

The Role of Environmental Stewardship Groups in the Grand River Watershed, Ontario

by

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A thesis
presented to the University of Waterloo
in fulfillment of the
thesis requirement for the degree of
Master of Environmental Studies
in
Geography

Waterloo, Ontario, Canada, 2014

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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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Abstract

In this thesis I analyze the role of stewardship groups in the Grand River watershed. The perceptions of stewardship volunteers and key agency informants are examined to determine the biophysical, educational and social implications of stewardship initiatives in the Grand River basin. The first objective is to examine the role of environmental stewardship group participants, understanding their contributions to biophysical or social changes in the Grand River basin. The intent is to determine if biophysical and social changes promoted by stewardship groups are influencing the watershed at a localized community level, whether broader, more cumulative effects are being demonstrated within the river basin, or if both effects are evident.

The second objective considers the motivations of stewardship volunteers, perspectives regarding involvement with environmental stewardship groups, and contributions to change within the community. Consideration is given to the importance of tangible results for many volunteers, as well as the acknowledgement of the risk for burnout for volunteers involved with environmental groups. The third and final objective considers if the initiatives or changes implemented by stewardship groups are influential in guiding river basin management through policy and decision making. Impact and influence of stewardship groups on decision making are assessed, based on the responses and reports of agency and organizational members, in addition to representatives from municipal and township government offices.

A case study approach is used to investigate the *rare* Charitable Research Reserve, Woolwich Healthy Communities, and Kitchener's Natural Areas Program in the Grand River basin. Relevant information pertaining to other stewardship group activity is included where appropriate. Data collection methods included surveys distributed to a combined group of 52 stewardship group volunteers and event participants, 14 personal interviews with key informants, and participant observation from June to October 2013.

The results indicate that environmental stewardship groups in the Grand River watershed are playing a role in creating biophysical change through the work of on-ground projects such as stream bank restoration initiatives and tree planting projects. Contributions to social change are evident through groups that are committed to community outreach and educational programs, particularly those targeted towards youth and school children. An examination of the motivations for stewardship participation revealed a consistent pattern of three primary reasons. First, there was a desire to contribute to the community or make some environmental enhancement or change. Second, participants expressed a wish to improve

ecological or environmental knowledge and awareness. Third, respondents noted a strong sense of volunteering or participating in stewardship as a means to make social connections or meet people with similar interests. The achievement of tangible results for on-ground efforts was observed by both stewardship group participants and organizational members to be important in the avoidance and alleviation of potential volunteer burnout.

Concerns from agency and municipal representatives suggest that stewardship groups tend to have a local, community focus with less concern for the ‘big picture’, or the potential for wider-reaching or cumulative effects of various projects. Yet, examples from the case study groups and other groups in the watershed indicate that there is an influence on the biophysical environment and at a social level beyond the immediate local initiative. Partnerships between stewardship groups and other agencies and organizations are highlighted as a strength with regard to the potential for greater impact at a broader scale in the river basin, as well as an opportunity for future growth and development in collaborative environmental and water management strategies. Corporate partnerships and employee volunteer programs are identified by several of the groups and organizations as valuable and promising approaches to collaborate on environmental stewardship initiatives.

Several aspects of this research suggest an opportunity for further study, particularly with regard to how evolving partnerships may contribute to the joint success of stewardship groups and governing or management agencies within the Grand River watershed. It would be interesting to determine if the development of stronger partnerships through collaboration between local stewardship groups and governing agencies such as the Grand River Conservation Authority might lead to larger stewardship initiatives and improved outcomes for targeted areas of need in the river basin.

Acknowledgements

I would like to express sincere gratitude to my two academic advisors, Dr. Bruce Mitchell and Dr. Derek Armitage who provided extensive knowledge, understanding, and encouragement through this process. I feel very fortunate to have had the opportunity to work with two such brilliant individuals, who challenged me to grow as a researcher, writer and academic, while always providing positive and supportive feedback. I would also like to extend thanks to Dr. Brent Doberstein, the Associate Chair for Graduate Studies, Department of Geography and Environmental Management, and Dr. Sarah Wolfe from the Department of Environment and Resource Studies, for their role as readers.

A special thank you also goes to Susie Castela, former Geography Graduate Program Administrator. As one of the very first people I had the pleasure of dealing with at the University of Waterloo, Susie continued to assist me in countless ways throughout my academic career and probably played a more important role than she could ever realize. Her prompt and friendly responses to my frequent questions were always reassuring, and generally made my life easier. Towards the end, I found at times she was actually able to anticipate my needs better than what I could actually foresee! I am deeply appreciative.

I would like to give my greatest thanks to my family, because without the constant love and support of my husband Steve, and my son Max, this thesis would never have been possible. Steve, my best friend, has believed in me from the beginning, and Max has been so patient and understanding when we have had less time to do the fun things. I love you both so much.

In conclusion, I realize this research would not have been possible without the financial assistance of the Department of Geography and Environmental Management at the University of Waterloo in the form of Teaching Assistantships, Graduate Experience Awards, and a Graduate Scholarship. I am extremely grateful for this funding. I am also very fortunate to have received generous support from Dr. Bruce Mitchell and Dr. Derek Armitage respectively, in the form of research assistantships. Through such provision I was able to continue my research each term and focus my attention towards the successful completion of my academic program. For this assistance, I am also truly thankful.

Dedication

This thesis is dedicated to my husband, Steve and my son, Max. Your belief in me was truly inspiring and provided motivation when I needed it most. You were, and are, my greatest cheerleaders in this project and in life. I could not have done it without you. I am not sure where our next adventure will take us, but I know it is a journey I want to take with the two of you. I am also dedicating this work to my constant daily companions Aspen and Eddy who definitely helped keep me sane. Special mention to my sweet rescue dog, Eddy, who came into my life half way through this process last June, and has been by my side ever since. You have taught me so much about love, patience, trust, and the ability to overcome the challenges and adversity that life sends our way. I am so grateful for your warm, comforting presence beside me every day.

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Chapter 1

Introduction

1.1 Context

Environmental stewardship groups play a number of important roles in the management of complex and diverse environmental challenges (Fisher, Campbell, & Svendsen, 2012, p. 29). River and river basin degradation is an increasing global concern, one that is often addressed at the local or community level with the participation of stewardship groups (Fisher et al., 2012, p. 29). At the local or drainage basin scale, various environmental stewardship groups may prioritize different issues. For example, some groups may focus on biophysical changes, targeting on-ground projects, while others may emphasize social change through educational programs and outreach.

The operation and action of environmental stewardship groups is frequently seen as part of, or in collaboration with, an agency or other organization. These groups may be incorporated, charitable non-profit groups, municipal groups, or organized groups of community volunteers. Hillman and Brierley (2005, p. 51) observe that when principal actors and stakeholders are engaged and empowered through the decision-making process, the opportunity to achieve desired environmental outcomes is often greatly enhanced. Key members of these groups are often able to provide valuable insight into collaborative and decision-making processes that may be having an impact at the community level, or at the broader river basin scale. For the purposes of this thesis, ‘community level’ can be understood to mean the immediate local area, or neighbourhood, of the river or landscape that is being affected by specific stewardship activities. The terms ‘river basin’ or ‘catchment’ are used to describe the topographic and geographic drainage basin of the river. On occasion, these terms will be used interchangeably with the term ‘watershed’ which, though technically less correct, is a commonly used term in reference to the Grand River basin.

An environmental stewardship group can be defined as a group that often self-organizes in response to a local threat. It may fill a vacuum left by government services that have been decreased or devolved due to a lack of funding, yet it has a vital role in sustainable environmental management. These groups often play a key part in the establishment of public-private partnerships, and are able to slow, and sometimes halt, the rate of environmental degradation through the development of targeted local strategies. Environmental stewardship groups consider the relationships among knowledge, attitudes and behaviour in determining new goals for sustainable management of natural resources. An environmental stewardship group will usually operate locally to incorporate local values, attitudes and views in designing action strategies towards restoration or other environmental initiatives (Carr, 2002, p. 4-7).

Numerous environmental stewardship groups exist within the Grand River basin in Ontario. However, for the purpose of this thesis, three groups are studied that have demonstrated positive change through successful ecological and social initiatives. Notable achievements of these groups include, but are not limited to, (1) biophysical improvements, including enhanced water quality and habitat restoration, as well as, (2) improved social connections, including opportunities for corporate employees to connect with environmental organizations, and the provision of educational programming in environmental conservation through school programs and public events. The result of such initiatives can be observed in the creation of a better understanding of the need for stewardship and environmental intervention within the river basin. In some cases, positive environmental changes have been facilitated through improved social and ecological interactions, leading to enhanced learning and better planning in river basin management (Hillman & Brierley, 2005, p. 51). Sustainable river basin management and stewardship is becoming increasingly important as both urban and rural environments face continuing challenges requiring innovative solutions and strategies. As Hillman and Brierley (2005, p. 54) state, “Biophysical goals are linked with measures that maintain capacity for economic production and asset protection, along with social, recreation and cultural values.”

1.2 Problem Statement

A number of environmental stewardship groups in the Grand River basin are contributing to positive biophysical changes. However, there appears to be a disconnection between the work being done by different groups and the impact, changes, and benefits observed at community and river basin scales. Secondly, stewardship groups are likely playing a role in affecting social change with regard to environmental behaviour in the Grand River basin, yet this is a value that has been traditionally difficult to measure and understand. In this thesis, I look at the perceptions of stewardship volunteers and key agency informants to determine the biophysical, educational and social implications of stewardship initiatives in the Grand River basin.

The motivation behind volunteer participation in environmental stewardship groups usually has many facets, often with a unique meaning to each individual, making it difficult to study. While volunteer burnout is often cited as a critical concern for stewardship groups (Byron & Curtis, 2002), there are also seemingly endless personal reasons that inspire and drive these volunteers to commit many hours of dedicated work to conservation and restoration efforts. There is a need to learn what continues to motivate these individuals to participate in stewardship programs and projects, but also to understand how they can

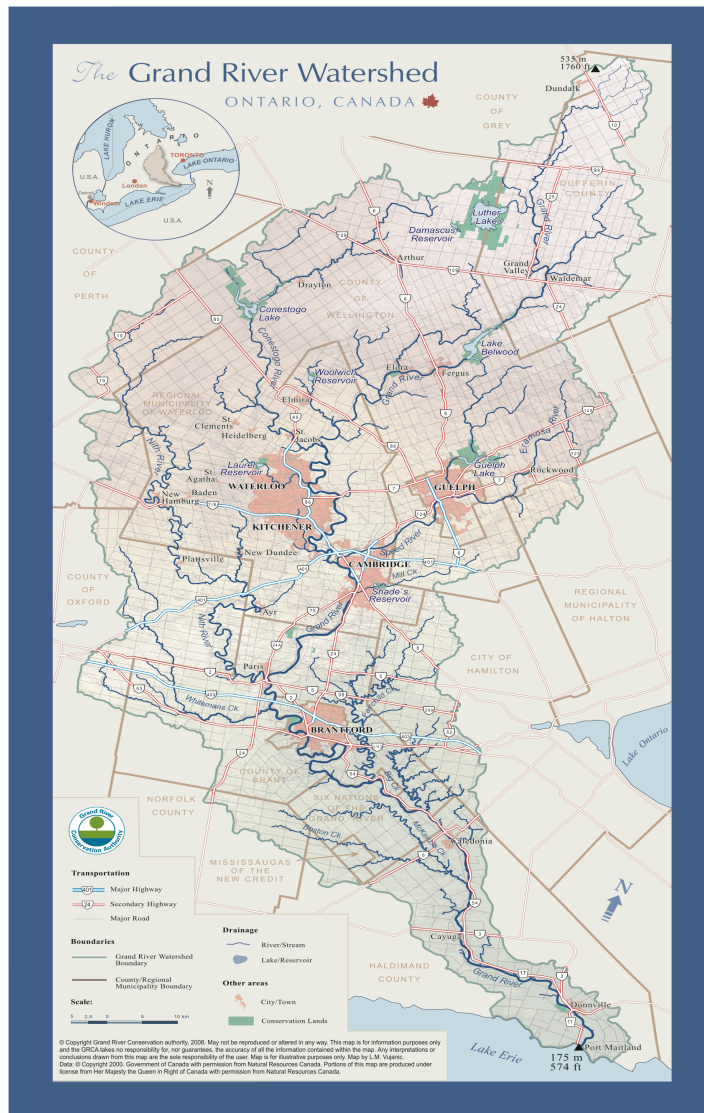
become better connected at a personal and organizational level to maximize efficiency, partnerships and collaboration.

Environmental stewardship groups have many different mandates and objectives, but some groups strive to have an impact or influence on policy or decision making. Policy, for the purposes of this study, is defined as: Decisions about what is (or is not) a problem, and decisions about how to implement the preferred policy; these decisions can occur at every stage of what is often termed the ‘policy cycle’ (Adger et al., 2002, p. 3). In this thesis, I will explore the insight that agency officials and decision makers have with respect to local stewardship groups and determine whether these groups are, in fact, having an impact on decision making in the Grand River basin.

1.3 Background

The Grand River is the largest river basin system in Southwestern Ontario, and includes the growing cities of Kitchener, Waterloo, Cambridge, Guelph, and Brantford (Figure 1.1). Despite its reputation as a highly managed urban river, the Grand also supports a diverse catchment system ranging across 39 municipalities, including erosion-prone rich till plains. The fertile soil in the till plains is attractive for agricultural use with up to 75% of the river basin actively farmed, often right down to the water’s edge, a practice with serious environmental implications for erosion control, and compromised water quality (Government of Ontario & Lake Erie Source Protection, 2008). As the river extends 300 kilometres southward from the headwaters in Durham County to Port Maitland, Lake Erie, the tributaries of the Conestogo, Nith, Erasmosa, and Speed rivers join the Grand River at various points through the basin (Government of Ontario & Lake Erie Source Protection, 2008).

Figure 1.1 Grand River Watershed (GRCA, 2008)



The Grand River basin has a strong history of planning and management initiatives, with adaptive management processes and integrated watershed management having become more recent priorities (GRCA, 2008). The provincial government maintains management control over water resources, including rivers, but municipal and regional governments oversee water supply and wastewater needs, as well as land use planning (Gregory et al., 2011). As a facilitative partner with all levels of government, the Grand River Conservation Authority (GRCA) has regulatory and decision-making authority in the planning, implementation and delivery of programs (Mitchell & Shrubsole, 1992).

The delivery of environmental services and programs through the GRCA focuses on the wellbeing of the environment and those who reside there. Although the GRCA does not operate water supply or sewage treatment plants, contributions to the conservation of resources are made through minimization programs in energy, materials and water consumption. In addition, the GRCA seeks to reduce the environmental impact of operations by minimizing waste generation, air emissions and effluent discharge through environmental management programs. Further efforts are made to improve environmental performance by monitoring and assessing measurable objectives and targets (Water Quality Working Group – GRCA, 2013).

