalized the TMDLs for the entire Willamette Basin in September 2006. Temperature, bacteria, and mercury are the three parameters that have been included in all of the Willamette Basin TMDLs. Although other pollutants have been found at excessive levels in specific spots, these three pollutants are the major concerns throughout the entire Willamette Basin.

The Willamette River basin, located in northwest Oregon, contains almost 1,400 miles of streams that do not meet water quality standards (DEQ, 2002). To address the water quality issues in the Willamette Basin, the Oregon Department of Environmental Quality has classified over 90 entities as Designated Management Agencies that need to develop TMDL Implementation Plans.

This specific project is located in the uppermost reaches of the Willamette River in the southern part of the Willamette Valley. The area of focus for this project is the Lane County portion of the Willamette Basin including the McKenzie, Middle Fork, Coast Fork subbasins and the southern portion of the Upper Willamette subbasin. The study area covers lands under the jurisdiction of nine local government DMAs including Lane County and eight cities. Agricultural and forestry lands, lands managed by the federal government, and land within the Springfield/Eugene metropolitan area are not included in this plan. These TMDL requirements are being met through different processes. This project focuses on urban and rural residential strategies that address non-point sources of pollution. Point sources, such as wastewater treatment facilities, are addressed through an individual permitting process.

In October 2003, anticipating the release of the Willamette Basin TMDLs, a group of city administrators from Lane County and municipalities within Lane County directed staff from Lane Council of Governments (LCOG) to pursue funding for a regionally coordinated TMDL planning effort. LCOG is a voluntary association of local governments that "serves as a regional planning, coordination, program-development, and service-delivery organization." LCOG was awarded grant funds from the DEQ to coordinate a regional planning effort and assist DMAs in Lane County. This research describes the methods used to initiate regional, interorganizational TMDL implementation planning and analyzes the process to draw out lessons for future efforts.

This project examines how a regional, coordinated approach could improve the effectiveness of TMDL implementation and reduce the burden on local governments. I approach the analysis of the project by asking whether or not a regional process is the best approach to planning for TMDL implementation. The project investigates which aspects of TMDL

implementation planning can be effectively addressed using a regional approach and which need to remain local.

Research Questions

Water issues are aptly suited for interorganizational approaches due to the trans-political boundary geography of watersheds and watershed-based problem-solving. In the past, TMDL implementation has been addressed by single entities without a broader look at how to coordinate strategies for increased effectiveness.

There are two research questions that will be addressed. The first is "What components of TMDL implementation planning have the potential to be addressed regionally and which should remain local in scope?" This is a critical question and addresses the current belief that "regional" or "collaborative" approaches can be a panacea in addressing complex planning, service delivery, and policy questions. The second research question is a natural offshoot of the first. "What are the barriers to regional TMDL implementation planning?" The first question identifies the components of TMDL planning that can be addressed through a regional, interorganizational approach and the second follows by looking at why it may be difficult to implement an interorganizational process. While both of these questions are specific to TMDL implementation planning, the findings will provide insight to a wide variety of efforts seeking to utilize interorganizational methods.

Methods

The intent of this project is to investigate a series of actual events to provide better understanding about the appropriateness of a regional, interorganizational approach to TMDL implementation planning. The methods used to gather information, coordinate amongst different

groups, and develop a regional approach to TMDLs in Lane County are included as part of the research methods. Beyond these project-specific methods, additional methods were applied to augment and expound on the results of the specific regional TMDL implementation process.

The project methods include a number of information gathering, analysis, and compilation techniques. The most significant is a short survey of public works, planning, and city administration staff regarding the programs and policies related to water quality that currently existed. While the primary role was to gather and arrange dispersed information into an easy-to-use reference document, the survey process also provided opportunities to educate local staff about TMDLs and, more broadly, potential water quality protection strategies.

Concurrently, multiple regionally-oriented meetings among staff from local jurisdictions, grassroots watershed organizations, and the state environmental agency were facilitated by the region's council of governments. The methods used to prepare for, facilitate, and come to decisions at these meetings are significant in better understanding effective approaches to interorganizational planning.

To ensure that this process resulted in more broadly applicable lessons for future TMDL and other interorganizational water resource projects, additional analytical methods were used to address how the practical outcomes coincide with or deviate from current theory on the topic. Participatory action research has been proven to be an effective way to use practical experiences to uncover theoretical implications (Patton, 2002). Two techniques within participatory action research that proved extremely helpful on this project are participant observation and key informant research. The broader participatory action research approach and these specific techniques are described in greater detail in Chapter 3: Methodology.

Research Significance

When looked at broadly, the results of this research can be used by other entities that are interested in interorganizational coordination. The findings draw out what conditions need to be carefully considered before embarking on an interorganizational planning effort. By bringing about a better understanding of what the limiting factors in an interorganizational effort are and formulating the attributes that lead to success in these efforts, the research will help improve the effectiveness of interorganizational work.

The application of networked governance and interorganizational theory to an applied natural resource planning project involving local governments, grassroots watershed organizations, a regional council of governments, and a state agency demonstrates how these theories are affected by organizational character, relationships, resource availability, regulation, and local context.

More specifically, many more local governments across the country will be facing the requirements of TMDL implementation in the years to come. This case study of a coordinated approach to TMDL planning will provide an example to encourage a more integrated response to this issue. Often, local jurisdictions would like to pursue an innovative course of action, but they lack information about the best way to proceed. This results in cobbled together efforts that are delayed or ruined by issues that could have been avoided through research and careful planning. This example provides a clear picture of what to be aware of when attempting to coordinate TMDL implementation planning among many different entities.

Overview

This introductory section has provided a brief summary of the project, its structure, and the theories assessed. Chapter 2: Literature Review begins by reviewing the fundamentals of

intergovernmental relations, network management, and regional environmental management.

From this broad perspective, the project narrows in scope by focusing on previously conducted regional water resource planning efforts, the background of the EPA's TMDL program, and previous research on the effectiveness of the TMDL program. Chapter 3: Methodology describes how information for this project was compiled and analyzed.

The findings from the application of this methodology to the specific project are contained in Chapter 4: Lane County Regional TMDL Implementation Planning Process. This section describes the organizations that were involved and the specific process used in this TMDL implementation planning initiative. The variety of organizations involved in the project makes it an ideal case for exploring the usefulness of interorganizational coordination in addressing Clean Water Act requirements. Chapter 5: Summary, Conclusions, and Recommendations takes a step back to draw out the potential lessons for similar types of planning efforts that may consider using interorganizational methods. This section also includes recommendations for further research, which would increase understanding of how interorganizational approaches work.

Review of Literature

This chapter presents an overview of the existing literature on three topics that relate to the research questions posed in this paper. The review establishes the theoretical basis for addressing these questions and illuminates how this original research contributes to the existing body of work.

The first section examines water resource planning and management to demonstrate how this sub-discipline of natural resource management is, and will continue to be, a field that faces complex challenges. The section presents information that poses water resource issues as especially suited for interorganizational approaches. Building off of this fundamental understanding, the next section reviews the literature on the theory behind interorganizational initiatives and how these approaches are becoming increasingly popular in public sector management. The chapter closes with an overview of the Clean Water Act, Total Maximum Daily Loads, and prior efforts to implement these standards.

Water Resource Planning and Management

The water resource planning and management discipline is often separated into two categories. Although not exclusive of each other, water quantity (or supply) and water quality are the two most prevalent ways of framing water resource concerns. This research examines planning efforts that focus on the protection and restoration of water quality. Many have noted that dealing with water supply and quality issues will be the major issue facing society in the coming years (UNESCO, 2006).