In April 2014, the GRCA released the draft of the new Watershed Water Management Plan for the Grand River basin (GRCA, 2014). Development of the plan involved a voluntary partnership among municipalities, federal and provincial agencies, First Nations and the GRCA (GRCA, 2012). The inclusion of the “broad water objectives” for the new GRCA Water Management Plan included participation from the agricultural community, Environmental Non-Governmental Organizations, Grand River Fisheries Management Plan Implementation Committee, the Grand Strategy Heritage Working Group, a Science Advisory Committee and the GRCA Board (GRCA, 2012). Additional collaboration is planned among municipal, provincial and federal governments, as well as among several legislative bodies and contributing agencies (GRCA, 2012). The literature suggests that representation and participation by the community and stakeholders may lead to stronger, more durable management plans and in turn, the relationships built during the planning process can contribute to better quality in local long-term planning and sustainability (Brody, 2003, p. 408).

Given the position of the GRCA and the various levels of government with regard to planning and management in the Grand River basin, in this thesis I seek to determine the role of environmental stewardship groups in the river basin in two distinct ways: (1) from the perspective of the volunteers, and (2) from the perspective of agency officials, municipal representatives, and other stakeholders able to comment on the impact of stewardship groups with regard to decision making and environmental governance issues. Environmental governance, in this context, is defined as the interrelated and increasingly integrated system of formal and informal rules, rule-making systems, and actor-networks at all levels of human society (from local to global) that are set up to steer societies toward preventing, mitigating, and adapting to global and local environmental change and, in particular, earth system transformation, within the normative context of sustainable development (Biermann, Betsill, & Gupta et al., 2010).

1.4 Research Objectives

This thesis has three main objectives and utilizes case studies from the *rare* Charitable Research Reserve (*rare*), Woolwich Healthy Communities (WHC) and Kitchener's Natural Areas Program. The first objective is to examine the role of participants with environmental stewardship groups in the Grand River basin to understand how they are creating or contributing to: (1) biophysical changes, through tree plantings, stream restorations and other on-ground projects, and (2) social changes, through educational programs and outreach initiatives. My intent is to determine whether the implementation of changes such as restoration projects, tree plantings and educational initiatives are having an impact at a community level, or if a broader, more cumulative benefit may be identified at the river basin scale. Changes at the community level relate to stewardship projects that are targeted towards locally identified issues within a particular section of the Grand River, or a specific land area within the river basin.

The second objective is to look at the role of the environmental group participants from their own perspective, to determine their motivations for involvement and their reasons for making a commitment to create environmental change within their community, the river basin, or both. Aspects of group organization and structure, as well as factors contributing to volunteer burnout are also considered.

The final objective is to consider environmental stewardship in the Grand River basin from the viewpoint of agency and organizational members, such as those in managerial and leadership roles at the Grand River Conservation Authority (GRCA), WHC and *rare*, as well as representatives from municipal and township government offices. My aim is to determine if initiatives or changes implemented by stewardship groups are influential in guiding river basin management through policy and decision making. In addition, I consider the potential benefits or drawbacks that may exist with regard to partnerships and collaboration between stewardship groups and other organizations or agencies. Determining factors regarding environmental governance will include learning whether the GRCA and partnering government agencies are strategically influenced by the actions of environmental stewardship groups.

1.5 Research Approach

In this thesis, I use a case study approach. The primary case is the *rare* Charitable Research Reserve (*rare*), with two smaller case studies from Woolwich Healthy Communities and Kitchener's Natural Areas Program. The *rare* Charitable Research Reserve is a 365-hectare land reserve located at the confluence of the Grand and Speed Rivers. The mandate of *rare* is to protect, into perpetuity, its reserve,

which contains diverse habitats, and supporting flora and fauna of local and global significance (*rare*, 2014).

Woolwich Healthy Communities (WHC) is a volunteer group in the Township of Woolwich aiming to promote and improve the health and wellbeing of the community, economy and environment through various initiatives. Under the umbrella group of WHC, there are five working groups including the Clean Waterways group, the Woolwich Trails group, the On-road Cycling group, a Coordinating Committee and the Township of Woolwich Environmental Enhancement Committee (TWEEC), which also oversees Trees for Woolwich (Woolwich Healthy Communities, 2014). Kitchener's Natural Areas Program is a community-based stewardship program with the goal of engaging and educating people about Kitchener's natural areas and providing opportunities to experience nature in an urban setting (City of Kitchener, 2014). Each of these case studies will be discussed in further detail in chapter four.

The case study approach allowed an in-depth study of the environmental stewardship groups involved with each organization. It also facilitated data collection in the form of volunteer participant surveys administered during stewardship activities and events. Analysis of survey results provided both quantitative and qualitative data about the volunteer stewardship groups studied. Additional qualitative data were collected through semi-structured interviews from key informants at agencies, organizations and government offices. These data were recorded, coded and analyzed. Where required, official documentation and website information was used for supplemental material in cases when certain individuals were not available for interviews. Chapter three, *Methodology*, will provide further details with regard to data collection and analysis.

Interviews were conducted between June and October 2013. Surveys were distributed electronically and during environmental stewardship events and activities between July and October 2013. Supplementary information was collected from websites and other sources during the time period from May 2013 to April 2014.

Chapter 2

Literature Review

2.1 Introduction

In this chapter, I review three key aspects relating to environmental stewardship. The first section considers the motivation of environmental stewardship volunteers and associated implications. The second section reviews the complex relationship between institutions and environmental stewardship groups and looks at how collaboration, partnerships and decision making can be instrumental in sustainable river basin management. A third and related section examines the integrated water resource management (IWRM) process that can be implemented as part of collaborative and partnership planning strategies.

2.2 The Motivation and Participation of Environmental Stewardship Volunteers

Environmental stewardship groups depend on the participation of volunteers to meet the rising need for restoration initiatives and program implementation in river basins (Byron & Curtis, 2002, p. 59). The role of groups and organizations in creating a successful experience that will encourage the recruitment and retention of both new and existing volunteers is a legitimate concern, as is learning what motivates environmental volunteers to participate in environmental stewardship activities. Another issue for consideration is avoiding ‘burnout’ in volunteers. Byron et al. (2001, p. 902-903), explain ‘burnout’ as a gradual process involving personal exhaustion, negative emotions, and a loss of professional effectiveness and accomplishment.

In this thesis, I examine three case study groups involved in environmental stewardship activities through various capacities. Each organization also depends, in varying degrees, on volunteer participation. In order to promote and encourage participation in environmental stewardship groups, it is imperative that there is an understanding behind what motivates environmental volunteers. The literature offers several recommendations with regard to recruiting and retaining environmental volunteers, key factors motivating environmental volunteers, and circumstances commonly leading to burnout among environmental volunteers.

2.2.1 Volunteer Resources

The success of an environmental stewardship group depends in many ways upon its volunteer resources. According to Gooch and Warburton (2009, p. 164), groups with a lack of committed volunteers

were more likely to have difficulties in reaching their organizational goals. Although well-established groups are often fortunate enough to retain a small group of dedicated, core volunteers, Gooch (2005, p. 18) has observed that successful groups strongly emphasize the importance of welcoming and accepting new members. In addition, successful groups demonstrated that diversity and new skills were valued among members and they ensured that group activities were of interest and suited to the abilities and skills of the volunteer group members (Gooch & Warburton, 2009, p. 164).

Fuchs (2004, p. 10) concurs that when engaging volunteers in stewardship work it is important to take into consideration both their understanding and their enjoyment of the work. Without such basic tenets to involvement with an environmental stewardship group, it is unrealistic to expect effective project implementation beyond the available expertise and resources of the group members (Fuchs, 2004, p. 10). The ongoing need to access sufficient volunteer resources is a common challenge for environmental stewardship groups. The development of effective strategies to ensure the recruitment of new volunteers with diverse skills is necessary for the function of a sustainable environmental stewardship group or organization (Gooch & Warburton, 2009, p. 164). One strategy used successfully in the effort to attract and motivate environmental volunteers is the functional approach.

2.2.1.1 The Functional Approach to Volunteer Motivation

Despite limited research pertaining to volunteer motivation, and with even less literature relating specifically to the motivations of environmental volunteers, it is worthy to note the work on functional motivation and how this approach may relate to working with environmental volunteers. The functional approach to studying individual behaviour such as volunteerism was introduced by Katz (1960) to examine the personal and social processes of initiating, directing and sustaining action (Bruyere & Rappe, 2007, p. 505). With regard to volunteer motivation, the functional approach suggests that certain acts of volunteerism may appear similar, yet may in fact be individually motivated by very different underlying processes. In their research on 'motivational functionalism', Asah and Blahna (2012, p. 471) discuss the challenges of declining environmental volunteer involvement in North America and look at ways to increase levels of volunteer participation and retention.

Environmental organizations often operationally depend on volunteers, yet even groups located in populated, urban areas struggle where there may be strong support for volunteerism in principle, but with far less physical action. The result creates a dependency on the retention of existing environmental volunteers and a need to increase their frequency of participation in order to ensure the success of volunteer-dependent groups (Asah & Blahna, 2012, p. 471). It is further suggested that volunteer

involvement may be on the decline as a result of a functional mismatch between the participation appeals for environmental volunteers and the planning or management of volunteer events, such that organizers are not making the most salient motivations (personal and social motivations) cognitively accessible, or obvious, to volunteers (Asah & Blahna, 2012, p. 471).

Recruitment requests often tend to focus on the conservation or biophysical aspect of a project, rather than any potential for social or personal motivations. Providing social and interactive activities that may even include games, food, and drinks, is one way to support appeals for conservation work that may better match volunteers' motivations. In addition, it is proposed that it may be beneficial to facilitate social interactions by having multiple individuals undertake specific tasks as a group rather than expecting individuals to work independently (Asah & Blahna, 2012, p. 474-475). However, as Bruyere and Rappe, (2007, p. 513) caution, volunteer coordinators and environmental group organizers may still be wise to use the natural environment as a focal point to highlight volunteer experiences since most environmental volunteers will rank 'helping the environment' as their primary motivation for volunteering. Nevertheless, based on the premise of the functional motivation approach, it may be helpful for stewardship groups to emphasize other benefits of the project such as social and learning opportunities.

2.2.1.2 Making the Volunteer Connection

The literature provides evidence that community members often are taking part in environmental stewardship opportunities in their local neighbourhoods and river basins, and by doing so they are re-establishing connections between their actions and the health of the environment. Such participation provides a sense of empowerment, recognition and belonging within the community (Shandas & Messer, 2008, p. 416).

Although the role of an environmental stewardship group and the associated volunteers will necessarily evolve over time, a successful and sustainable group can consider several aspects in the interest of maintaining volunteers who are both committed over the long term and who participate actively and consistently. Bruyere and Rappe (2007, p. 514) outline several considerations for a volunteer manager or group director who wishes to motivate environmental volunteers over the long term:

- 1) Be prepared to explain the environmental significance of certain projects, e.g., trail maintenance, stream bed restoration
- 2) Select projects with an apparent positive impact on the environment and explain the impact, e.g., tree planting
- 3) Incorporate 'social' and 'learning' opportunities

- 4) Provide a variety of projects, thereby accommodating different interests and skills
- 5) Provide acknowledgement and recognition for all volunteer work
- 6) Create a sense of community and belonging

The volunteer coordinator or group director should also take the time to show the volunteers where, and how, the work of the group has made a difference and improved the local habitat. At all times the volunteers should feel that their work is valued and appreciated (Ryan, Kaplan, & Grese, 2001, p. 646). Environmental volunteers will be more likely to make a long-term commitment to a group if they perceive their own needs are being met, as well as those mandated by the organization (Byron & Curtis, 2002, p. 65). Gooch (2005, p. 18) concurs that volunteers who are satisfied by a welcoming group atmosphere that leads to a sense of belonging, and encourages an attachment to, and enjoyment for the volunteer work place, will likely remain with the organization for an extended time. Engaged volunteers benefit from participation in community life and often experience the therapeutic rewards of increased confidence, while appreciating the results of working toward a common goal (Gooch, 2005, p. 18).

2.2.2 What Motivates Environmental Volunteers?

A number of common themes appear in the research with regard to key factors that motivate environmental volunteers (Bruyere & Rappe, 2007, p. 510; Measham & Barnett, 2008, p. 540 and Bramston, Pretty, & Zammit, 2010, p. 779). The ten most reported motivations for volunteering have been identified. However, the top three are examined in detail in this section as they can be most closely related to the research objectives of this thesis and more specifically, are relevant to the survey data that will be discussed in detail in chapter five. Among the primary motivators for participants in environmental groups are:

- 1) Helping the environment; seeing tangible results
- 2) Learning; personal growth
- 3) Social connections; sense of belonging
- 4) Public education; benefit to future generation
- 5) Organization and leadership of group
- 6) Recognition; acknowledgement
- 7) User of site; attachment to local area
- 8) Contribute to decision making
- 9) Getting outside

10) Sense of empowerment and mobilization; networking

2.2.2.1 Helping the Environment; Seeing Tangible Results

Most, if not all, environmental volunteers highly rank ‘helping the environment’ as a motivating factor in their decision to participate in a volunteer group, activity or event. This category usually refers to the tangible results or improvements to the local environment that are visible as a direct result of the volunteer activity (Bramston, Pretty, & Zammit, 2010, p. 779). In some cases, for example after a tree planting, or the removal of an invasive plant species from an area, the tangible results are instantaneous. In other instances, such as a habitat restoration for a threatened bird species, or an erosion control project to improve water quality along a stream bank, there is much more of a time lag before the results of a project may be seen. Regardless of the time frame, the sense of accomplishment that comes from a completed project, particularly one visible in the community as people go about their daily lives, leads to a personal connection that encourages commitment among volunteers and contributes to future project goals and successes (Shandas & Messer, 2008, p. 416).

In their study on predicting volunteer commitment in environmental stewardship programs, Ryan et al. (2001, p. 645) found that while the importance of environmental concern had been established as a key motivating factor for initial involvement in stewardship groups, it also proved to be of continuing importance for long-term volunteers. That helping the environment in a rewarding and tangible way is still important over the long-term to the deeply committed volunteer is vital for program coordinators and group organizers to understand. In order to promote volunteer retention, it is critical to recognize the best strategies for volunteer engagement over different time frames and to provide volunteers with the best opportunities to optimize their own diverse skills and interests (Ryan et al., 2001, p. 645). Secondary to helping the environment, volunteers identify learning opportunities as another key reason for volunteering with environmental groups, and this aspect is discussed in the following section.

2.2.2.2 Learning; Personal Growth

Opportunities for learning and personal growth are very important to environmental volunteers. It often seems the first encounter with a volunteer group or organization may be because of a desire to learn more in relation to a particular interest in the natural world (Bruyere & Rappe, 2007, p. 510). There is a sense of the value in learning and sharing knowledge (Bramston et al., 2010, p. 785), and there is an appreciation for the type of hands-on work experienced through environmental volunteer work – a ‘learning by doing’ atmosphere (Gooch, 2005, p. 12). Ryan et al. (2001, p. 645) determined that a need

for ongoing learning opportunities was another quality that stood out among dedicated, long-term volunteers. Hence, it is incumbent upon the program coordinator or group director to ensure adequate stimulating and engaging occasions for these committed individuals to continue to develop their skills and interests (Gooch, 2005, p. 17). Aside from traditional environmental and learning goals, social motivations are very powerful drivers for some environmental volunteers, and are examined below.

2.2.2.3 Social Connections; Sense of Belonging

For some environmental volunteers, the social component may be the most important aspect of the work they do. It may be an opportunity to meet new people with similar interests and ideas or it might be a time to do something ‘fun’ and positive with family, friends or co-workers (Bruyere & Rappe, 2007, p. 510). The social benefits of joining an environmental group were proposed by Ryan et al. (2001, p. 646) as particularly attractive to new members, but later study found that highly committed members also valued the social benefits of volunteering. As previously mentioned by Asah and Blahna (2012, p. 475), many individuals are seeking social interaction through their volunteer experiences, even if it is at a sub-cognitive level, as functional motivation theory proposes. As such, volunteer coordinators and group organizers would be mindful to incorporate projects that encourage communication, collaboration (Bruyere & Rappe, 2007, p. 514) and even games, food and drinks.

The social identity that individuals develop in connection with a particular environmental stewardship group can contribute to a sense of belonging and responsibility, along with associated values and emotions (Gooch, 2005, p. 11, and Measham & Barnett, 2008, p. 547). The social side of volunteerism, developing friendships, forming bonds, networking, and making connections, is an important aspect in avoiding burnout, one of the potential downfalls that can afflict hard-working volunteers.

2.2.3 Avoiding Volunteer Burnout

In any volunteer setting, there is always the risk that participants will suffer from mental or physical fatigue, exhaustion, or ‘burnout’. The environmental sector is no different. In some ways, environmental volunteers may be at higher risk for developing burnout due to the often physically demanding nature of the work and because environmental stewardship groups often rely on a very small core group of volunteers who repeatedly do the majority of the work (Byron & Curtis, 2002, p. 64). Higher levels of activity and subsequent and related levels of emotional exhaustion are linked to decreased levels of volunteer involvement (Byron & Curtis, 2002, p. 64).

Depending on the environmental focus of the group, it may be difficult for some volunteers to make the connection between the action and the effect of their work. When few results are seen in the short-term, despite ongoing volunteer contributions, there is often concern for volunteer burnout. In order to maintain group morale and provide encouraging, positive feedback, it is important for group leaders to develop indicators that can provide a gauge, or monitor for success in situations where an extended lead-time occurs between work action and effect (Byron et al., 2001, p. 65). Environmental stewardship groups, which target biophysical change within the river basin, traditionally measure success in terms of on-ground results. Byron et al. (2001, p. 65) propose also including organizational and process outcomes as indicators of success that can be reasonably expected to be part of the on-ground outcome.

Additional findings by Byron et al. (2001, p. 65) regarding volunteer burnout note the importance of developing group priorities and expectations at the outset of a project. A lack of priorities was linked to a lower sense of personal accomplishment and, subsequently, to a higher chance of burnout. Related to setting appropriate priorities in the reduction of burnout is the necessity of effective leadership in environmental stewardship groups. The importance of strong leadership is an aspect of group structure and volunteer management that recurs numerous times in the literature. See Bramston et al. (2010, p. 779), Bruyere and Rappe (2007, p. 510), Byron and Curtis (2002, p. 65), and Ryan et al. (2001, p. 646). Effective group leadership is associated with lower levels of burnout among environmental volunteers.

Another key aspect in attempting to avoid burnout in volunteers is matching tasks and programs to the skills and motivations of environmental volunteers. Measham and Barnett (2008, p. 549) note the importance for volunteer coordinators to recognize that the need for a source of labour may not correspond to the motivation of the volunteers. Longer term commitments are likely to be undertaken by volunteers involved in environmental stewardship groups when interests and skills are acknowledged and social connections are fostered and encouraged (Measham & Barnett, 2008, p. 549). The importance of the social element in reducing burnout among environmental volunteers is also observed by Byron and Curtis (2002, p. 65).

A sense of community, established through the building of relationships and networks, leads to a level of respect and trust among group members that contributes to satisfied volunteers and effective group function. Some environmental stewardship groups are fortunate to have a number of dedicated volunteers who are able to work for many years while maintaining a successful balance between the needs of the group and their own personal needs. As discussed previously, there are various key motivations for environmental volunteerism. However, another factor that may play a role for some volunteers is the

opportunity to make a difference, not just at the biophysical or social level in the community, but by building relationships and collaborating with organizations and agencies (Gooch, 2005, p. 11). By empowering volunteers to take on more influential roles, it becomes possible to see the potential impact that environmental stewardship groups may have on governance and decision making.

2.3 Environmental Governance and Decision Making

Depending on the mandate of the environmental group and the commitment of the volunteers, some stewardship groups are motivated to go beyond effecting change at the biophysical and social levels and become involved in governance and decision making. With interest in outdoor recreation and use of natural areas on the rise, the demand on the natural environment will also increase (Bruyere & Rappe, 2007, p. 504). Elsewhere in the literature, it is noted that there may be a desire on the part of environmental groups to affect political outcomes, particularly in regard to preventing, reducing, or influencing the type of residential development that may occur in a community (Measham & Barnett, 2008, p. 547). Management of these trends can be at least partially accounted for by increasing volunteer resources who, in collaboration with other agencies, may assist in developing strategies to maintain and restore ecosystem stability (Bruyere & Rappe, 2007, p. 504).

2.3.1 Challenges in River Basin Governance

It can be challenging from the perspective of a governing agency such as a Conservation Authority or City planning department to accept input and involvement from the public and other stakeholders, including environmental stewardship groups. However, the complex issues that surround river basin management require new insights that have evolved from traditional models of top-down administration (Borden et al., 2007, p. 93).

2.3.1.1 Conservation Authorities in Ontario: The Challenges

Conservation Authorities in Ontario are often in an environmental leadership position, providing services and programs, and acting as an intermediary between the complexities of provincial and federal legislation, and the public. Conservation Authorities normally recognize the important work being done by other groups related to environmental stewardship. However, the ability to apply local knowledge, expertise and resources on a provincial scale can help considerably in informing both local and provincial decision making (Conservation Ontario, 2012, p. 4). The governing power for Conservation Authorities originates from the *Conservation Act of Ontario*. That statute gives Conservation Authorities the power

to set priorities and determine programs in partnership with municipalities, government ministries and other organizations and individuals (Conservation Ontario, 2012, p. 7).

Over time, the division of provincial, municipal and Conservation Authority roles has changed. However, the traditional concepts of management of a river basin as a complete unit and using an ecosystem approach have changed little. In addition, the ideals of public and stakeholder participation in planning and decision-making processes and maintaining a focus on local initiatives remain important aspects of Conservation Authority planning and management (Shrubsole, 1996, p. 331). Since the 1990s, provincial funding to the Conservation Authorities has declined, with the municipal and self-generated portions of revenue now covering the majority of operational costs for Conservation Authorities.

Prior to the 1990s, Conservation Authorities focused on a rational-comprehensive model of planning in which goals were created, but without a complementary plan using timelines or monitoring, goals were often not seen through to completion (Priddle, 2009). In the early 1990s, government reform at the provincial level led to a shift to more strategic planning in many areas. One of the greatest changes resulted in a significant transfer of control in water management from the Conservation Authorities to municipal agencies (Priddle, 2009). By the mid-1990s, the provincial government mandated changes to the *Planning Act*, including the requirement for all municipalities to develop an 'Official Plan', that would empower them to make development decisions congruent with provincial policy statements (Shrubsole, 1996, p. 325). The latter part of the 1990s saw even more dramatic changes for Conservation Authorities with a further dissolution of power and a fragmentation of river basin responsibilities, in addition to decreased cooperation and collaboration with municipal, provincial and federal partners (Priddle, 2009).

With the trend of declining funding for Conservation Authorities at the provincial level likely to continue, the development of stronger partnerships with the province, the municipalities, and other agencies may be beneficial. Another suggestion includes greater involvement of environmental stewardship groups and other non-governmental organizations (NGOs), particularly with regard to monitoring and implementation of programs (Shrubsole, 1996, p. 333).

Inconsistencies with provincial policies are another concern. Although guidelines are in place for policies regarding floods and hazards, other areas such as natural heritage systems are less well defined, leaving municipalities to delegate with varying degrees of accountability (Conservation Ontario, 2012, p. 9). While the province is responsible for outlining policies under the *Planning Act*, the municipalities are

not always suitably positioned to deliver these policies or provide effective environmental management (Shrubsole, 1996, p. 332).

2.3.1.2 Conservation Authorities in Ontario: The Solution?

In an effort to address many of the identified concerns and observations, Conservation Authorities believe discussion at the provincial level may be a beneficial process for all stakeholders (Conservation Ontario, 2012, p. 11-13). The following points have been raised by Conservation Ontario as requiring attention:

- 1) Acceptance of Conservation Authority Mandate by the province
 - Conservation Authorities have demonstrated that an integrated water resources management (IWRM) approach is effective, efficient and equitable through the participation of local stakeholders
 - The province needs to acknowledge the benefits of the IWRM approach and be prepared to move forward with implementation by Conservation Authorities across the province
- 2) Improvement of Conservation Authority Relationships with other Government Offices
 - The Ministry of Natural Resources (MNR) has administered the Conservation Authorities Act for the past 60+ years but recent changes have resulted in a devolution of that role
 - Governance of Conservation Authorities needs to be outlined within a provincial policy framework and understood within the context of their operation as independent corporations, governed by elected Boards
 - Efficiency with Ministry of Environment (MOE) could be improved by formalizing relationships rather than managing arising needs on an ad hoc basis
- 3) Restructure the Conservation Authority Governance Model
 - There are discrepancies on a provincial basis as to how board members are appointed – some municipalities appoint members of council, others appoint citizens
 - There is some concern among members of environmental organizations and community groups that a Conservation Authority Board with a majority of appointed council members may tend to vote in favour of development, yet a Board with more citizen appointed members may incline towards a more environmental attitude
- 4) Development of a sustainable funding plan
 - Conservation Authority infrastructure should be considered part of municipal infrastructure, particularly with regard to flood and erosion management
 - Recognition for the large pool of non-tax, self-generated revenue through user fees and charitable foundations

5) Increased Accountability

- Some would prefer stronger provincial control; others suggest greater stakeholder involvement and influence
- IWRM requires an equitable decision-making process for all involved stakeholders and partners
- Improvements to the accountability framework within the context of an IWRM decision-making process would alleviate some of the accountability issues

The proposed changes also would have an impact for local environmental stewardship groups which partner with Conservation Authorities. In some areas, pressure has increased for local groups to take on larger roles with fewer resources and less support. If the Conservation Authorities are successful in redefining their mandate with the province, and in gaining widespread acceptance for the adoption of IWRM plans (Section 2.3.1.1), local environmental stewardship groups could experience widespread benefits. The ability to contribute to river basin management in the context of IWRM could empower stewardship groups and allow on-ground work to be more targeted and focused. An inclusionary decision-making process would permit stewardship groups to participate as more active and contributing partners in local environmental issues that can be developed and integrated to have broader reaching impacts.

The governance of a river basin ultimately depends on the integration of federal, provincial and municipal policy, with science, local knowledge and decision making. Collaboration is of key importance at all levels to ensure the involvement of stakeholders where decisions and policy will affect the economic, social and environmental sustainability of a river basin and its surrounding communities (Conservation Ontario, 2012, p. 14). By engaging the community representatives and environmental stewardship groups early in the decision-making process, members are involved, have ownership, give direction, and are responsible for integrating the program in order to achieve a positive outcome (Hillman & Brierley, 2005, p. 65). When stakeholders are invited to participate in the early identification of concerns at the community level, they also have opportunity to direct the types of stewardship activities deemed most beneficial from a biophysical and social perspective (Shandas & Messer, 2008, p. 414).

Working towards common goals in a community setting allows volunteers and stakeholders to understand and appreciate the link between the on-ground stewardship actions and the broader impact on the health of the environment and ecosystems (Shandas & Messer, 2008, p. 414). In a study where community members took the lead in defining project goals, large-scale infrastructure projects, traditionally guided by professional engineers, were well supported by stakeholders through educating the public about ongoing challenges, and by assisting the volunteers in developing strategies for local

solutions (Shandas & Messer, 2008, p. 415). Combining the participation of local environmental community members who completed the actual restoration work, with technical expertise to help improve understanding around the complexities of the project, proved to be largely successful from a community and organizational perspective (Shandas & Messer, 2008, p. 415).

2.3.2 A Change in Thinking

One of the advantages of transferring some responsibilities of river basin governance to local communities is that it encourages the connection of community members and increases public understanding with regard to ecological systems and environmental issues (Shandas & Messer, 2008, p. 409). Despite the associated challenges, there is a growing trend world-wide to incorporate the public more actively in programs aimed at addressing environmental degradation.

2.3.2.1 Social Connections and Decision Making

There may be a tendency on the part of government agencies, or other decision-making bodies, to believe that certain groups or community members should have only limited involvement in any decision-making process (Hillman & Brierley, 2005, p. 66). Developing trusting relationships between institutions or government agencies and environmental stewardship groups, however, usually is an important step towards a more collaborative approach to governance and decision making. In working towards better partnerships, there must be flexibility on the part of the administration and the stakeholders, and the programming should be coordinated and in cooperation with all parties. Challenges to overcoming institutional barriers include an inability of administrations and agencies to accommodate the face-to-face interactions required by participatory frameworks. Citizens or groups may be considered to lack the knowledge or skills to make meaningful contributions to planning or decision making, and within the traditional context of community participation, favour may be given to polarized interest groups rather than the representation of the interests of the general public (Shandas & Messer, 2008, p. 409).

Shandas and Messer (2008, p. 415) reviewed a partnership between a Community Watershed Stewardship Program (CWSP) in Portland, Oregon and the Bureau of Environmental Services (BES) at the City of Portland, in cooperation with the local university. The BES did not initially provide uniform support to the CWSP, yet after developing specific plans and criteria, the program was able to advance with input from local community citizens and volunteers. The importance of clarifying goals was re-affirmed and community partnerships were encouraged.

In the Portland study, conflicting goals early in the program were resolved as the program evolved. Collaboration was demonstrated at all levels with the participating groups. The BES provided administrative support and benefitted from the cost-effective source of student labour. The university provided students to implement and oversee the program and helped to engage the community through environmental projects and by promoting volunteer involvement. Evidence from this case study shows that a community given the opportunity to take a lead role and have ownership in an environmental project usually will benefit from both an institutional and community sustainability perspective (Shandas & Messer, 2008, p. 416).

2.3.2.2 Power and Governance

Many decisions made around environmental governance are based on uncertainty, complexity and involve biophysical constraints, as well as conflicts in human interests and values. Dietz et al. (2003, p. 1907) discuss the struggle to govern common natural resources and the natural environment. When common resources are at stake, power discrepancies between users and across scales can emerge if some groups choose to ignore the rules, or to act in favour of their own interests, thereby inhibiting the ability for local groups to self-govern (Dietz et al., 2003, p. 1907). Effective environmental governance depends on reliable and valid information, but also on an understanding of the uncertainty inherent in complex systems such as a river basin. Decision makers need to understand, or at least appreciate, the nature and extent of the uncertainty within the systems, as well as the processes and the human and biophysical interactions that occur (Dietz et al., 2003, p. 1908).

Inequities in power and values can create conflict in groups involved in environmental governance (Dietz et al., 2003, p. 1909). When considering participatory approaches to governance, it is important to acknowledge that power can result in divisive partnerships. Usually the less powerful partner will be at a disadvantage. Potential power-sharing issues can be resolved by formalized institutional arrangements and may be further strengthened by community engagement and the encouragement of knowledge sharing (Berkes, 2009, p. 1693).