In the United States, great strides have been made to cut back water pollution through the regulation of point sources. This was a relatively straightforward process that received broad-

based support and yielded almost immediately noticeable results (Houck, 1999). In the years since the initial push to control point sources of pollution, water resource issues have become increasingly complex.

The rise of ecosystem-based approaches to natural resource problems, increased citizen and special interest involvement, and a growing skepticism around the use of science are some of the major factors that influence how water resource problems are being handled today. Instead of being able to clearly identify a point source of pollution and monitor it for compliance with definite, measurable standards, policies and activities are now trying to address sources of pollution that are diffuse and difficult to monitor. Changes in practices do not lead to immediate results, scientific findings often lack certainty, and competing information can lead to impasses.

These trends have shifted the focus from top-down regulatory approaches to more horizontally-oriented voluntary efforts (Goldsmith and Eggers, 2004). As a demonstration of the change in thinking about compliance with federal standards, the "EnLibra principles" provide a notable example of this recent phenomenon. The Western Governor's Association (2003) developed these principles in response to a drastic increase in conflict and impasse around natural resource management and conservation. *EnLibra* is Latin for "move toward balance" and the overarching theme is to get away from polarization to achieve successful outcomes. The principles have been embraced by a variety of different entities from local conservation groups to the U.S. Environmental Protection Agency. Among other things, these principles emphasize local decision-making, "National Standards, Neighborhood Solutions", and incentives over regulations, "Markets Before Mandates". These examples of principles sought after by leaders across all levels of government demonstrate how environmental problem-solving is in a major transition.

The TMDL implementation efforts in Oregon show a clear emphasis on looser regulations and allowance for flexibility in attaining compliance. The guidance given to communities has been very general and the language of the Oregon Administrative Rules that govern the process contain only five broad requirements. The regulatory agency, DEQ, has focused more on cooperative decision-making and relationship building.

The trends outlined above have impacted the way that organizations address water resource issues. Along with being more interorganizational in nature, water resource initiatives have broadened in geographic scale. Organizations have realized that to be truly effective in addressing water resource problems, they need to be addressed in terms of hydrologic, not political, boundaries. This has led to a dramatic rise in regionally-based, interorganizational efforts (Cortner and Moote, 1999; Johnson et al., 1999).

In an effort to study how collaborative, interorganizational efforts work in the realm of water resource management and policy, Innes and Connick (2003) observed three major water resource-related efforts. The researchers framed successful outcomes not as agreement reached, but as a series of eight factors that incorporate some of the less tangible outcomes described in the previous section. They built off of previous research in defining eight procedural necessities that lead to success and found that interorganizational collaboration has led to the production of "robust and lasting outcomes that extend well beyond the resolution of specific disputes" (pg. 195).

These findings have significant implications for the creation and application of interorganizational processes to address TMDL implementation. While the focus of the effort remains on the specific issue, long-term opportunities may also exist. Taking advantage of these opportunities as they arise from an interorganizational process would have lasting benefits by

sustaining TMDL implementation efforts and institutionalizing water quality protection activities. If the process was to stall or an impasse should arise, the bigger picture can be used to reinvigorate the effort and move past trivialities. This is one of the great advantages of an interorganizational approach.

Crafting these types of arrangements is difficult and, although there are many benefits, the challenges must also be considered. The next section reviews the fundamentals of interorganizational cooperation and further examines how its growing popularity has influenced the water resource planning and management field.

Interorganizational Approaches and the Rise of Networks in the Public Sector

The problems facing public institutions are growing increasingly complex. Environmental issues in particular are gaining a reputation as hard to handle and contentious. As Bressers and Rosenbaum (2000) note, public administrators face a trilemma in making sound policy in the environmental arena. The trilemma involves "reconciling the competing demands of scientific accuracy, procedural equity, and democratic political norms" (pg. 527). This process and the resultant frustrations have caused local governments to be very cautious and, at times, even evasive of environmental planning and policy-making (Blackburn and Bruce, 1995). Additionally, traditional approaches, such as litigation, have proven to be time consuming, expensive, and unproductive.

As a result of growing complexity and frustration with conventional methods, interdisciplinary approaches are becoming a more standard way of confronting environmental problems. This approach has generated mixed results, but it has become clear that interaction among diverse agencies and organizations is necessary to solve complex problems. As a result,

administrators and staff are increasingly interested in ventures that cross traditional professional and jurisdictional boundaries (Goldsmith and Eggers, 2004).

Local governments, such as cities and counties, are becoming more amenable to networked approaches because they are facing significant challenges with limited resources. In many small cities infrastructure is aging, citizens are reluctant to support new taxes, regulatory pressures are mounting, and government is generally stretched thin. These pressures and the awareness that traditional approaches are often lacking have caused local governments to be more open to working in partnerships with other public entities and private organizations.

At the federal level, networking and interorganizational contracting is already well established. The federal government now spends $100 billion more on contracts than employee salaries. The trend at the federal level is also being seen at the state and local level (Goldsmith and Eggers, 2004).

Interorganizational approaches fall under many different labels. Collaboration, partnership, networks, and other terms all fall under broad designation as an interorganizational undertaking. Collaborative approaches to public service delivery and decision-making are a specific type of interorganizational arrangement. There is also a renewed focus on how private entities can be linked with government to achieve common goals. Often referred to as public-private partnerships, the resultant networks can contain many different entities. The systems that are formed by collaborative efforts, networked governance, and public-private partnerships are often very complex and the results can be widely variable. Many times, the outcomes are not limited to tangible deliverables. The end goals can also be an increase in awareness, flexible, adaptable institutions, and social capital (Innes and Connick, 2003).

The following definitions begin to establish what the key components of networks and interorganizational efforts are. Goldsmith and Eggers (2004) use the term 'network' as a reference to "initiatives deliberately undertaken by government to accomplish public goals, with measurable performance goals, assigned responsibilities to each partner, and structured information flow" (pg. 8). The editors of a collection focused on managing networks to create policy define "policy networks as (more or less) stable patterns of social relations between interdependent actors, which take shape around policy problems and/or policy programs" (Kickert, Klijn, and Koppenjam, pg. 6, 1997).

The breadth of these two definitions hint at the variety of ways that networks can be constructed and the wide range of purposes they can be used to fulfill. While networks in and of themselves are interesting, the management of these arrangements is the primary consideration of this research. Network management is a form of coordination that exists within an interorganizational framework with the goal of directing strategies and involved entities with different goals towards solving a problem, delivering a service, or creating policy (Kickert, Klijn, and Koppenjam, 1997).

In their study of how networks are changing the structure of governments, Goldsmith and Eggers (2004) highlight four major advantages of the network model; *Specialization*, *Innovation*, *Speed and Flexibility*, and *Increased Reach*. In addition, they make a clear case that properly implemented networks support a vibrant civil society and self governance. By fusing organizations that do not traditionally work together, networks generate innovative ideas and allow government to pursue alternatives that previously exceeded their capacity.

These advantages often lead to a one-sided promotion of networks as an overall cure for all that ails government. There are, however, many challenges that need to be addressed. One of

the primary challenges includes maintaining the high level of accountability that is sought after in government affairs. The other challenges include maintaining proper and efficient administrative procedures, maintaining focus on the public interest, clear communication, and stability. These challenges must be carefully considered before attempting a network approach and it is important to realize that there are certain situations that are not suitable for a networked approach.