Varying interests and perspectives can provide opportunities for learning and change. Internationally, governments are experimenting with new approaches to governance that allow interested parties to resolve conflict at different levels of interaction (Dietz et al., 2003, p. 1909). Traditional 'command and control' or top-down approaches to governance and environmental management are now being replaced by more flexible frameworks suited to adaptation as biophysical and social systems change (Dietz et al., 2003, p. 1909).

It is generally recommended that a proactive approach be taken toward environmental governance and community involvement. Such an approach requires environmental stewardship groups to find a balance among monitoring, planning strategically for the long-term, and working constructively with implementation and on-going projects. It is imperative to pursue a purposeful path to address key issues proactively at their root cause, rather than responding reactively to the symptoms (Hillman & Brierley, 2005, p. 69). Developing deliberate strategies to assist in community-based policy and planning processes requires flexibility between institutional partners and stakeholders as well as with community volunteers.

2.3.2.3 Economic Reality

A reality of the current economy is that there is often less funding and fewer financial resources for environmental programs and conservation initiatives at the federal, provincial and even municipal level. The increasing need for environmental volunteers and environmental stewardship groups can be ameliorated by engaging stakeholders and encouraging volunteer participation in projects that enhance learning and knowledge collaboration, and work towards community sustainability (Asah & Blahna, 2012, p. 471). Volunteers from the community are able to contribute significant knowledge and understanding regarding specific local environmental concerns and by incorporating projects targeting these issues, communities are contributing to the development and attainment of policy goals relating to monitoring, education and outreach (Asah & Blahna, 2012, p. 475).

With the management of large-scale natural areas now often beyond the scope of traditional agencies, environmental stewardship groups are introducing volunteer participants to natural resource management and local ecology while implementing restoration projects. As partners, non-governmental organizations (NGOs) and governmental agencies may provide support in terms of technical expertise, in-kind donations or limited funding (Chanse, 2011, p. 123). Environmental stewardship groups and environmental volunteers cannot work in isolation. They should not be expected to reverse extremes in land or river degradation, or perform miracles in restoration. What the groups can do, in partnership with community stakeholders, governmental agencies and NGOs, is promote change at the policy level (Byron & Curtis, 2002, p. 66).

To the extent that policy can bring about new and broader environmental initiatives, it is also necessary to look at how water resource planning and management strategies function as part of an integrated approach. An integrated water resource management (IWRM) approach (Section 2.3.1.1) should promote collaboration, partnerships, and social responsibility among stakeholders, including city planners and engineers, environmental groups and community members (Shandas & Messer, 2008, p.

416), and should demonstrate improved understanding and knowledge regarding local ecosystems (Conservation Ontario, 2012, p. 3).

2.4 Integrated Water Resource Management

Many water management authorities across Canada and internationally have determined that integrated water resource management (IWRM) is beneficial in terms of efficiency and effectiveness in dealing with water and natural resource issues. Definitions of IWRM vary but most emphasize that it is an approach with an economic rationale that aims to improve water use efficiency; a social rationale to promote equity and access to water; and an environmental rationale to achieve sustainability (Butterworth et al., 2010, p. 69). Conservation Authorities in Ontario also believe the IWRM approach provides a framework for initiating an integration of federal and provincial environmental science and policy into local decision making (Conservation Ontario, 2012, p. 4).

Holistic approaches to environmental management have, historically, been attractive to organizations such as the Grand River Conservation Authority (GRCA), because the concept suggests the examination of all variables and their inter-relationships as a complete system. As such, land-based systems are considered in relation to the effects on water, and the implications of water are considered in terms of terrestrial systems (Mitchell, 2005, p. 1338). Early interpretations of the holistic approach were *comprehensive* in nature, defining the ecosystem in the broadest terms and attempting to identify and understand all relationships and variables through a scientific understanding (Mitchell, 2005, p. 1338). The more recent, *integrated* interpretation focuses on key variables and relationships that are likely to be causing the most variability in the system. Information from both scientific and local knowledge systems is incorporated, and this view also recognizes that not all variables can be manipulated and managed to obtain a desired outcome (Mitchell, 2005, p. 1338).

2.4.1 IWRM and the Role of Environmental Stewardship Groups

IWRM is not without its challenges and the literature identifies a number of criticisms (Butterworth et al., 2010, p. 69). However, despite the concerns, there are also alternate strategies that may mitigate some of the issues, including situations where stewardship groups can contribute to successful IWRM approaches. One potential weaknesses of the comprehensive interpretation of IWRM was that the planning processes could become extremely time consuming to meet the needs of the expansive ecosystem under review. Therefore, often by the time the plan was ready to implement the conditions or context had undergone significant change (Mitchell, 2005, p. 1338). Mitchell (2005, p. 1344) notes that

IWRM planning can result in minimal action despite considerable commitments of time and effort. Another concern regarding the integrated perspective of IWRM is that there may be a higher possibility of overlooking one or more variables, considered key to a proper understanding and analysis of the ecosystem (Mitchell, 2005, p.1338).

Butterworth et al. (2010, p. 75) concur that the IWRM approach can be viewed as an unwieldy concept, and that comprehensive packages of IWRM do not generally include local IWRM terms. However, resolution of this concern may come from building IWRM reforms onto existing platforms of participation and organization of stakeholders in water management at the local level (Butterworth et al., 2010, p. 75). Mitchell, (2005, p. 1339) acknowledges the benefits of using both local and scientific knowledge and suggests that further consideration may be given to the advantages of using both comprehensive and integrative interpretations at different strategic and operational levels in the development of the IWRM plan. By applying IWRM concepts at the local or community scale, better resource management practices may take place and can lay the ground-work for larger scale, i.e. river basin wide, IWRM (Butterworth et al., 2010, p. 76). Stewardship groups can play an important role in initiating participatory processes by interacting and collaborating at the local level with management agencies such as Conservation Authorities.

In the literature, Butterworth et al. (2010 p. 75) suggest that Conservation Authorities, or other river basin agencies, may have issues with legitimacy or even maintaining the capacity to deliver water management functions. Often the plan has low legitimacy and implementation can be challenging due to the involvement of multiple organizations including: government agencies, corporations or non-government organizations. Since each group has existing priorities and responsibilities, the IWRM recommendations may be given low priority. If the initiatives are to be implemented, they may be done in a manner that fits with the schedule of each agency rather than as the intended integrated initiative (Mitchell, 2005, p. 1345).

The best opportunity for a successful IWRM approach involves the conception, development and implementation of the plan with specific connections to other related initiatives that have existing credibility related to policy or sound institutional background (Mitchell, 2005, p. 1345). The role of local environmental stewardship groups in this context would be to collaborate and partner with local organizations and government offices to streamline goals and objectives for IWRM plans. In addition, although local initiatives may have limited range, they may eventually serve to extend IWRM across the river basin. Again, environmental stewardship groups can play a role in establishing community

connections, engaging volunteers and creating awareness for local issues that can ultimately have a wider reaching impact.

Another criticism has been that IWRM may not be sufficiently people-centered (Butterworth et al., 2010, p. 75). The solution may be to establish IWRM frameworks within the parameters of local laws and policy, and to build stronger partnerships with local government agencies (Butterworth et al., 2010, p. 75). Butterworth et al. (2010, p. 75) note that there are benefits to supporting existing local water management arrangements and that the incorporation of IWRM does not necessarily entail initiating a program from the ground up. Additional attention should be given to forming connections between and among stakeholders and environmental groups that may serve to influence governance and decision making (Mitchell, 2005, p. 1345).

There are several steps in the IWRM process. A preliminary, although valuable step, in developing a successful IWRM approach is the creation of a statement that engages the community and delineates realistic biophysical and social goals for a program (Hillman & Brierley, 2005, p. 51). Stewardship groups working towards an IWRM framework will want to ensure that the use of an integrated interpretation leads to some form of positive action (Mitchell, 2005, p. 1339). The successful development of an IWRM plan usually takes place through the identification of basic goals and directions for the group, i.e. the development of a vision statement (Section 2.4.2), and the initiation and attainment of those goals (Mitchell, 2005, p. 1339).

2.4.2 Developing the Vision in IWRM

The importance of developing a vision statement prior to implementing an IWRM plan is emphasized by Hillman and Brierley (2005, p. 58) to assist in connecting the desired biophysical changes with the social and economic needs of the community for an overall goal of sustainability. It is at this stage of IWRM that community participation plays a key role. Strategic integration of a vision statement developed at the river basin scale can be successfully incorporated to blend local concerns with broader objectives (Hillman & Brierley, 2005, p. 59).

In order to ensure the validity and significance of a vision statement to community members, it should include local and historical contexts. Hillman and Brierley (2005, p. 62) offer an example from the Grand River Conservation Authority, which in its ‘Grand Strategy’ demonstrates the incorporation of biophysical, cultural, and heritage aspects of planning and management, while on-ground actions also include activities ranging from river basin management and restoration, to concerns for water quality and

cultural heritage. Having developed a vision statement that establishes a direction for IWRM within the river basin, the next step is to gain a thorough understanding of the biophysical processes for the river under consideration (Hillman & Brierley, 2005, p. 65). To transfer the concept of the IWRM approach into more usable terms, it is useful to conceptualize it within the context of a water management framework that looks at the specific issues within a particular river basin (Environmental Water Resources Group et al., 2010, p. 19).

In addition to developing a vision reflecting community goals and objectives that can be tied into the IWRM framework, it is also critical to acknowledge the role that environmental stewardship volunteers can have during both the visioning process and through the implementation of IWRM strategies. Volk (2004, p. 158) makes an astute observation that “the job of today’s resource manager is less about the science and technology of resource management, and more about when and how to engage and assist the public to become good stewards of their own lands and public resources.” Having highlighted the significant role that stewardship groups can play with the successful implementation of an IWRM plan, in the next section I provide recommendations for bringing IWRM into Ontario.

2.4.3 IWRM in Ontario: A Water Management Framework

Conservation Ontario is recommending the adoption of a water management framework for assessing and addressing complex water issues within individual river basins under the jurisdiction of Conservation Authorities. The overarching principles for this framework include consideration of the river basin as a complete management unit regarding ecosystem requirements for land, water and human uses. In addition, the water management framework will incorporate principles of adaptive environmental management with IWRM (Environmental Water Resources Group et al., 2010, p. 19).

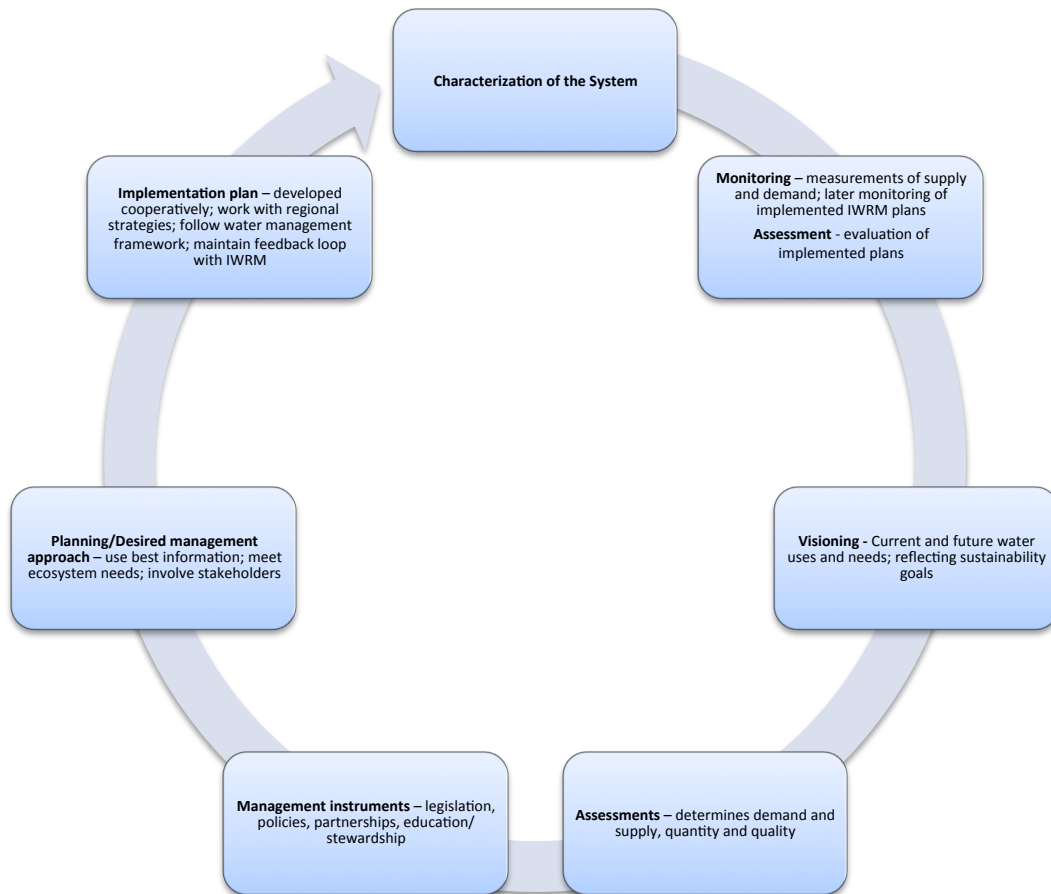
The first element of a water management framework within an IWRM context involves a characterization of the water system. The characterization process includes identifying and prioritizing needs within the system, and setting achievable management objectives and goals. This phase also includes observing potential limitations to mitigation measures and accounting for the possibility of adverse effects that may result from attempted activities (Environmental Water Resources Group et al., 2010, p. 21). Beyond the characterization phase, the water management framework has seven additional elements (Figure 2.1):

- i. Monitoring – measurements of supply and demand and later monitoring of implemented IWRM plans
- ii. Current and Future Uses – reflecting sustainability goals

- iii. Assessment – determines demand and supply, as well as quantity and quality
- iv. Managing Uncertainty – incomplete and insufficient data, gaps in knowledge, cumulative and multiple stressors
- v. Management Instruments – legislation, policies, partnerships, education/stewardship
- vi. Desired Management Approach – use the best information, meet ecosystem needs, involve stakeholders, adopt adaptive environmental management approaches
- vii. Implementation Plan – developed cooperatively, follow water management framework, work with regional strategies, maintain a feedback loop with IWRM

Figure 2.1 The IWRM Framework for Conservation Authorities in Ontario

(Environmental Water Resources Group et al., 2010, p. 19)



Conservation Ontario is proposing the use of Integrated Watershed Management (IWM) strategies in the context of the water management framework to be employed by Conservation Authorities across the province. IWM is the preferred term employed by Conservation Ontario, but can be considered as an equivalent term to IWRM. Important work remains to be done in terms of securing support and

understanding at federal, provincial and municipal levels where decision making regarding water management needs to become integral to the relationships and collaborative partnerships with Conservation Authorities (Environmental Water Resources Group et al., 2010, p. 23). Incorporating environmental stewardship groups into an IWRM framework will be a significant part of the plan for Conservation Authorities to consider as they move forward. The shift in governance, as previously mentioned, in section 2.3.2.2, will be one from top-down, to a more flexible bottom-up approach.

Organizations such as Conservation Authorities and government agencies would benefit from recognizing the need to experiment with new models of governance and to support ‘co-management’, in which river basin residents and volunteers are empowered through the exchange of knowledge and are given larger stakes in local decision-making agendas (Volk, 2004, p. 155). In the United States, specifically, it can be argued that public participation, often through the contributions of volunteer stewardship members, plays a key role in the success and implementation of environmental policies, laws and programs (Volk, 2004, p. 158). In Canada, and particularly in the province of Ontario, water management and governance is often a complex collaboration among federal, provincial, regional and municipal governments, in partnership with the local Conservation Authorities and other stakeholders. As such, bringing additional parties into the decision-making process has not always been seen as favourable or advantageous. However, looking at an example such as the inception of the newest water management plan from the Grand River Conservation Authority (GRCA, 2014), greater effort is being demonstrated by a more inclusive approach, indicating progress towards more robust collaborations in governance among stakeholders, community residents, and engaged and educated environmental volunteers.

2.5 Summary

The literature review provides a contextual base for the analysis of the data relating to the three case studies in this thesis. The literature regarding the motivation of volunteers in environmental stewardship groups can be highly correlated to the data from the volunteer participation surveys. Specifically, the key factors acknowledged in the literature as motivating to volunteers were also strongly represented in the data. Recommendations could be taken from the literature with regard to recruiting and retaining volunteers and avoiding volunteer burnout in environmental stewardship groups. This topic was not specifically dealt with through the volunteer surveys but is relevant in the context of the one-on-one interviews with agency and organizational officials.

A review of the literature pertaining to governance and decision making and the influence which stewardship groups may have in this realm led to some interesting connections. Information obtained in interviews with key informants from government offices and other agencies frequently supported the literature findings, particularly in regard to some of the challenges in forming effective partnerships and working collaboratively. Both stewardship group participants/organizers and agency officials noted these issues. Additionally, information specific to Conservation Ontario and the plans for new discussions, partnerships and water management plans is highly relevant and contextual to the Grand River basin where the case studies are based.

Decisions resulting from the research and ongoing work of Conservation Ontario and other consulting partners will have a direct impact on the operation of stewardship groups in the Grand River basin. However, the literature reminds us that the issue of governance is complex, especially regarding environmental governance. Other factors to remain cognizant of when contemplating shifts in governance structure include: 1) maximizing the potential for social connections in knowledge sharing and partnerships, 2) being aware of the possibility of power inequities among stakeholders, and 3) understanding the current economic climate while being able to direct resources, natural, human or fiduciary, in a meaningful and sustainable manner.

The final section of the literature review examined IWRM, including criticisms and challenges of the approach, as well as how environmental stewardship groups may be able to help overcome some of the obstacles often present in a typical IWRM framework. The data collected from both volunteer participant surveys and the interview process add evidence to the knowledge that stewardship groups do have both the willingness and the means to be substantial contributors in river basin management within an IWRM framework. Through the participatory process and collaboration at the local level, stewardship volunteers can have a significant impact on change within the river basin at both biophysical and social levels.

Chapter 3

Methodology

3.1 Introduction

Environmental stewardship groups are numerous and diverse in the Grand River basin. This thesis examines the role of stewardship groups through three case studies along with additional information provided by 14 key informants and 52 survey participants. An investigation of the first research objective considers the perceptions of environmental stewardship volunteers, as well as key governmental, agency and organizational informants, with regard to the biophysical, social and educational implications of the environmental programs and initiatives being undertaken by selected stewardship groups. Typically, the impact from the changes made by these groups, and the influence they may be having at the community or river basin scale, are difficult to measure.

The second research objective studies the role of stewardship groups in the context of how environmental volunteers are motivated to join and participate in environmental groups and programs. The perception of the volunteers towards their role in creating change at a biophysical and social level, both in the community and at the broader river basin scale, is considered. The third, and final research objective, examines how the work being done by the environmental stewardship group volunteers, both on-ground and through social or educational initiatives, is having an impact on governance and decision making in the Grand River basin.

The following research questions were addressed in this study:

1. a) In what ways are environmental stewardship groups affecting biophysical and social changes within the Grand River basin?
b) Do those changes have an effect at the community level or at a scale that benefits the river basin as a whole, or both?
2. In what ways are volunteers motivated to participate in environmental stewardship groups and how do they perceive their role in creating biophysical and social changes in the Grand River basin?
3. How do agency officials and institutional representatives perceive the role of environmental stewardship groups in the Grand River basin?

This chapter will commence with a summary of the research design and approach, including an overview of the qualitative methods and case study approach used in this thesis. Next, I will review the setting in which the case studies took place. Subsequent sections will provide a summary of the methodology used followed by a section outlining the procedure for data analysis. The chapter will conclude with an examination of some of the limitations and challenges involved in this study.

3.2 Research Design and Approach

This thesis involved a qualitative review of three case studies of environmental stewardship groups in the Grand River basin. Case study research, as defined by Hay (2010, p. 81), “involves the study of a single instance or small number of instances of a phenomenon in order to explore in-depth nuances of the phenomenon and the contextual influences on and explanations of that phenomenon.” This explanation of case studies can be readily applied to the case studies of selected environmental stewardship groups I examined in this research.

3.2.1 The Case Study: Strengths and Weaknesses

In using the case study approach, context is always an important consideration because it will influence the occurrence or subject that is being studied. Context can be understood through the examination of multiple units, or a group, and attempting to understand the interactions within that group. Consequently, there is opportunity to take an intensive and holistic approach to the study where the focus is on working within an idiographic, or depth-oriented framework (Hay, 2010, p. 85-86).

According to Yin (2003) a distinguishing feature of case study research is that formal, theoretical propositions are stated in the preliminary stages of a research process (Hay, 2010, p. 88). The literature recommends caution be used, however, because presumptions might be made that propositions are conditional, and can only be used to describe relationships that are ‘true’ in particular circumstances. Yet, many concepts are still ‘true’ beyond a particular relationship, and such a situation is likely to occur in qualitative research (Hay, 2010, p. 88). A potential problem can arise in stating propositions at the outset of a study, yet due to the nature of qualitative case studies, the material under review is often less known and less theorized to begin with, thus necessitating the use of propositions (Hay, 2010, p. 89).

Using the case study approach to generate or expand on theory utilizes deductive processes while studying the real world aspects of the case study, and inductive processes in the use of the revealed information to generate new concepts in an effort to explain the observations (Hay, 2010, p. 89).

Considering the case study within time and space parameters is also important. The case studies for this thesis were based on a cross-sectional approach, studying the groups at a particular point in time. In this instance, the research took place in the time frame of June to October 2013. Other options, such as longitudinal study, may have been preferable in terms of desired scientific rigour, due to the ability to explore the robustness of concepts over an extended period of time (Hay, 2010, p. 90). However, due to the time constraints of this research, the cross-sectional approach was more appropriate. A comparative analysis approach was used to study the environmental stewardship/case study groups. Comparative studies have some of the benefits of longitudinal case studies because concepts can be adapted to explain similarities between and among cases (Hay, 2010, p. 92).

Case studies have been criticized for a lack of generalizability (Flyvbjerg, 2006, p. 219). However, the concept of generalizability is concerned with how findings relate not just to other cases of similar phenomena, and also to how results can be explained as credible. Generalizability is best achieved through careful case selection and by creating theory that falls on a spectrum where it is not too abstract and not too case-specific (Hay, 2010, p. 93).

3.2.2 The Case Studies: An Overview

An initial review of stewardship groups in Southern Ontario revealed 47 potential groups that had some of the desired characteristics suitable for case studies. Groups were then categorized into three sub-groups: i) groups within the Grand River basin (N=18), ii) provincial organizations (N=23), and iii) national organizations (N=6). To facilitate the process of selecting environmental stewardship groups for this study, the following criteria were developed:

1. Located within the Grand River watershed for travel convenience and for biophysical similarities in stewardship group areas
2. Administrative staff willing to work with me or grant research approval
3. Groups had experienced proven success in stewardship activities
4. Groups had significant differences in organizational structure
5. Groups offered the opportunity to participate/observe stewardship activities

The selected case studies provided an opportunity to conduct an exploratory study that engaged the three different stewardship groups, each with its own group structure, administrative model and governing

mandate. Information relating to the case study groups was acquired through a variety of sources including websites, gray literature and interviews with seven key informants who had either a representative role with the group, or another distinct connection or position within the group. A second set of data was collected through surveys distributed to environmental stewardship group participants, volunteers and event attendees (Table 3.1). The three case study groups are discussed in further detail in chapter four.

3.2.3 Sampling

Purposive sampling was used in this research because it provided the flexibility to tie sampling strategies to the objectives of this thesis (Palys, 2010, p. 1). In the context of this thesis, purposive sampling gave me the opportunity to select participants who had common characteristics, or who had engaged in a particular behaviour or experience (Hay, 2010, p. 205). One strategy that can be used in purposive sampling includes ‘expert sampling’ (Palys, 2010, p. 3) which was used to screen participants for the interviewing phase of this research. The other strategy used in this study was ‘opportunistic’, or ‘convenience’ sampling, which was deemed most appropriate for participants involved in the survey portion of the research.

3.2.3.1 Expert Sampling – Interview Participants

It was important to include individuals in the interview process who were able to contribute to the understanding of the research problem and provide knowledge and insight through their own expertise. In total, 12 interviews were conducted, with 14 interviewees (two interviews took place with two people simultaneously), from a variety of professional backgrounds, each with various connections to environmental stewardship groups and communities. In addition, a snowball, or chain strategy was employed, whereby each interview participant was invited to recommend other potential candidates for the interview process. This approach continued until it appeared a certain level of exhaustion was reached where the suggested candidates had either already been interviewed, or had been previously approached and had declined involvement in the interview process. Specifically, four individuals contacted for interviews either did not respond to the request, or declined to participate in the research.

3.2.3.2 Opportunistic Sampling – Survey Respondents

Opportunistic or convenience sampling was the strategy best suited to surveying environmental volunteers and participants at environmental activities and events because these individuals were

available and accessible at the time of the study and provided the opportunity to take advantage of unexpected findings and new directions in the field (Hay, 2010, p. 75). Survey respondents were drawn specifically from participants involved in a variety of activities organized by the case study groups. I received a total of 52 completed surveys. Table 3.1 provides a summary of the survey participants and the activities in which they were involved.

Table 3.1 Groups of Survey Participants

Group Name	Description of Activity	Number of Participants
<i>rare</i> Butterfly Count (RBC)	Volunteer Event	2
<i>rare</i> Corporate Group 1 (RCM)	One Group, Two ½ day activities	5
<i>rare</i> Corporate Group 2 (RCT)	Three Groups, Three ½ day activities	18
<i>rare</i> Volunteer Event (RVE)	‘Walk-a-thon’ Fundraiser, approximately 3 hours, public and group members	8
Woolwich Healthy Communities (WHC)	Tree planting, Live Snow Fence Project, ½ day activities, public and group members	9
Kitchener’s Natural Areas Program (KNA)	On-ground restoration work, public and group members	10
Total		52

The purpose of the surveys was to start to identify trends in experiences that were common among the participants. Through understanding the perceptions and behaviours of the environmental volunteers, it is possible to analyze the responses within the specific context, rather than trying to generalize claims relating to an entire population (Hay, 2010, p. 205). One of the advantages of using surveys to gather both qualitative and quantitative data is that they can assist in the identification of variability across the participants in terms of understanding and interpretation of the concepts (Hay, 2010, p. 214). The results

of such findings can be significant for future investigations that may employ different, or more in-depth, approaches of study (Hay, 2010, p. 214).

3.2.3.3 Participant Observations

There are a number of reasons to partake in participant observation. Crang (1997, p. 360) argues that observation is a way of “taking part in the world, not just representing it.” For the purposes of this thesis, utilizing participant observation methods provided ‘complementary’ and ‘contextual’ information to enhance understanding and interpretation of the more formal data collection methods (Hay, 2010, p. 242).

On two occasions where corporate environmental volunteer groups were participating in an activity, I was able to join the groups as a participant observer. The experience of performing hands-on work as a member of the volunteer group gave me additional insight regarding the environmental group process as well as some anecdotal feedback not present in the surveys. Participant observations took place when groups were involved in a tree planting activity for the purposes of bank erosion control, and during the removal of invasive plant species from the community garden at the *rare* Charitable Research Reserve.

3.3 Setting

The *rare* Charitable Research Reserve (*rare*) was the principal case study, chosen for its accessibility to a diverse range of environmental stewardship group initiatives and participants. In addition, it is part of *rare*'s mandate to encourage and support research and education. Woolwich Healthy Communities (WHC) was the second case study group and was selected due to its multi-tier group structure (Figure 4.2). WHC operates as an umbrella organization that collaborates and works in conjunction with five other independent, yet closely interconnected groups. While each sub-group subscribes to a particular focus or goal, there is commitment among all groups towards the greater goal of sustainable, healthy communities within the Township of Woolwich. The third group, Kitchener's Natural Areas Program (KNAP), an initiative based in the city of Kitchener, was a later, but valued addition to the study. KNAP is an urban, community citizen group with funding and leadership at the municipal level.

This study took place in a number of locations within the Grand River basin. The catchment basin of the Grand River consists of diverse rural and urban landscapes with multiple examples of the challenges that can be encountered in efforts towards sustainable river management. For instance, issues such as water quality and contamination from agricultural run-off and urban sources are a concern, as are other environmental degradation factors including stream bank erosion, invasive species, loss of tree canopy

cover and decreased wildlife habitat, to list just a few. As such, the river basin offers a prime setting to study environmental stewardship groups and their dedication towards making sustainable biophysical and social changes that will influence governance in a positive way at the community level and beyond.

The primary group used in partnership for this study was the *rare* Charitable Research Reserve (*rare*). I attended a number of events and activities at the *rare* property in Cambridge, Ontario. Actual observations took place in the vicinity of the North House property on Blair Road in Cambridge, at the ECO Centre on Blair Road, and on one occasion behind the main *rare* administration building on Blair Road. Surveys were completed by small working groups consisting of five or six people in each group, at the conclusion of environmental stewardship activities led by the land stewardship coordinator (Table 3.1).

Groups that participated in activities at the property closest to North House worked directly behind the house on a bank erosion project, as well as in the community garden. These volunteers then filled out the survey at the picnic tables on the deck of North House, or inside the North House kitchen. Participants of activities nearest to the ECO Centre focused on trails in the ‘Cliffs and Alvars’ area (Figure 4.1), and then met in the classroom of the ECO Centre to complete the surveys. Other surveys were distributed at various *rare* events, including a fundraising walk on the *rare* property and a public educational event at the ECO Centre (Table 3.1). The variety of settings led to opportunities to work with a diverse set of participants described in the next section.

3.4 Methods

This thesis is a primarily qualitative investigation incorporating a case study approach. Three main data collection methods were employed to obtain multiple sources of related data and information. Semi-structured interviews were conducted with key informants from the case study groups and from decision-making agencies or offices. Appendix A includes the interview question protocol. Volunteer surveys were distributed to environmental group participants and members, and to attendees of environmental events hosted by the case study groups. See Appendix B for the volunteer survey protocol. Participant observation took place in conjunction with two of the environmental stewardship activities. See Appendix F includes information pertaining to the ethics approval for this research.