The practical application of these concepts is a challenging task and networks are not always the best way to go, but they will be helpful tools that can be used as public servants seek to maintain public entities as valid, capable, and thriving components of society. Government is definitely changing and network governance seems to be the next operative paradigm in the public sector.

The Clean Water Act and Total Maximum Daily Loads

As mentioned earlier, the TMDL program is based on section 303(d) of the Clean Water Act Amendments of 1972. This section requires the EPA to identify pollutants that needed to be analyzed and pollution levels that cannot be exceeded. Once complete, state environmental agencies are required to list which waterbodies are not meeting standards. These standards are based on whether or not the waterway's "beneficial uses" are being met. Beneficial uses include such things as fish rearing, recreation, and drinking water. These uses are unique to each waterbody depending on the local conditions and existing uses. If state agencies determine that the waterbody is not meeting standards it is placed on the "303(d) list" as a Water Quality Limited Stream (WQLS).

To put this in context, as of 1999 at least 40 percent of the nation's waterways remain impaired after technological fixes and point source pollution control. Since the definitive court

cases in the late 1970's and early 1980's, the TMDL program has gone through many revisions in efforts to get states and other interest groups moving towards developing and implementing TMDLs.

The Clean Water Act TMDL Program, by renowned environmental law professor Oliver A. Houck, gives an overview of the federal legislation, how it has been implemented (or avoided) over time, and how the future use of the 303(d) provisions and the Total Maximum Daily Load (TMDL) program has the potential to severely reduce the extent of water pollution in this country. Houck is clear in pointing out that states are still dragging their feet on developing tangible, enforceable standards for water quality limited streams. This hesitation illustrates the difficulty of pinning down "blame" for the many impaired waterbodies that exist even after point source control. The complexity and lack of 'perfect' scientific knowledge establishes TMDL-related processes as very compatible with interoganizational processes.

The scale of the project falls between the two extremes of local government on the one hand and large mega-regions on the other. The study area is based on watersheds, not jurisdictional boundaries, which has been seen as an effective way to address water quality concerns in a holistic manner. This project contributes to the existing literature by applying principles from within the field of interorganizational theory to a specific water quality initiative. The lessons drawn out from this research will have ramifications for how TMDLs can be implemented across the country and will also provide insight on designing effective networks to address water resource concerns.

Methodology

The research conducted for this project is very practical. The research is designed to better understand the effectiveness of a process. In this way it is similar to a formative evaluation. The research is participatory in nature and the results are presented in order to improve future efforts. Although the project contains a mixture of methods, the most accurate description of the approach is action research.

In presenting this research, a preliminary step was to develop the theoretical base for understanding and framing the subject matter. A broad review of existing research on interorganizational theory and application framed the project within an often nebulous conceptual area that straddles political science, organization theory, sociology, and management. This theoretical research is summarized in the preceding chapter.

Building off this foundation, there are two distinct facets of this project and each employed unique methods. The first is the actual methods used to coordinate and move forward the interorganizational process. The second facet is to analyze the process. The first involves the actual doing of interorganizational management and planning while the second assesses the process to draw out larger lessons.

To initiate an interorganizational effort, there must be a shared issue to draw all interested parties together. In this case, the impetus is the release of the Willamette Basin TMDLs along with requirements for DMAs to establish implementation plans.

The first method used to initiate the interorganizational effort was securing resources and positioning a coordinating body to facilitate the process. Background research and information gathering allowed Lane Council of Governments (LCOG) to achieve the status needed to attract

outside investment through grant funds. As will be discussed later, LCOG was a natural fit to coordinate the interorganizational effort.

The second method involved the building of support from affected entities and obtaining commitment to participate. In this case, the grant proposal provided an ideal focal point to gain support and commitment. After initial communication with representatives from local organizations and government explaining the TMDL project's structure and objectives, a strong proposal showing broad-based support for an interorganizational effort was submitted to the state environmental agency. The proposal was successful and thus began the next phase of support-building, coordination, and activity.

At the outset, there was little motivation for entities to commit time and energy to the project. Although resources had been secured to work on the project, TMDLs were still being finalized. This provided some time to do background research and build the capacity within the organization that would serve as the coordinating entity for the project. In late 2005 – early 2006, the DEQ released a draft of TMDL to get public comment. LCOG reviewed the entire TMDL, a highly technical, 1,500 page document, and prepared informational summaries to facilitate information dissemination among local staff.

The public comment period also provided an opportunity to bring interested parties together to begin the discussion on how to proceed with an interorganizational process. LCOG had some initial ideas of how to structure the process, but knew it was best to include the entire group in the decision-making. LCOG organized and facilitated a meeting between the state environmental agency, staff from local jurisdictions, and watershed council representatives. This meeting was also used to announce the initiation of a process that would be used to identify specific priorities for each jurisdiction as well as regional opportunities.

LCOG used a variety of data collection methods to compile scattered information about the existing conditions in local communities. A survey, entitled the TMDL Gaps Analysis Worksheet, was distributed to 3-4 key staff from each jurisdiction. The idea was to bring land use planning, public works, parks, and administrative information related to water quality together into an easy-to-use matrix. Having all this information in one place would allow the discernment of gaps in existing efforts to protect water quality. With many competing demands for staff time, it was important to highlight the benefits of completing the survey. A key strategy in getting staff to complete and return the worksheets was posing the worksheet as an opportunity to formulate a public comment expressing local concerns about TMDL requirements. There was also an emphasis on how completing the worksheet would streamline planning efforts in the future. During the three-month window, LCOG used a somewhat aggressive outreach effort to encourage staff to complete the worksheets. Amazingly, all nine local jurisdictions completed and returned the Gaps Analysis Worksheets.

Following this initial success was a period of relative inactivity. As the DEQ assessed comments, revised the TMDL accordingly, responded to those who commented, and prepared the final document for federal approval there was not a lot for local staff to do. But this provided an opportunity for the coordinating entity to use the information from the worksheets to prepare for the release of the final TMDL. While participating organizations ceased to work on the TMDL project, LCOG compiled, organized, and augmented the information gathered through the gaps analysis process. A method that proved to be very helpful was the review of existing documents such as land use and public facility plans. Starting with the information provided by staff in their responses to the gaps analysis survey, a matrix was developed to display existing efforts. Since the goal of was not only to highlight gaps, but also identify positive actions

already underway in these communities this matrix was labeled the "Regional TMDL Gaps and Assets Matrix".

Based on the findings from the gaps analysis LCOG developed a list of key focus areas for local jurisdictions. LCOG prepared a broad background report summarizing TMDLs, the pollutants of concern, the sources of pollution, and local conditions. To aid decision-making, a list of potential strategies, with reference to the pollutants they addressed, was also created.

There was also a lot of interest in developing a model plan to give local jurisdiction staff a clear picture of what DEQ expected to be in the implementation plans. One of the small cities in Lane County had exhibited special interest in the TMDL process. Taking advantage of this interest, LCOG and DEQ met with this small city to develop a plan template that could be used by other cities. The creation of a template early on in the process was an extremely valuable method.

Following the release of the final TMDL by the Oregon DEQ, LCOG distributed this information and coordinated a regional meeting to review the results. At this meeting of local staff, city administrators, DEQ staff, watershed council representatives, and LCOG staff discussed ways to proceed. LCOG presented the information gathered thus far and ask the group for input on moving forward. Following the meeting involving all interested parties, LCOG arranged to meet with DEQ representatives, who were administering the grant, and other entities to talk about issues that arose at the meeting.

The activities described above are the actual events that constituted this interorganizational process. While all this was occurring, I was also using broader analytical methods to draw out lessons on the act of interorganizational coordination and planning. Participatory action research was the primary approach used to analyze the process.

Michael Quinn Patton (2002) points out four major attributes of action research. It engages the people in the program or organization in studying the issue. It focuses on specific programs at specific points in time. The design and data collection tend to be informal. Patton also points out that the findings of action research are not often disseminated beyond the specific program or organization of interest. The research presented here is focused on the specific problem of TMDL implementation planning, but it also attempts to draw out lessons for similar interorganizational efforts in the future. Within the participatory action research framework, the specific research and process evaluation techniques included participant observation and interaction with key informants.

Observation is a talent that must be practiced and nurtured. According to Patton (2002), the two most important qualifications for observational methods to be considered valid are preparation and training. By always preparing before interaction with involved parties and realizing that I was serving not only as staff for the project but also as an observer, I made sure to stay focused on understanding the day-to-day activities in light of the overall research project framework.

Patton (2002) notes that a core element of action research is "the use of key informants as sources of information about what the observer has not or cannot experience as well as a source of explanation…" Through informal interaction with key informants and participants in this interorganizational TMDL planning process, I was able to confirm observations that I was having and uncover other issues that I had not considered. The primary cause of differing perspectives was the organizational affiliation of the informant. This observation in itself provides interesting lessons on the way that organizations interact.

Throughout this project, I served concurrently as staff at LCOG and a student in the Department of Planning, Public policy, and Management at the University of Oregon. This intermingling of theory and practice allowed me to serve in both roles more effectively while also allowing me to filter observations from the practice through the lens of theory and vice versa. A similar account describes my interaction with key informants during this time. These two tools within the broader participatory action research framework provide tangible suggestions on the accuracy of interorganizational theory based on real world application and forms implications for future efforts.

Lane County Headwaters TMDL Implementation Planning Process

This chapter describes how the events of this regional, interorganizational process illuminated key points of the theory surrounding interorganizational processes. The context is described in the first two sections; Geography and The Players. This provides the necessary information to better understand how these pre-existing conditions impacted the project's outcomes. Especially important are the structures and missions of the involved organizations and the relationships between them.

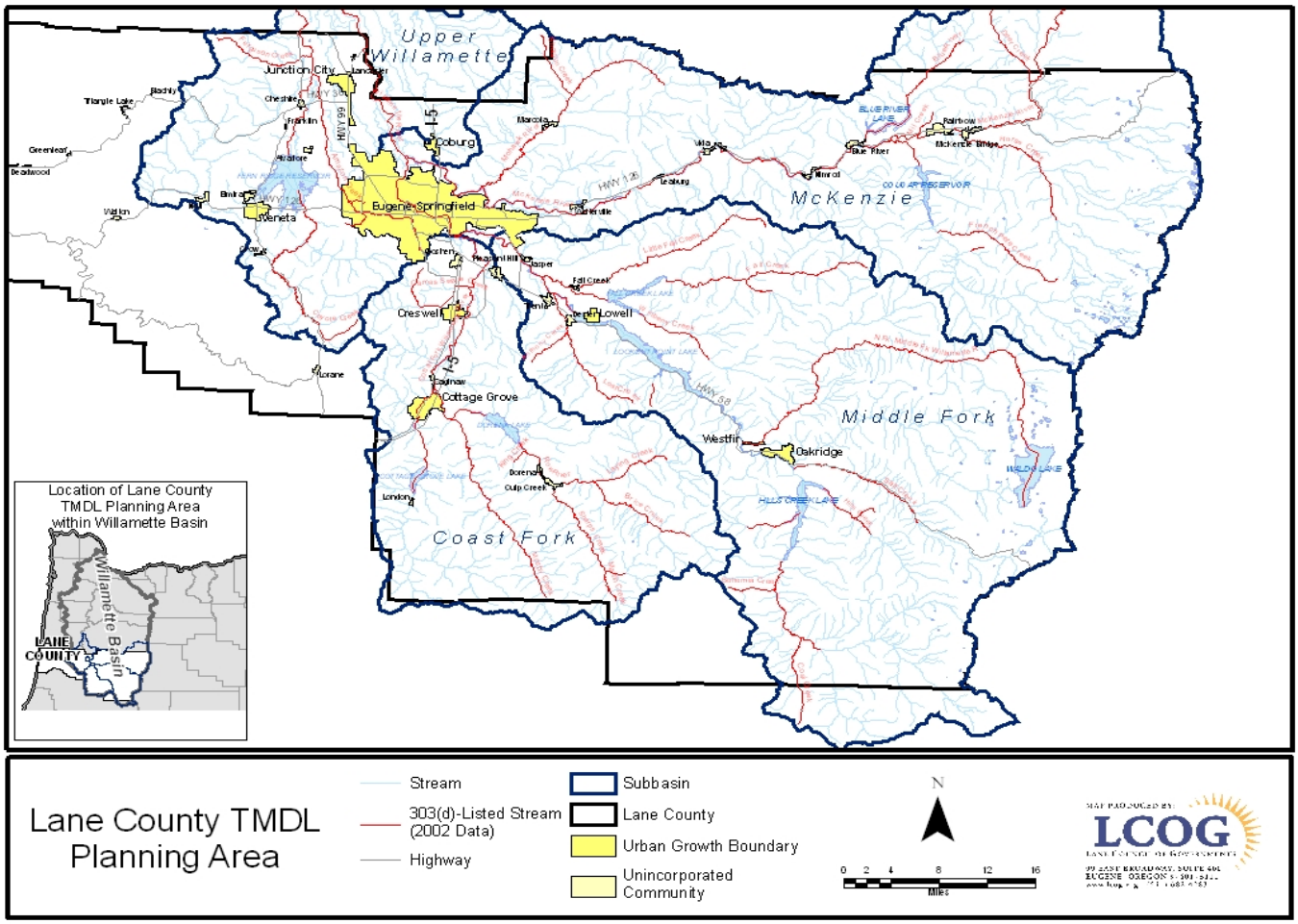
The third section draws out the specific events that allowed participant observation and key informant discussions. The dynamics of these events and where they fall in the overall project timeline provides insight into how interorganizational suppositions are played out in real situations. The last section summarizes the entire project according to identified, commonly accepted advantages and challenges of network approaches. This reflection is designed to highlight those aspects of the project that were closely aligned with theoretical expectations while also exploring why some were more prescient than others.

Geography

The mighty Willamette River spawns from humble beginnings. In the southernmost part of the Willamette Basin, upland forest streams begin as spring-fed rivulets, snowmelt drainages, or small mountain lakes. These watercourses join with other small streams and flow into major tributaries; the Mohawk, McKenzie, Middle Fork Willamette, Row, Coast Fork Willamette, and Long Tom Rivers. These rivers comprise the headwaters of the Willamette River as it proceeds to flow northward 186 miles to the Columbia and then to the Pacific Ocean. On its way, the river passes the state's three largest cities and nearly 2 million people (DEQ, 2004). In the next

45 years, an additional 1.7 million people are expected to be living on the land adjacent to the Willamette River and its tributaries (Sinclair, 2005). Current and future generations of Oregonians depend on the Willamette and its tributaries to provide water for drinking, industrial uses, sanitary functions, recreation, aesthetic enjoyment, fish and wildlife habitat, and many other purposes.