3.4.1 Semi-structured Interviews

Interviews with key informants from agencies and organizations provided information pertaining to the impact stewardship groups are having at the community and river basin scale, and also the influence those stewardship activities are having on governance and decision making. The interview questions pertained to perceptions about the roles of stewardship groups, the impacts that they may be having in the river basin as a result of their on-ground and educational initiatives and whether they are having an influence on decision making at the agency or municipal level (Appendix A). The results from the interviews were transcribed, coded and classified into five main themes. The coding process and the five specific themes are outlined further in section 3.5.

For the purpose of conducting the one-on-one interviews, I met at a site of convenience for the interviewee, often at their office, sometimes a coffee shop, and on one occasion at the home of one of the professional members of the Woolwich Healthy Communities group. The interviews were audio recorded, although notes were also taken as a precaution against equipment failure and to ensure accuracy.

One method of data collection employed during the interview phase of the study involved a semi-structured set of eight primary questions and 20 sub-questions (Appendix A). To obtain the desired information from the key informants, I designed the interview questions to be administered verbally, on a one-on-one basis with government officials, agency personnel and other organizational representatives. The purpose of conducting interviews with these particular individuals was to engage informants who would provide a high level of insight about the impact that environmental stewardship groups are having in the Grand River basin, suggest whether that impact is sustained at the biophysical and social levels, or both, and if the effects are influencing governance and decision making.

I met 12 of the interviewees on separate occasions; one interview was conducted with both the representative from the Laurel Creek Citizens' Working Group (LCCWG) and the representative from the City of Waterloo in attendance, and another was conducted with two representatives from the Woolwich Healthy Communities (WHC) group; the average interview time was one hour, with the shortest interview lasting one half hour, and the longest interview continuing for nearly two hours. The interviewing process took place over a four-month period from June to September 2013.

The participants in the interview portion of the study were from diverse professional and personal backgrounds. From a total of 14 interviewees, there were five males and nine females. Three females and one male work with the Grand River Conservation Authority, and one female works for the Grand River

Conservation Foundation. Two other female participants are professionals who are heavily involved with the WHC group as long-term volunteers. In slightly different roles, one female has staff time allotted through Woolwich Community Health Centre to work with WHC, and another has time allotted through the Township of Woolwich. One male participant holds a staff position at the City of Kitchener; another male participant works with the City of Cambridge. One of the females has a position with the City of Waterloo, as well as working with a Citizen's Advisory Committee. Another female interviewee works closely with the City of Waterloo in her role with a citizen's working group. Finally, two of the males interviewed were independent professionals who have connections and past working history with the *rare* Charitable Research Reserve.

3.4.2 Volunteer Surveys

The distribution and completion of the volunteer surveys occurred in a number of ways and provided a combination of quantitative and qualitative results. The surveys were distributed electronically to a database of 88 volunteers through Kitchener's Natural Areas Program Coordinator (KNAP). I did not have any direct contact with these volunteers. I interviewed the coordinator of the KNAP program who kindly offered to distribute my survey to his volunteer base. Another group I worked with, Woolwich Healthy Communities (WHC), also delivered my survey to approximately 15 of their volunteers via email.

Additional data were collected through the distribution of the survey to environmental stewardship volunteers and event participants. The survey consisted of ten primary questions; sub-divided into 14 additional questions. Specifically, two questions ask the respondent to rank choices in a chart form, and an additional two questions present the respondent with a list of possible options, where the selection(s) may be checked off. The survey provides a general demographic profile of the participants as well as targeted questions regarding motivation for group involvement, perceptions around biophysical and social changes initiated by stewardship groups in the Grand River basin, and opinions pertaining to importance of the roles and actions of environmental stewardship groups.

Survey data were collected electronically via email, through personal collection at the conclusion of the stewardship activities or events, and six individuals chose to mail in the completed surveys after departing from the activity. Survey responses collected by email were either sent directly to me, or in some cases routed through the group coordinator who acted as a host, depending on the preferences of the

respondent. Most participants took approximately ten minutes to complete the survey. Surveys were completed and data were collected during the time period of July to November 2013.

The surveys were distributed to six sub-groups based on the stewardship activity or event in which they participated (Table 3.1). The RBC group had completed its stewardship activity in the natural setting of the *rare* Charitable Research Reserve (*rare*) property when I arrived; therefore, I gave an overview of the research and the purpose of the survey, and then collected the completed surveys. Volunteers who completed the survey from the *rare* ‘Walk-a-thon’, an annual fundraising event for the organization, potentially had two different perspectives of the event. Some of the respondents were actual participants in the event, while others were volunteers with *rare* who were at the event to ensure the success and enjoyment of the participants.

The RCM group took part in two separate stewardship activities, and the surveys completed by this group reflected an overview of both activities. The first activity was completed on a drainage ditch and hill behind North House. The second activity took place further west on the same property, at the location of the *rare* community garden. Following the two activities, the group members filled out the surveys. The RCT group was divided into three separate groups representing the same corporation, each participating in a half-day stewardship activity. The first two groups of RCT volunteers completed similar restoration activities on the ‘Cliffs and Alvars’ trail of the *rare* property. Following the work, these two groups completed the surveys in the classroom of the ECO Centre. The third group of RCT participants worked at the site of the *rare* community garden and at the conclusion, surveys were completed in the kitchen of North House.

Electronic data collection was used exclusively for the surveys from the Woolwich Healthy Communities (WHC) group and Kitchener’s Natural Areas Program (KNAP). Volunteers from the WHC group were invited via email to participate in the survey. Having interviewed four key members of the organization, other committee members and core volunteers were encouraged to participate in the survey process. In addition, following a tree planting activity with WHC and a corporate volunteer group, participants were given the opportunity to complete the survey via email. Similarly with the KNAP group, I interviewed the program coordinator who offered to circulate the survey to the KNAP volunteer base via email.

For clarity, survey respondents were sorted into six sub-categories based on the type of activity or event in which they participated. It is worthy to note that two of the sub-groups from *rare* Charitable Research Reserve were corporate volunteer groups who had volunteered time through a corporate-

community partnership program. Two corporations are represented with one group participating in two activities (RCM), while the other group (RCT) had 18 volunteers in total, who were divided into three groups, each completing three separate activities. The six groups of individuals who participated in an environmental stewardship activity or event are depicted in Table 3.1.

Of the total of 52 respondents who completed surveys, 29 were males, and 23 were females. The largest number of respondents was in the 26-35 year old age group (15 participants), closely followed by the 36-45 year old group with 12 individuals. Nine respondents were in the 56-65 year old group, seven in the 65-75 year old group, and only three survey participants are listed in the 19-25 year old age group. A majority, at 34 respondents, reported either a college or university education. Of the respondents, nine claimed to have a master's degree, with one reporting a PhD. A total of seven survey respondents claimed secondary school as the highest level of education attained.

Of the group of participants surveyed, the majority had lived in the Grand River basin for an extended period of time. The results showed 26 respondents had lived in the Grand River basin for 15 years or more. One individual had lived in the area for 12-14 years. Five participants had resided in the Grand River basin for nine to eleven years and another five had lived in the region for six to eight years. Three respondents had lived in the area for three to five years, and eight individuals responded that they had resided in the Grand River basin for zero to two years.

Asked about their primary place of residence, 16 respondents named Kitchener as their home, with six each for the cities of Waterloo and Cambridge. Four individuals listed Elmira as their residence, while two noted Guelph. Other respondents were varied, with three in Brant County, one in Bloomingdale, one in Conestogo, and one each in North Dumfries and Paris. Another nine respondents fell outside the geographical region of the Grand River basin, and two participants declined an answer to this question.

3.4.3 Participant Observation

A third form of data collection took place via participant observation. On two occasions, as a researcher, I took part in the environmental stewardship activity in which the group was involved in order to observe at the participant level. Since note taking was not appropriate while involved with the hands-on physical activities, recordings of participant observations generally took place shortly after each activity in the form of a reflection and written narrative based on anecdotal comments and feedback received during the time working with each group. The participant observation provided additional and supportive information to the data collected via the surveys.

3.5 Data Analysis

The data collected from the interviews with agency and organizational representatives were transcribed and reviewed. The analytical process involved an initial coding process searching for key words and patterns that ultimately revealed 15 general categories into which the text could be sorted. From the 15 initial categories, I was then able to further refine the data into five core themes. The five themes used to classify the interview data include: 1) the overarching tendency to identify biophysical stewardship needs at a local level as opposed to an understanding of the ‘big picture’, 2) challenges related to effectively partnering with communities and stakeholders to effect social change, 3) engaging the volunteer sector and the importance of having a ‘champion’ to promote stewardship agendas, 4) the importance of stewardship group administration and structure, and 5) the influence of stewardship groups on governance and decision making. Quotations from the interviews are used to highlight particular areas within each theme.

The surveys presented both quantitative and qualitative data. Information from the completed forms was entered into spreadsheets and organized according to survey question number and participant identification number. Numerical data were tabulated for data calculation purposes, and represented in table or graph form where applicable. Responses to surveys distributed to environmental group participants afford insight into the perceptions of the volunteers with respect to the on-ground works with which they are involved, as well as how the volunteers are motivated to participate and become engaged in the environmental groups, events or activities that are inspiring change at biophysical and social levels in the Grand River basin.

The narrative survey responses were grouped according to survey question, with particular attention given to commonalities between responses. Subjective, narrative data were transcribed and coded for themes correlating to the survey questions. My analysis of the subjective data from the participant surveys began with coding for a compilation of 30 key words and phrases. The next step involved linking the first 30 words and phrases into a more manageable list of 13 phrases. The responses were once again coded for the occurrences of these phrases and considering how these data connected specifically to the first two research objectives, which are most closely related to the questions in the volunteer survey. Quotations chosen from selected surveys provide context and illustrate the personal perceptions of the volunteer stewardship participants.

3.6 Limitations

Qualitative research can, at times, be criticized as being too small in scope, biased, anecdotal or lacking rigour; however, qualitative research that has depth and validity can minimize these claims (Anderson, 2010, p. 142). Nevertheless, several limitations that were beyond my control became apparent during this study. My study relied in part on information from volunteer survey respondents and interviews with key informants. Despite an unpredictable response rate, ultimately the desired number of survey responses was achieved. However, reaching a desirable cross-section of representatives for interviews was more challenging. Notwithstanding recommendations from personal contacts and repeated requests, it was not possible to secure interviews with certain key informants who may have contributed to more comprehensive results in this research. Efforts were made to connect with people at the Regional Municipality of Waterloo, the Ontario Ministry of Natural Resources and the Ontario Ministry of the Environment. Of these, only the Ontario Ministry of the Environment responded that they were not able to meet with me but suggested I contact the Grand River Conservation Authority (GRCA) for information. I had, at that time, already met with a number of contacts from the GRCA.

A key limitation is the geographical location of the project. As stated previously, the Grand River basin covers an extensive land base and involves numerous municipalities. It was beyond my capacity, and the scope of this study, to cover the entire range of the river basin. To keep travel distances manageable and within the same region as the case studies, the area of the Grand River basin studied is generally the area within the Regional Municipality of Waterloo. Information discussed is still applicable, in most cases, to the Grand River basin as a whole, and it is to this larger area that the GRCA is responsible for and referenced to, but this thesis refers primarily to the Region of Waterloo.

Another limitation was the seasonal timing of this project. As a student researcher, my time schedule for collecting data was limited mainly to the summer months. Unfortunately, the nature of environmental stewardship work is also seasonal, often peaking in the spring and usually winding down, if not ceasing altogether, over the summer months when volunteers are less available. The inability to connect with stewardship groups and survey them during their events and activities created a delay in my data collection and forced me to wait until many of the stewardship activities had recommenced in the early Fall of 2013. Despite these limitations, the study proceeded and the desired information was collected.

There were additional limitations with the Woolwich Healthy Communities (WHC) case study because of difficulties in scheduling and event timing, leading to challenges in accessing an appropriate

sized volunteer base. WHC had one event that I was scheduled to attend and survey the participants in person, but due to a scheduling error on the part of WHC, this meeting did not occur.

3.7 Summary

Qualitative research, particularly when a case study is involved, can be challenging. With time constraints and the dependency on the reliability and commitment of third parties who are not directly connected to the research, it can be difficult to meet objectives and deadlines. However, with perseverance and creativity it is possible to achieve a desirable outcome that meets the needs of the researcher and fulfills or exceeds the goals of the project.

Chapter 4

The Case Studies

4.1 Introduction

The case studies selected for this thesis were chosen not only because they met a set of criteria for the study (Section 3.1.2), but also because they provided an opportunity to conduct an exploratory study that examined both the similarities and differences between the groups, with a particular emphasis on the significance of partnerships and collaboration to the successful function of the group. It is possible to understand the role of partnerships as related to the objectives of this thesis by examining the biophysical and social changes that result from environmental stewardship initiatives. The implications for partnerships are further considered in connection to how stewardship groups in the Grand River basin may be contributing to policy and decision making within agencies and municipal offices.

The three case study groups include the *rare* Charitable Research Reserve, Woolwich Healthy Communities, and Kitchener's Natural Area Program. This chapter will provide an overview of each case study group. Further connections to the specific research objectives will be made in chapters five and six through the analysis of interviews with key informants involved with each group, as well through a review of the surveys completed by environmental group volunteers and participants in events and activities.

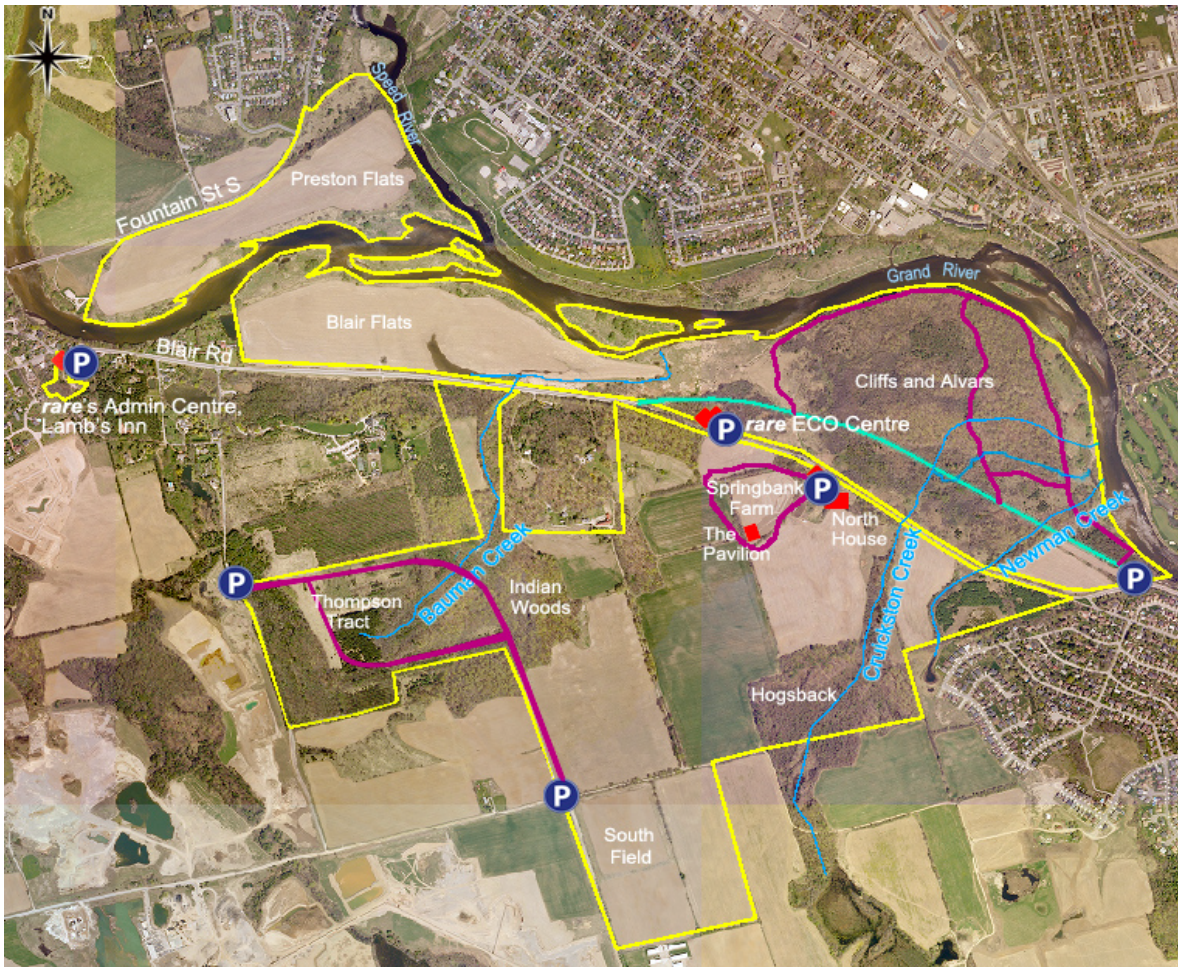
4.2 The *rare* Charitable Research Reserve

The primary case study is the *rare* Charitable Research Reserve (*rare*), located at the confluence of the Grand and the Speed Rivers in Cambridge, Ontario. The property is recognized for its diverse habitats, including an eight kilometre long riparian zone, three cold-water streams, several swamps, upland and lowland deciduous forest, hawthorn and bur oak savanna, floodplain meadows, as well as old-growth Carolinian forest. *rare* is a strategic site in the Carolinian zone - an area adjacent to the Grand River that has seen the expansion to the southern range of a number of important species in the past century. The location of *rare* as a Carolinian zone is an important connection to the Boreal north and southern wintering grounds for many migratory bird and butterfly species (Dance & Dance, 2014). Also of note on the *rare* property are the exposed cliff faces along the Grand River, identical to those of the Niagara escarpment, a UNESCO world biosphere reserve designated site.

rare is a registered non-profit organization with the goal of protecting 370 hectares of environmentally sensitive landscape into perpetuity, while promoting the use of the property for community, educational and research opportunities (Figure 4.1). *rare* is involved in a number of stewardship initiatives, often in collaboration with education and research programs operated by partnering institutions and agencies.

As a non-profit organization, *rare* depends on fundraising campaigns and donor contributions to maintain its operational needs and to continue with ongoing development plans. The current fundraising target is 17 million dollars - a goal that will see the present *rare* property protected into perpetuity. \$12.5 million has already been raised. Support comes from a variety of sources, including provincial and local foundation contributions, private donations and corporate sponsorship. In addition, several of the recent projects at *rare* have benefitted from in-kind donations from local businesses and community members (*rare*, 2014).

Figure 4.1 *rare* Property and Trail Network (*rare*, 2014)



Base Map © Grand River Conservation Authority (2011).

The focus of this case study is multi-faceted. First, I studied the organizational structure of *rare*, how it functions as a group, and how stewardship is incorporated into the programs and activities directed at encouraging public engagement, volunteering, and community participation to create positive environmental change. As an organization, *rare* relies on a basic staff of approximately 12 full and part-time employees. However, *rare* is also supported by several other leadership groups including:

- Board of Directors
- Environmental Advisory Committee
- Research Advisory Committee
- Educational Advisory Committee
- Archaeology Committee

- International Ambassadors
- Campaign and Community Cabinet
- Volunteer and Consulting Advisors

The role of each of these groups is varied, yet their interaction contributes to the overall success of *rare* as an organization. *rare's* vision is “To offer the community, including the international community and future generations, a natural area, protected intact and in perpetuity” (*rare*, 2014). *rare* meets some of the restoration and rehabilitation needs encountered on the property by forming partnerships with external institutions, including corporations, universities and school groups. I consulted with *rare* staff and key informants with the organization to learn more about how these partnerships are developed, the level of success, and whether these types of interactions can foster greater participatory collaboration towards stewardship ideals at the policy and decision-making level.

The value that corporations contribute through a commitment to provide hands-on manpower is becoming an increasingly important part of the stewardship program at *rare*, according to Land Steward, Shawna Craig (personal communication, September 23, 2013). While some corporations are interested in making strictly financial contributions to *rare's* fundraising initiatives, an increasing number of businesses are interested in donating employee time either in conjunction with other financial support or as a stand-alone commitment. In either case, the employer agrees to pay employees for their regular hours of work, while they spend the day, or half-day at *rare* providing labour to assist in a variety of stewardship projects. Aside from the obvious benefits to *rare*, with respect to completing on-ground work that would otherwise not be possible, this program has been key to developing corporate partnerships in the community and has given an opportunity for community members who may not have otherwise been exposed to *rare* to have a chance to explore the property and learn more about the organization (*rare* Review, 2013, p. 5).

Supporting and promoting research, in cooperation with local universities, is another important aspect of *rare's* mandate, with the property able to provide countless opportunities for study in areas as diverse as ecology, biology, hydrology, geology, geography and environmental studies. The chance to interact with a diverse range of flora and fauna within a protected habitat is attractive to many researchers from neighbouring universities. One of *rare's* programs, the ‘Chain of Learning’, aims to connect research done on the property with other existing educational programs (*rare*, 2014).

To meet the goals of the ‘Chain of Learning’ program, *rare* offers comprehensive educational programming for children and youth through ‘ECO’, or ‘Every Child Outdoors’. Programs exist for both

elementary and secondary school students to provide hands-on environmental learning opportunities. In the 2013-2014 school year, *rare* hosted 2348 elementary and secondary school students during its fall, winter and spring programs (G. Kamminga, personal communication, September 8, 2014). To aid in meeting its educational programming goals, since 2012, *rare* has successfully completed the restoration and renovation of an 1840s slit barn and farmhouse to be used as the new education and research centre. The *rare* **ECO** Centre provides a space to host programs for youth, new Canadians, visiting researchers and community gatherings (*rare*, 2014).

With too few resources in the region of Waterloo to offer outdoor education to all children, the completion of the **ECO** Centre means *rare* is able to offer year-round programming to a greater number of students; an important step in being able to help students reconnect with the natural world (*rare*, 2014). Ongoing needs include furnishings and science-based equipment to complement the **ECO** Centre and allow greater access to the natural world through *rare*'s 'Chain of Learning' and 'Every Child Outdoors' Program.

Scientific exploration in *rare*'s educational environment is designed to encourage critical thinking about the natural world, create awareness towards stewardship ideals, and more specifically an understanding of the 'bigger picture' – how today's actions influence the world tomorrow (*rare*, 2014). In addition, community programs, including lectures, guided hikes and other special events are important in providing community members with hands-on experiential learning that is linked to better understanding of the natural environment (*rare*, 2014).

The *rare* Charitable Research Reserve, as a case study, provided the opportunity to examine a successful non-profit group that is experienced in forging partnerships and making strong community connections. Many of these partnerships continue to evolve as *rare* meets its goals and moves forward in the development of new objectives within the community, and at a larger scale within the Grand River basin. Like many charitable organizations, *rare* realizes it must remain cognizant of ongoing priority needs and continuously reassess organizational requirements for project costs, programming needs and funding. *rare* believes research is the foundation of learning, and therefore priority is given to initiatives that build on and emphasize science, research and education (*rare*, 2014).

The second component to my research at *rare* involved the distribution of surveys to volunteers and participants of environmental stewardship programs and events. The surveys were distributed to environmental stewardship group volunteers and event participants at the conclusion of the activities. As noted in chapter 3, the intent of the surveys was to gather information from the volunteers regarding

perceptions around motivation, and the effects of the stewardship groups on creating changes in the biophysical and social realms, as well as with respect to influencing decision making around river basin management. Having the opportunity to interact with the various groups involved in stewardship activities provided important context and insight to this research. The perceptions of the volunteers toward their experiences at *rare* were significant to this study. In addition, it was important to emphasize how the thoughts, feelings and observations of the volunteer participants could be translated to meaningful data that could attempt to demonstrate the impact these volunteers were having at the biophysical level of the land, as well as through education and outreach initiatives that lead to change at the social level.

4.3 Woolwich Healthy Communities

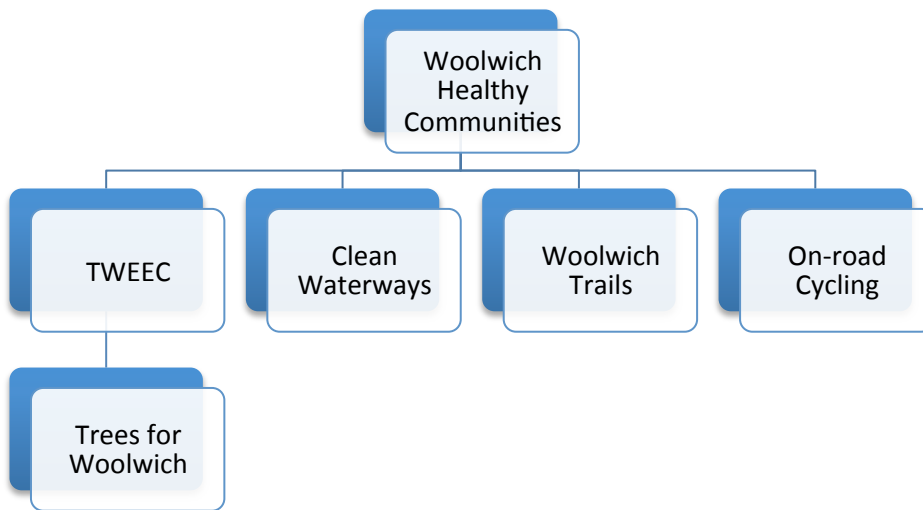
Woolwich Healthy Communities (WHC) was an interesting group to study, particularly because of the umbrella-type structure of the group with the principal group of WHC facilitating five related, but independent sub-groups (Figure 4.2). Under the umbrella of WHC are the Township of Woolwich Environmental Enhancement Committee (TWEEC), the Clean Waterways group, the Trails for Woolwich group and the On-road Cycling group. A subsidiary group of TWEEC is the Trees for Woolwich group. This case study encompasses all groups working under WHC with the exception of the On-road Cycling group, which was less directly related to the objectives of this research.

The WHC group was founded in 1991 after a comprehensive visioning process held in collaboration with the Township of Woolwich and the Woolwich Community Health Centre. The visioning process was initiated in the wake of the Elmira water crisis, a situation where the groundwater aquifers, supplying drinking water to Elmira and the surrounding area, became contaminated as a result of leaching from the Uniroyal chemical plant (now Chemtura). WHC is primarily a volunteer-run organization; however, a Trails Coordinator and the Health Promoter from the Woolwich Community Health Centre, both employed by the Township of Woolwich, provide part-time support.

WHC is not a registered non-profit group, but receives funding from a variety of sources, including the Township, and through partnerships with other agencies and groups. The vision of WHC is to promote and improve the health and wellbeing of the community, economy and environment by bringing people together to enjoy hiking, biking, learning and working together (WHC, 2013). In 2007, WHC received the Community Recognition Award from the Ontario Healthy Communities Coalition, and in 2008 the Clean Waterways group was recognized by the Grand River Conservation Authority (GRCA) with a Watershed

Award for helping farmers improve the water quality in creeks on their property. Each year, WHC hosts Health Communities Month between April and May. Various special events and activities are planned throughout one month to engage the community at all ages and levels. Some of the scheduled activities over the month include: ‘A Taste of Woolwich’, Community Clean-up Day, Yellow Fish Road storm drain painting, tree plantings, special hikes and a ‘Kids CAN bike festival (WHC, 2013).

Figure 4.2 Woolwich Healthy Communities Organizational Diagram



4.3.1 TWEEC

In 2004, TWEEC was formed as a partnership between Woolwich Township and Woolwich Healthy Communities (WHC) with the goal of environmental enhancement for the township. The committee consists of 11 individuals (four members from WHC, five members of the public, one Township Council representative, and one Township staff member). Committee members are appointed for a four-year term that coincides with the term of Council members. The Township of Woolwich allots \$10,000 annually to support TWEEC programs (WHC, 2013). One of the primary activities TWEEC is involved with is tree planting in the community.

TWEEC has been very successful in the forging of partnerships with a number of agencies and organizations in the Grand River basin. Partnerships and working relationships exist between TWEEC and the Region of Waterloo, the Grand River Conservation Authority (GRCA), Trout Unlimited and numerous local schools. Through working with local schools, TWEEC has established relationships with

students and staff who have benefitted from involvement in restoration projects on school properties as well as having the opportunity to participate in local tree planting events. Other partnerships within the township are indicators of TWEEC's commitment to work collaboratively within the Woolwich community and beyond, into the larger Grand River basin. Further details of these collaborative partnerships can be found in section 6.3.1.2.

4.3.2 Trees for Woolwich

Trees for Woolwich is a sub-group of TWEEC that began in 2011 with the goal of planting 23,000 trees (one for each resident) in the Township by 2016. The mission of the group is to create a green legacy for Woolwich Township by working with community members and partner organizations to increase tree cover, as well as to educate the community around the benefits of trees and tree planting to both humans and the environment. Plantings are encouraged for both private and public lands with an emphasis on creating windbreaks and limiting soil erosion and run-off. The Region of Waterloo and the Waterloo Stewardship Network provided start-up funds for initial tree plantings in 2011 and 2012 (WHC, 2013).

4.3.3 Clean Waterways

The Clean Waterways group aims to improve water quality throughout Woolwich Township by working with volunteers and landowners to repair, rehabilitate and improve stream bank stability. A key project for the group involves engaging community members and schools, alongside a core group of volunteers, installing fencing on the properties of local farmers to keep cattle out of the Canagagigue Creek, thereby improving stream-bank stability, reducing run-off and improving water quality. In addition, the native trees and shrubs are planted, further reducing erosion and providing filtration from farm run-off and contaminants that may enter the creek (WHC, 2013).

Another component of the Clean Waterways group is the 'Adopt-a-creek' program whereby local organizations and landowners are encouraged to contribute to creek rehabilitation and water quality improvement. Participating groups are provided with training, tools and materials to complete each project. Through this program, partnerships are built within the community with the participation of service clubs and the involvement of schools from the Waterloo Region school boards and from local parochial schools. Education and outreach to the community is an important function of the Clean Waterways group with the goal of better water quality and overall health for the Township and the residents (WHC, 2013).

4.3.4 Woolwich Trails

The goal of the Woolwich Trails group is to promote hiking and biking, and improved health and fitness for the residents of the Township. Woolwich Township has ten public trails used for a variety of activities, including: walking, biking, running, cross county skiing and snowmobiling, where permitted. The group offers guided hikes between March and November and provides a '*Guide Book to Woolwich Trails*' with maps and trail descriptions. Volunteers with the Trails group are also involved in trail maintenance, bridge repair and other trail events throughout the year (WHC, 2014).