The Lane County portion of the Willamette Basin encompasses an area of nearly 3,769 square miles, spans four major subbasins, and is home to approximately 300,000 people. There are eight incorporated cities outside the Eugene-Springfield metropolitan area in the Lane County portion of the Willamette Basin. There are approximately 27,660 people living in these urban incorporated areas (PSU Population Research Center, 2004) and 56,733 rural residents living in unincorporated areas outside Urban Growth Boundaries (Lane Council of Governments, 2000). The following map shows the subbasin boundaries, waterways, and local jurisdiction boundaries.



Source: Lane Council of Governments, 2007

The McKenzie, Middle Fork Willamette, Coast Fork Willamette, and the Upper Willamette subbasins contain thousands of waterways, the quality of which is impacted by adjacent land uses. There are many different types of waterways in this region including a higher elevation network of rushing forest streams, channelized urban stormwater conduits, agricultural irrigation ditches, rural roadside ditches, mid-sized tributary rivers, and the beginnings of the broad, meandering Willamette River. The surrounding land uses are also very diverse.

These four subbasins are a patchwork of ownership and land use. The higher elevations on the western slopes of the Cascades are mostly federally managed forestland. Rural residential settlement has followed the river valleys of the Mohawk, McKenzie, Middle Fork, Coast Fork, Long Tom, and other smaller valleys. Near the Middle Fork and Coast Fork confluence and the Willamette and McKenzie confluence, urban settlement dominates the landscape. The eastern slope of the Coast Range is also forestland, but is mostly privately owned. As steep slopes flatten into the fertile Willamette Valley, agricultural producers have taken advantage of the high quality soils.

The Players

Interorganizational efforts are driven by the alignment of intra-organizational missions and mandates with a broader common purpose. For this reason, it is important to understand the conditions under which the organizations involved in this project are operating and how TMDLs presented a unique opportunity for the involved organizations to meet mandates and work towards shared goals.

The core partners in this project are those directly involved with the regional TMDL planning project. Although there are many organizations working on the implementation of TMDLs in the area, only a specific set are involved in the regional project. For example, the Oregon Department of Agriculture (ODA) is working with farmers to address pollution contributions from farmland, the Oregon Department of Forestry is addressing contributions from forestland, and federal land management agencies are implementing TMDLs according to their internal procedures. Although these organizations are working to address TMDLs, their organizational structures and the scale of their efforts are outside the scope of this project. The primary focus was to aid smaller, local jurisdictions.

A general understanding of the entities involved lays a good foundation for constructing an analysis of this project. The organizations involved in this project include the Oregon Department of Environmental Quality (DEQ), Lane Council of Governments (LCOG), 8 small cities, Lane County, and local watershed councils.

The DEQ's interest in the project is clear, but their relationship with the involved organizations differs and thus influences how they approach the TMDL issue. The DEQ spent nearly six years and a large amount of resources to create the pollutant loads for the waterways and define load allocations for the Designated Management Agencies (DMAs) in the Willamette Basin. They are therefore extremely vested in seeing that this extensive dataset translates into on-the-ground action to reduce pollution. The organization has designated staff to work with DMAs in developing their implementation plans.

The DEQ has regulatory authority to enforce compliance with TMDL standards, but they also provided the resources necessary to coordinate this interorganizational approach. Through one of the agency's grant programs to address non-point source pollution they provided financial resources to Lane Council of Governments to serve as the coordinating body of this effort. The distinct, yet related, roles that the DEQ is playing in this process provide significant incentive for them to be involved in and move the interorganizational effort forward.

Lane Council of Governments (LCOG) is a voluntary association of local governments and special districts in and around Lane County, Oregon. Although there are annual membership dues, most of the work conducted by LCOG is funded through intergovernmental, project-specific contracts and grants. By definition and based on past experiences, LCOG is especially capable of coordinating initiatives that involve diverse entities. This reputation certainly contributed to LCOG's success in securing grant funds for the regional TMDL implementation

project. LCOG's interest is defined by the scope of work for the grant, organizational mission and reputation, and the desire to build relationships with member agencies to establish a positive reputation possibly leading to future work.

As mentioned previously, the first step in the process was procuring the necessary resources to conduct an interorganizational effort. Once awarded grant money by the DEQ, LCOG's commitment to the project was established. The organization now had to comply with the stipulations included in the contract, which included the development of adoptable plans for local jurisdictions in the region and holding public involvement events. As will be discussed, a key component of interorganizational processes is flexibility. This can either be stifled or facilitated by language included in work agreements and is an important up-front consideration when designing network-oriented projects.

Local jurisdictions are the third major actor in this interorganizational effort. Ultimately, the two organizations described above have the shared interest of seeing pollution reduction activities implemented on the local level. The local entities are faced with pressure to comply with TMDL mandates and have an overall goal of providing quality public services. As opposed to DEQ's and LCOG's role, the local jurisdictions are mostly reacting to instead of initiating activities. They are primarily concerned with being in compliance to avoid civil penalties and instituting efficient systems and services to maintain quality of life in their community. Within each local jurisdiction there are a number of different people involved who represent different facets of local governance.

During the initial gaps analysis process in which LCOG developed a short worksheet to be completed by each jurisdiction key staff at each jurisdiction were identified. The areas of interest fell into either public works or planning departments. Therefore, worksheets were sent to

planners, public works directors, and, to ensure administrative representation, city managers. These three positions represent the major interests from local jurisdictions that were involved in the process. There is also a large role to be played by the elected officials, but the assistance provided was mainly directed at staff thereby enabling them to go before their elected officials when official action was necessary.

Watershed councils are locally organized, voluntary, non-regulatory groups established to improve the conditions of watersheds in their local area. These grassroots groups perform a variety of different activities including watershed action planning, water quality monitoring, restoration project development and management, and public education. While watershed councils have a clear interest in working on projects to protect and improve water quality such as TMDL implementation, they face similar budget and time pressures as other organizations. It was necessary to provide resources and support in the effort to engage watershed councils. This was done by designating a portion of the grant funds for work done by the councils. Again, flexibility was integral in this process and the ability to redesign work goals and reallocate funds became an important factor in the progress of this project.

Those four entities represent the major players in the regional TMDL implementation planning process. As described above, they all had an interest in being involved in the TMDL process. The following section describes the process of engaging these entities in an interorganizational planning process.

Procedural Observations

This section provides an overview of the process, but the real focus is on the influential factors that created opportunities for or barriers to success. An explanation of the original interorganizational concept comes from grant documents submitted to DEQ in order to secure

funds to do the work. From here, I will explain how the process changed, the actual outcomes, and the primary messages that can be taken from this example.

Grants are often written with little concern for reality. They are idealized pictures of how things would work in a perfect world, but they are extremely informative when trying to understand the original motives and objectives of a project.

The original grant document entitled "Lane Regional TMDL Implementation Plan – Willamette Basin" clearly emphasized the regional and interorganizational aspects of the project to portray it as a unique project that deserved funding. The application includes the following quote, "This project will allow an efficient, collaborative, regional process to be designed and completed instead of seven different government entities struggling with varying levels of technical support to develop plans to implement in order to come into compliance". The grant did not go so far as to suggest that a regional plan would be created for all jurisdictions and was careful to clarify that jurisdiction's would still ultimately be responsible for being in compliance. The document that has been produced through this process has been reduced to a technical document and staff are not even attempting to frame it as a regional plan due to the sensitivity around those terms.

Once awarded grant funds, the work began and there were many opportunities for observation. Within months of finalizing a work plan, a draft version of the TMDLs was released for a public comment period. This provided the first opportunity to initiate activity around the interorganizational effort. LCOG recognized that, although minor, the public comment period provided an incentive for local jurisdictions to notice and be receptive to TMDL-related activity. Along with the mutual interest that all the parties shared in being involved in TMDL

implementation planning, it was necessary to add a sense of urgency to motivate participation from local jurisdictions.

After relatively little communication about the project, LCOG distributed the "TMDL Gaps Analysis Worksheet". The worksheets were sent by e-mail as well as hard copies in regular mail to the staff contacts outlined above. LCOG followed the distribution of the worksheets with a phone call to each jurisdiction offering assistance. Most importantly, although the anticipated release of the final TMDL order was over a year away, LCOG emphasized that the close of the public comment period was only weeks away. The worksheets were posed as a way to identify any issues that deserved comment. This method proved successful and all nine jurisdictions returned completed worksheets.

To disseminate information and allow for discussion around the best way to move forward with the regional TMDL implementation project, LCOG convened a kick-off meeting in January 2006. Interestingly, there was very little substance that came out of this meeting that affected the long-term progress of the project. Although it was a good first step to get the involved entities together, the meeting served mainly as a presentation of information about TMDLs. The staff that attended were interested, but there was little tangible action that could be taken because the TMDLs were in draft form. LCOG provided an overview of the regional process concept and asked for feedback, but, again, without tangible examples and a clear idea of what was being required from the local jurisdictions not much came of this discussion. While it was important to get everyone together, the role that physical meetings play in today's interorganizational efforts is changing and it is important to ensure that physical meetings are necessary and productive.

Following the first meeting, there was a significant lull in visible project progress, but LCOG was able to work behind the scenes to be prepared when the final TMDL was released. The

initial grant work plan was laid out on a two-year schedule based on the expected release date of the final TMDL order. Due to extensive public comment and new modeling efforts, the DEQ was not able to meet their anticipated deadline. The release of the final TMDL was delayed over 15 months, which significantly impacted project progress.

During this time LCOG staff prepared documents based on the results from the gaps analysis. They began drafting general material that could be used by involved jurisdictions in their implementation plan and an internal discussion that began at the outset of the project continued. This discussion centered on the best design for the regional process and, ultimately, the best format for the final product. The first meeting touched on the topic, but, as mentioned, there was little feedback from staff. LCOG staff was realizing that the processes and products outlined in the grant application could be too laborious and even hinder success. This actualization was based on the process that might be necessary to have a regional plan adopted by multiple jurisdictions. When dealing with autonomous units of government, it is absolutely necessary to consider how the process of agreement will be facilitated. In this case, a change of course has been taken to avoid never-ending revisions and political battles.

While the TMDL was being finalized, LCOG began developing a plan template for local jurisdictions. This was done by engaging one of the cities that had expressed interest in the TMDL process early on. The DEQ and LCOG realized the benefit of doing a trial run of both the plan development and plan approval processes. The lessons learned through the trial process helped prepare LCOG and the DEQ for issues that would arise once the DEQ released the final TMDL. Additionally, LCOG was able to use the materials and experiences of the trial process to design items that other cities could use to streamline the process and reduce the intimidation of the unknown.

By working closely with DEQ through this process, there were many opportunities for feedback and LCOG even had opportunities to shape the expectations of the DEQ. Although subtle, this give-and-take afforded LCOG a significant role in crafting what TMDL implementation plans would look like in the region. This result could have been good or bad depending on the quality of the plans and presents a significant challenge when using an intergovernmental approach. The devolved sense of authority that arises when no entity stands firm as the regulator can lead to underwhelming results. While it is important to have good working relationships, it is also important to clearly distinguish and recognize the different roles and authorities of the players. In this case, LCOG was able to provide a strong mediating presence that accurately represented the jurisdiction's concerns, but also made sure that DEQ's interests were addressed and tangible results came out of the process.

Also during this time, LCOG received another grant to expand the scope of the TMDL work to include some demonstration and implementation activities. The reputation that LCOG had developed through the preliminary activities and the good working relationship with DEQ were certainly factors in the success of the second TMDL grant proposal.

Once the final TMDL was released interest in TMDLs increased significantly, but there was considerable uncertainty around what the DEQ was requiring from jurisdictions. The sense of urgency increased because the 18 month timeline for local jurisdictions to complete their plan began once they received notice of the release of the final TMDL order. This occurred in late September 2006 establishing an April 2008 deadline.

As LCOG worked to convene a regional meeting in response to the release of the final TMDL, they realized that there had been quite a few staff changes so it was necessary to refresh everyone on the basic TMDL procedures and requirements. The focus of the meeting however

was intended to be the options of utilizing a regional approach to ease the burden on the small jurisdiction's time and resources.

The meeting included representatives from the small cities including city administrators, LCOG staff, DEQ staff, and watershed council representatives, totaling 21 people. The watershed council representatives were somewhat timid and seated themselves around the perimeter of the meeting table while the city administrators and DEQ staff sat at the table, but directly across from each other. This interesting dynamic emphasized some of the hostilities between these two interests and the absence of this tension at the first meeting shows how deadlines and mandates drastically influence attitudes. Following a brief overview, the discussion turned to the level of detail that DEQ was requiring and how to obtain funding to implement some of these requirements. There was some tension over these topics which resulted in subtle attacks traded between DEQ and the small city representatives. Although it was a minor incident, it would have repercussions further on in the process.

Another key observation from the meeting was the lack of common understanding about how a regional process would work and the allocation of responsibility. Some city managers were willing to forego any control over the process if LCOG was willing to "write a plan for them." Others indicated that they would rather work with the watershed council due to their existing knowledge of local conditions and priorities. Still others were weary of being involved in a regionally-oriented process because the elected officials they took direction from disliked efforts involving other entities in the region. The influence of past experiences greatly impacted the direction taken in this project and these factors must always be considered prior to initiating an interorganizational effort.

Due to a number of factors, including political tension and procedural difficulties, the focus shifted towards having the coordinating body provide the support and background information necessary for staff to make decisions about what strategies best suit the particular locality. This approach was favored by the entire group as opposed to the development of a single regional plan to be adopted by all involved entities. While some information can be generalized and used by multiple jurisdictions, the particulars of how a city or county is going to move forward will most certainly vary. LCOG, as coordinating body, accommodated this turn of events in a number of different ways.

The first tangible way to meet the needs of the local jurisdictions was to provide an example of what the DEQ would consider sufficient to meet the TMDL requirements. The trial process, mentioned above, provided a wealth of experiential information and materials. By educating staff, providing examples, and giving guidance on the best water quality strategies for that jurisdiction, LCOG was able to meet the objectives of their grant agreement and build institutional capacity at the local level to address water resource issues in the future. This approach has multiple benefits because it leads to better-informed local staff and, in the end, a plan that has broad community ownership and is unique to the conditions in that area.

The resulting documents include a regional TMDL document called the, "*Willamette Headwaters: Water Quality Assets, Gaps, and Opportunities Study*". Although this document was originally conceived as the regional plan, staff was able to adapt it to be a guidance document and template. It contained information that could be directly copied into an individual jurisdiction's implementation plan, but did not dictate actions that jurisdictions should take. Included in this document was an example matrix that compiled a significant portion of the

required information into an easy-to-use format and a "menu" of strategies. These two tools, used together, gave jurisdictions an excellent start on their individual plans.

Although LCOG had facilitated an early trial process with a very small city there was now interest in applying these tools in the effort to help craft an implementation plan for a larger city. One of the small cities in the region was in the midst of updating their development ordinance and LCOG was providing assistance for that project as well. LCOG contacted the city and explained how it would be possible to address two problems at once with little additional work. The city was willing to proceed and committed time to help address TMDLs and incorporate water quality protection measures in the updated code. The coupling of these two processes proved extremely valuable and a quality example plan was produced.

The observations from the events outlined above definitely reinforce some of the established concepts surrounding interorganizational theory. The relationships and specific considerations will vary from project to project, but the general ways to ensure that an interorganizational process is successful will have many similarities. These advantages and challenges are examined more closely in the next section.

Advantages and Challenges

As discussed in the review of existing literature in Chapter 2, there have been a number of attempts to define the advantages and challenges of the networked, interorganizational model of planning and policy implementation. The Lane County Regional TMDL implementation planning process reinforces some aspects of interorganizational theory as previously described and researched. However, the project also has unique features that contribute to the existing body of research.

Goldsmith and Eggers describe four major advantages of the network model. In reviewing this particular project, each of these is present in some form or another. The most striking advantage of applying an interorganizational approach to this project was the increased flexibility. Interestingly, this benefit of the project also contributed to some of the project's uncertainty, fragmentation, and coordination problems.

Goldsmith and Eggers (2004) state that, "Networks…tend to be more nimble and flexible than hierarchies". This advantage was realized most clearly in the working relationship that developed between DEQ and LCOG. The original contract needed to be revised more than once and the close relationship between these two entities made this process relatively smooth. Early work produced by LCOG seemed to impress the DEQ and, from this point on, the relationship had a strong sense of trust and professional respect. As LCOG commenced the regional process and realized some of the difficulties in establishing a single plan for multiple entities, it merely took a meeting with DEQ representatives to explain these potential barriers and adapt the outputs accordingly.

The changes also led to uncertainty both within the project and in its appearance to external parties. Beginning with the schedule changes before the final TMDLs were even released, the process did not follow a logical sequence. Decisions were largely made on-the-fly with some supporting data, but mostly based on individual inclinations. DEQ funded this project with the idea that it would be a model for other areas to use in meeting TMDL requirements, but this benefit was largely unrealized because project partners could not clearly delineate or define the process. This leads to the conclusion that the flexibility could also contribute to fragmentation and miscommunications, which Goldsmith and Eggers identify as two challenges of the network approach.

Another benefit that was realized through the application of an interorganizational approach to this project was the ability to capitalize on the specialties of the different entities involved. LCOG offered significant experience and skills in coordinating efforts that involved multiple organizations. LCOG was able to assemble support from multiple jurisdictions and other organizations to develop an attractive project proposal and bring outside investment to the area through the DEQ grant program. The grant funds allowed LCOG to develop a strong understanding of the TMDLs and associated requirements that was not possible for each jurisdiction.

Once the process began, LCOG was not able to get to the level of detail needed to develop and implement specific strategies for each jurisdiction. The partnership with local jurisdictions is where this project will be transferred from planning to on-the-ground implementation. This mixture of specialized knowledge was a huge benefit of the network approach to TMDL implementation planning.

These findings also address the primary research question of this paper, which is "What components of TMDL implementation planning have the potential to be addressed regionally and which should remain local in scope?" The initial role that LCOG played in bringing specialized TMDL knowledge to the region and convening informational sessions was extremely beneficial. LCOG could not, however, make decisions for the local jurisdictions and the initial idea of creating a regional plan was illogical. The specific actions that each jurisdiction was going to take needed to be decided at the local level. It was helpful to have supporting data to guide those decisions and that data could be at a regional scale, which is where LCOG played a valuable role. In the end, the final decisions needed to be made at the local level and the plan needed to be 'owned' by the local jurisdiction.

The challenges faced by this project fell into four of the broad categories described by Goldsmith and Eggers. Communication problems, fragmented coordination, oversight, and goal congruence were all impediments to success. Understanding these prospective difficulties prior to initiating an interorganizational project will significantly improve the structure and function of the network.

Although all of the challenges are interconnected, the two most pressing problems were very closely related. The issues around coordinating multiple partners and maintaining clear and consistent communications had the biggest effect on the overall process. Goldsmith and Eggers identify "fragmented coordination" as a major challenge to successful networks. They note that, "Each [entity] has its own constituencies, and when complexity is high and responsibility unclear, coordination problems can undermine the network". In this instance, the coordination among many different types of organizations was impacted by loosely defined, inconsistent communication. The diffusion of responsibility, uncertainty, and constant change did not allow the process to function as smoothly as would have been desired.

Although LCOG was clearly the lead coordinator, many factors inhibited LCOG from being as effective as they could have been. The complexity of the project and the lack of clear direction from DEQ on TMDLs as a whole surrounded the project with a shroud of vagueness that made it very difficult to discern correct actions to take. This vagueness will always be present in complex policy problems and it is important to recognize how it may impact interorganizational policy making and planning projects.

Problems associated with poor oversight stemmed from the DEQ's reluctance and inability to pinpoint exactly what they were looking for in TMDL implementation plans. The project was designed as a trial run, so this lack of clear direction should have been expected. In many ways,

it is beneficial to work under these circumstances because they provide the creative space necessary to develop innovative products. But it can also be very frustrating when the outcome is unknown and there is hesitancy in each step forward.

Achieving the alignment of goals across multiple organizations is another challenge related to network initiatives. For this project, goal congruence was easier due to the fact that desired outcome was clearly defined as compliance with the Clean Water Act and a complete TMDL Implementation Plan. Finding an externally defined common outcome can help avoid problems that arise from goal dissimilarity.

The findings presented here closely parallel the benefits and challenges that have previously been established by research on interorganizational processes. Some challenges presented harder struggles and some benefits reaped greater returns, but they were present in some fashion. The unique lessons that arise from these observations relate to how coordinating entities can factor these into the upfront design and on-going harmonization of a process that involves diverse organizations. The concluding section includes a summary of the key lessons and suggestions for future research to ensure that interorganizational initiatives continue to improve.

Summary, Further Research, and Conclusion

I address two primary research questions in this paper. The first, "What components of TMDL implementation planning have the potential to be addressed regionally and which should be local in scope?", involves a critical analysis based on participant observation of a process that attempted to incorporate aspects of interorganizational and regional planning to improve TMDL implementation planning. This question examines the current trend that "regional" or "collaborative" approaches can be a panacea in addressing complex planning, service delivery, and policy questions.

As discussed at length in the previous chapter, the different elements of the process prompted different levels of specificity. Although all jurisdictions involved were facing similar water quality concerns, the detail needed in the plans warranted a focused decision-making process. The desire for autonomy was also a major factor in localizing the strategy selection portion of the planning process. Local jurisdictions were open to receiving guidance and assistance from a regional entity, but they did not like the notion of being forced to fit into a regional plan against their will. Staff from the coordinating entity also recognized that the process that would be required to create a common plan adopted by multiple jurisdictions could be extremely time consuming. This is not to say that no plans should be developed in this manner. Certain issues require interjurisdictional agreement and not just information sharing, but this particular project, due to its scope, subject matter, and timeline, was able to be completed effectively with a lower level of interdependency.

The second research question naturally follows the first and attempts to prevent impasses or breakdowns in regional processes by identifying barriers to regional TMDL implementation

planning. The ten lessons explained below draw out some of these barriers and suggest ways to overcome them.

These ten lessons do not attempt to cover all of the necessary conditions or considerations that must be involved in a successful interorgnaizational effort. There are broad factors that are not specified here. Things like a common vision, building trust, and other high-level statements are intentionally avoided in favor of more specific, tangible elements. These lessons are meant to be very practical ways to increase the chances of success and the ability to enjoy the process.

10 Key Lessons

1. **Interorganizational processes can be valuable even when the resulting product is not interorganizational**

This is one of the primary lessons illuminated through this observatory research and all the other lessons relate to it. While the project may be bolstered through the application of an interorganizational process, an interorganizational product may not be feasible.

Due to the wide variety of entities that can be involved in interorganizational projects, there must be room to accommodate the different organizational structures and operating procedures. It is important, however, to maintain the understanding that there is significant value in the process even if no binding agreements come from the process. In the case of this project, a technical document, plan template, and a few meetings were the products that were interorganizational in scope and they had no binding authority. Beyond these products there were many less tangible outcomes, such as information sharing, diffusion of new ideas, and a collective understanding that came from the process.

2. **Be aware of the increased administrative demands of an interorganizational approach**

While there are great benefits to having multiple organizations involved, this can necessitate a higher level of administrative supervision from the coordinating entity. This is especially true when the coordinating entity designates funding for all or some of the entities involved. Establishing work plans, timelines, and contracts between many organizations can put a significant amount of pressure on the coordinating body and potentially strain relationships.

3. **Consider establishing communication protocols such as lead contacts and regular check-ins**

The diffusion of responsibility across many entities is a major advantage of interorganizational processes, but this diffusion can create uncertainty about roles and accountability. By clearly establishing ways to communicate and ensuring regular contact, stalling and finger-pointing can be avoided. These communication protocols can be informal or very official depending on the circumstance, but they must be clearly understood by everyone.

4. **Integrate flexibility in the design of the process**

The initial vision of how things should work can change dramatically as an interorganizational process progresses. The ability to refine goals and outcomes through collaboration is one of the major reasons to pursue interorganizational opportunities. The group discussion that emerges should be able to shape the products. There needs to be recognition that the process will inevitably impact the final outcomes and participants should refrain from getting tied to any particular outcomes.

5. Identify the special competencies that each partner brings early on in the process

Specialization is another major advantage of interorganizational processes. The coordination of specialized organizations to craft outputs that address multiple concerns in a authoritative way leads to more holistic problem-solving. The specialized knowledge and abilities that each entity brings to the project should be acknowledged from the beginning along with organizational motives for being involved in the process.

6. Establish a shared understanding of the process that will be used

Even if there is a clear long-term vision among the involved parties, it is important to have a common understanding of the way that will be taken to get there. This does not need to be clearly defined right away and there is great benefit in allowing all entities to contribute ideas. At some point however there must be a clearly defined process and everyone should be able to understand each other's roles.

7. Avoid fragmentation by maintaining central coordination and closely monitoring how responsibilities are dispersed

Diversity of partners can lead to fragmented efforts. As described above, effective communication is an important means to avoiding disorder. The coordinating entity bears a large amount of responsibility for effective communication as well as monitoring progress, dispersing tasks, and identifying work gaps. A skilled coordinator will be able to avoid fragmentation without coming across as domineering.

8. Ensure that partners' autonomy is not threatened

While the lesson above explains the importance of central coordination, this lesson cautions those who are serving as coordinators from being overbearing. The shared interest that makes an interorganizational effort practical must be contained so that the broader roles an

organization needs to play are not overshadowed. Additionally, the level of interdependency among project partners needs to be closely monitored. Agreements must be transparent so that partners can be clear on the level of commitment called for at any given time. This is an especially important factor when coordinating efforts that involve units of government.

The coordinating entity is responsible for gauging the sentiments of each organization and deciding how to best coordinate without threatening autonomy. There are many resources and processes that have been created to engage the entire group and help partners feel as though they 'own' the process and its outcomes. Utilizing methods such as collaborative learning, adaptive management, and alternative futures analysis may be especially useful to avoid perceived threats to autonomy.

9. Look for ways to couple related processes

This is an effective way to encourage involvement in an interorganizational process. If the coordinating entity can identify a process that is already underway or already funded, the interorganizational effort will benefit. Demonstrating that participation in the interorganizational initiative will achieve multiple objectives leads to interdisciplinary outcomes and partners that are fully engaged.

10. Consider ways to leverage the interorganizational aspect of a project to attract outside investment

The broad base of support that comes from a successful interorganizational effort can be used to bring more resources to a project, support peripheral projects, and improve implementation. Entities that provide support for planning projects, such as federal or state agencies and private foundations, will tend to rate projects higher if presented with a proposal

that includes a variety of supporting entities. Capitalizing on this fact will not only increase outside investment, but will also provide a stronger incentive for partners to stay involved.

Policy Implications and Further Research

The findings of this research have the potential to inform future policy making decisions, but the true value of the research will be in applying the knowledge to future interorganizational efforts outside of the policy realm. Practitioners, including planners, contracted project managers, city administrators, and the wide range of staff who are involved in interorganizational projects will benefit from considering these findings before initiating or agreeing to be involved in an interorganizational process.

The policy implications for TMDL implementation planning lies both in what should be pursued and what should be avoided. Mandating regionally-based, cooperative, or collaborative processes often fails to achieve the desired ends. Even incentive programs falter if the incentives to work together are not strong enough. The most meaningful way to incorporate the benefits of interorganizational coordination into TMDL implementation planning is by showcasing successful projects and raising awareness about proper ways to design a network to address TMDL implementation.

TMDLs offer a great opportunity to continue testing and refining interorganizational, regional, and watershed-based processes because they will continue to be an issue into the foreseeable future. To meet Clean Water Act mandates, the U.S. Environmental Protection Agency must develop TMDLs for waterbodies that are not meeting standards and that leads to the requirement that local jurisdictions complete TMDL implementation plans.

There are obviously two realms within which this paper can suggest further research. First, the implementation of Total Maximum Daily Loads is an extremely timely and important

research topic. TMDLs are the primary mechanism that the state and federal environmental agencies will use to protect and restore the nation's waterways. It is held as one of the best ways to address the very complex and pressing problem of controlling non-point source pollution.

There has been a fair amount of research effort put into the development of TMDLs using water quality data and hydrologic modeling, but very little attention paid to the implementation phase. Research that focuses on ways to reduce the costs incurred by local jurisdictions would be helpful as well as ways to integrate TMDL and other water quality initiatives into regular operations.

Secondly, there are particular questions that arise related to interorganizational processes and network design. With the growing focus on collaboration, resource sharing, holistic approaches, and networking there are many opportunities to gather data about such endeavors. One of the most interesting topics related to interorganizational theory that arose during this research is the balance between effective coordination and individual autonomy.

As discussed in the 'Lessons Learned' section these are both important factors in an interorganizational effort. Although they appear to be opposites, in practice a skilled coordinator can, and must be able to, balance these considerations. Especially when an interorganizational project includes units of government, autonomy must be carefully handled. The first research question addressed in this paper begins to get at this important distinction by separating out appropriate regional and local roles, but there is much more inquiry that can be done to address this question of balancing coordination and autonomy.

Conclusion

The findings of this paper can be used to make future TMDL implementation efforts more effective. The results can also be generalized to improve all interorganizational processes by providing upfront considerations to be addressed when designing an interorganizational initiative.

The ten key lessons described above have been especially designed to be helpful for practitioners. The coordinator must be familiar with the organizational histories, structures, and missions to effectively foster a successful, dynamic partnership. There is a delicate balance between coordination, flexibility, maintaining autonomy, and ensuring progress. Although this project did not perfectly balance these considerations, adept coordination is leading to valuable outcomes and the achievement overall project goals. There were many learnable moments and this paper explores those moments to improve future efforts.

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