The Woolwich Healthy Communities (WHC) group provides an example of a distinctive organizational model for environmental stewardship, and has been extremely successful in meeting its goals to date. The umbrella group of WHC has played a key role in the development and maintenance of ongoing partnerships that have led to greater understanding about environmental needs in the community, promoting partnerships at the community and municipal level, as well as between agencies and organizations.

4.4 Kitchener's Natural Areas Program

Kitchener's Natural Areas Program (KNAP) was created in 2006 as a partnership between the city of Kitchener, the Kitchener-Waterloo Field Naturalists and the Waterloo Stewardship Network. The program is funded by the city of Kitchener. The Natural Areas Coordinator oversees the delivery of the programs encompassed by KNAP. The goals of KNAP are to promote community engagement in environmental stewardship projects, to educate the community about the natural areas in Kitchener, and to provide opportunities for residents to experience nature while in an urban city setting. There are over 75 natural areas in Kitchener, providing ample opportunity for residents to explore nature in a natural environment within the city. During the first two years of operation, the program created and utilized more than 6,000 hours in volunteer time and education, and connected with over 2,250 community members (City of Kitchener, 2014).

Various stewardship opportunities are available through KNAP and can be an ideal way for individuals, groups or schools to become involved in conserving the natural areas in Kitchener and the local community. Stewardship activities include: natural area/creek cleanups, ecological restoration and monitoring projects, and tree planting. In addition to offering hands-on opportunities for community members to become involved in environmental stewardship projects, KNAP is also committed to providing education regarding Kitchener's natural areas through several initiatives including:

- ‘The White Pine’, a newsletter providing information about KNAP achievements, events and other relevant details
- KNAP Factsheets, with topical information geared to helping community members better understand and enjoy the natural areas, while reducing the impact of their use
- KNAP Website (www.kitchener.ca/knap), a primary source for everything pertaining to the programs, including the above materials in a downloadable format, along with other significant information (City of Kitchener, 2014)

The city of Kitchener’s largest and most valuable natural area, Huron Natural Area (HNA), is particularly significant, with 107 hectares of protected land on the southern side of the city. The HNA has a number of important geographical features including Strasburg Creek, a cold-water stream, provincially significant wetlands, forests, and meadows (Figure 4.3). The diverse landscape provides habitat for many noteworthy species of flora and fauna. Within the HNA are scenic hiking trails, boardwalks and lookout areas popular with visitors of all ages (City of Kitchener, 2014). The HNA is operated as a partnership among the city of Kitchener, the Waterloo Catholic District School Board (WCDSB) and the Waterloo Region District School Board (WRDSB). Through these partners, numerous programs are offered at the HNA with particular emphasis on education through programming for school aged children. The focus of the group is to maintain or enhance the ecological integrity of the park while encouraging stewardship initiatives and education regarding the indigenous ecosystems of the area (City of Kitchener, 2014).

Figure 4.3 Huron Natural Area (City of Kitchener, 2014)



KNAP has developed a number of resources that can be accessed by community members who are seeking to experience nature without having to leave the city. These resources include:

- KNAP Natural Area Park Series - park specific information sheets with trail maps, park details and directions

- Interpretative Trail Guides - available for some of the natural parks; provide detailed information that can be downloaded via the website
- Guided Nature Walks - held throughout the year to provide insight and education regarding the natural diversity of plants and animals found in the parks
- KNAP's Annual Earth Day Celebration - a community event with family-friendly activities held every spring (City of Kitchener, 2014)

As a case study, KNAP demonstrates a number of ways in which partnerships are successfully managed at the municipal and community level, embracing community stewardship ideals and promoting education about the natural environment.

4.5 Summary

The three case study groups used in this research offered an opportunity to study several diverse environmental stewardship programs and the volunteers involved with them. The use of partnerships and various forms of collaborative work were observed to play an important role in all three groups. Collaboration within each group and between other agencies and organizations was significant in meeting the goals and objectives for each group. The effective attainment of goals involved the realization of on-ground physical projects, improved educational outreach leading to social change, and the potential to influence river basin governance through demonstrated program success with an achievable vision for environmental enhancement at the community and river basin level. The following chapter will present the findings and results of the interviews and surveys relating to the case study groups.

Chapter 5

Results: Research Objectives One & Two

5.1 Introduction

In the following two chapters, I present the results of my qualitative analysis (chapter three) of the three case studies (chapter four). The rationale for dividing the results between two chapters relates to the three preliminary research objectives being used as a framework to present my research findings. In chapter five, I provide the results for the first two related research objectives: (1) to examine the role of participants from environmental stewardship groups in the Grand River basin, to understand how they are creating or contributing to: (i) biophysical changes, for example through tree plantings, stream restorations and other on-ground projects, and (ii) social changes, for example through educational programs and outreach initiatives; and, (2) to determine the role of the environmental group participants from their own perspective, considering their motivations for involvement and their reasons for making a commitment to create environmental change within their community, the river basin, or both. Aspects of group organization and structure, as well as factors contributing to volunteer burnout, are also considered.

In chapter six I present the findings related to the third research objective: how environmental stewardship in the Grand River basin is viewed by agency and organizational members, such as those in managerial and leadership roles at the Grand River Conservation Authority (GRCA), Woolwich Healthy Communities (WHC) and the *rare* Charitable Research Reserve, as well as representatives from municipal government offices. The findings illustrate how initiatives or changes implemented by stewardship groups can be influential in guiding river basin management through policy and decision making. In addition, the potential benefits and drawbacks with regard to partnerships and collaboration between stewardship groups and other organizations or agencies are analyzed.

Throughout the results section and in other areas of this thesis, reference is made to volunteers, participants and groups. Although some distinction can be made between volunteers and participants, as survey respondents they are both categorized into a single group, meaning individuals who either volunteer with a group at one time, on an ongoing basis, or who are participants in a particular stewardship activity or event. The use of the terms ‘stewardship groups’, or ‘groups’ refers to the organization or body, organizing or undertaking a stewardship activity or event. At each activity or event, there may be a combination of both volunteers and participants. Survey respondents consist of both volunteers and participants.

Chapters five and six present the results of this thesis as compilation of qualitative results collected from the volunteer participant surveys and the interviews with key informants. The qualitative results should be understood to be information gathered specifically from the surveys and informants unless otherwise stated to be the observations or conclusions of the researcher.

5.2 The Role of Stewardship Groups in Creating Change

The data collected in this research demonstrate that environmental stewardship groups and community volunteers are creating change in a variety of capacities within the Grand River basin. Groups are involved in on-ground projects, where the hands-on work of volunteers is affecting the biophysical environment of the community and river basin. Stewardship groups provide the on-ground resources – they are identifying threats or issues in the community such as invasive species, the need to improve water quality, or an observed paucity of tree cover. Groups are also active in the physical removal of invasive species, planting of native trees and subsequent monitoring (Respondent 10, personal communication, July 23, 2013).

Through the work of stewardship groups, social changes are being observed within the local communities of the Grand River basin, as well as at the broader level of the catchment. Basin-level social change in connection with environmental improvement can be seen as a primary result of the educational initiatives and community outreach. Examples from the case study groups include the educational programming provided by the *rare* Charitable Research Reserve (Section 4.2), and the hands-on opportunities offered by Kitchener’s Natural Areas Program (Section 4.4) (Respondents 1, 10, & 11, personal communication, 2013). The importance of community engagement in mitigating environmental challenges is also emphasized by two of the research participants (Respondents 6 & 10, personal communication, 2013). In particular, three stewardship volunteers and leaders note the importance of involving and educating the youth around the importance of stewardship concepts and the positive impact that can be achieved through participation in environmentally aware stewardship behaviour and activity (Respondents 1, 3, & 14, personal communication, 2013).

5.2.1 Stewardship Volunteers Create Biophysical Changes in the Grand River Basin

The respondents exhibit a strong consensus, through both interviews and survey questions, indicating a perception that environmental stewardship groups are making significant contributions to the biophysical changes in the Grand River basin. Through the planning and implementation of on-ground projects, groups are having an impact at the community level but stewardship participants (N=15) and six key

informants note broader, cumulative effects are also a result of a number of stewardship projects (Respondents 4, 7, 10, 11, 13, & 14, personal communication, 2013). The data indicate stewardship efforts are taking place on the land surrounding the Grand River waterway (N=30) including tree planting (N=17), windbreak and green corridor establishment (N=25), the removal of invasive species (N=18) and plant and animal monitoring (N=20). In addition, groups are targeting specific sections of the Grand River (N=17) through contributions to rehabilitation, remediation and restoration by conducting stream cleanups, water monitoring and other related initiatives.

The research for this thesis led to the exploration of a number of examples of biophysical changes in the Grand River basin. The examples of changes being affected by environmental stewardship groups range from those that are broad in scope, pertaining generally to the entire river basin, such as water quality, to those that are much more specific, such as tree planting programs within various communities. In responding to the survey question specific to categories of changes or improvements that were perceived as most important in terms of stewardship group activity, 'restoration or rehabilitation' to land area in the Grand River basin is ranked by a majority as 'most important', with 54% (N=28) respondents making this selection. Another substantial group, 42% (N=22) ranked local community education and awareness as most important. A summary of participant rankings of improvements resulting from stewardship efforts is provided below (Table 5.1).

Table 5.1 Participant Rankings of Improvements Resulting from Stewardship Efforts

	<i>Ranking: 1 = most important, 5 = least important (N=52)</i>				
Improvements	1	2	3	4	5
Local community education/awareness re: environmental issues	N=22 (42%)	N=9 (17%)	N=14 (27%)	N=3 (6%)	N=4 (8%)
General public education/social awareness re: environmental issues	N=13 (25%)	N=19 (37%)	N=10 (19%)	N=8 (15%)	N=2 (4%)
Rehabilitation/restoration of land area(s) in the Grand River watershed	N=28 (54%)	N=12 (23%)	N=5 (10%)	N=3 (6%)	N=4 (8%)
Rehabilitation/restoration of waterway(s) in the Grand River watershed	N=17 (33%)	N=13 (25%)	N=6 (12%)	N=8 (15%)	N=8 (15%)

These results in Table 5.1 are corroborated by open-ended survey replies and interview responses that indicate how volunteers and stewardship groups are contributing to biophysical change at the local and river basin-scale. Specific responses can be separated into several key categories around biophysical changes. These categories include:

- Volunteers and stewardship groups are making changes, having an impact or influence (on the environment), making improvements and making a difference in their communities
- Volunteer participants and agency personnel understand the importance of on-ground or hands-on work to implement projects
- Stewardship groups and volunteers express a need to participate in restoration, rehabilitation, regeneration, or planting initiatives in the Grand River basin

The following section highlights some examples of the biophysical changes to which stewardship groups are contributing in the Grand River basin. Changes are outlined in terms of the case study groups involved in this research, as well as in the context of examples provided by informants through the

interviewing process. Finally, data from the participant surveys provide additional evidence of the biophysical changes as a result of activities by stewardship groups.

5.2.1.1 Examples of Biophysical Changes: The Case Study Groups

Through my observations at the *rare* Charitable Research Reserve (*rare*) it became clear the organization is making numerous contributions to biophysical changes on the land and waterways by engaging an array of community and corporate volunteers, researchers, and school children (Craig, 2013, p. 6). Community and corporate volunteers are involved with a variety of restoration and rehabilitation projects, ranging from trail maintenance to removal of invasive species and planting of native species (Craig, 2013, p. 6). Corporate volunteer groups are contributing restoration and ecological initiatives through extensive tree planting projects, often geared towards reducing erosion and improving water quality, as well as assisting in the extension of the community gardens at *rare* (Craig, 2013, p. 6). School groups are participating through *rare's* educational programs and are learning the importance of native plant buffers in preventing invasive plant species from moving into areas of bare soil. In one instance, students provided assistance by adding mulch to a trail and in building a boardwalk over a seasonally wet area. The addition of boardwalks to some sections of trail aids in the defraying of the environmental impacts that occur when hikers move off trail in search of dryer land (Craig, 2013, p. 6).

Researchers from nearby universities and institutions utilize the property at *rare* to further their research goals while contributing to biophysical improvements on the land and water. The goal of these projects is not only to improve the land and water within the protected areas of the *rare* property, but also to have a greater impact at the community and river basin scale. Current research taking place at *rare* includes: the control of invasive species, the science of soil systems, maintaining grasslands, improving habitat for the Bobolink – a species at risk in Ontario, and understanding pollinators (Burt, 2014). Such research supports *rare's* commitment to employing an ecosystem approach to land and water management that includes ideals for restoration and stewardship, promotes environmental sustainability and establishes the benefits of simultaneous ecological and economic growth (*rare*, 2013).

Woolwich Healthy Communities (WHC) is another case study group involved in a range of stewardship activities within the community. Under the umbrella of WHC, the Township of Woolwich Environmental Enhancement Committee (TWEEC) has implemented a Live Snow Fence project adjacent to Highway 85, in Woolwich Township. Along a 500-metre section of the highway, 150 trees and 450 shrubs have been planted (WHC, 2013). The natural windbreak created by the Live Snow Fence has

multiple benefits, including safer winter driving, with reduced costs in road plowing and salting. As participants in the Live Snow Fence project, landowners have opportunity to direct the species planted on their land (WHC, 2013). For example, the planting of sugar maple trees provides sap for harvesting and the addition of flowering shrubs attracts pollinators, improving crop yields. Positive results are seen in cleaner air and water from a reduction in emissions and the use of road salt, and wildlife habitat is created and enhanced (WHC, 2013). TWEEC was also instrumental in setting up a program with the local waste transfer stations in Elmira and Crosshill, where it was arranged that farming bale wrap would be collected by an external company for recycling, rather than going into the landfill or having farmers burn the plastic wrap on their property (Respondent 8, personal communication, September 12, 2013).

In 2012, TWEEC began working with the community and the local high school to establish a native tree nursery on township-owned land near Elmira. Native seeds are selected and collected by a local naturalist. The seeds are stratified in preparation for germination, then planted and cared for by high school students, first in a nursery, then outdoors for two years before being moved to permanent locations (WHC, 2013). Through participation in this program, students receive an opportunity to learn about local horticulture; they gain an understanding of the importance of trees and canopy cover to the health of the environment; and, they gain an appreciation for the importance of environmental stewardship (WHC, 2013). In the winter of 2014, TWEEC expanded the Classroom Seedling Program to include elementary students in Elmira and Breslau who took responsibility for planting and caring for trays of seedlings over the winter. Seed trays were collected and transplanted to the outdoor nursery in May 2014 with as many as 2,000 seedlings resulting from the program (WHC, 2014).

Another umbrella group of WHC, Trees for Woolwich, has set an ambitious goal to plant 23,000 trees by 2016. With forest cover presently at approximately 14% in the township, the aim, to ensure sustainability and environmental health, is for 30% forest coverage (WHC, 2013). Since the inception of the program in 2011, over 9,000 trees have been planted across the township. Trees are being planted by individuals and organizations, and are located on both public and private lands (WHC, 2014). Recent ice and windstorms have had a significant impact on the trees in Woolwich Township and tree damage is predicted to be ongoing in connection to climate change and related severe weather events. In addition, the Grand River region is now susceptible to damage from the Emerald Ash Borer, an invasive insect that is expected to kill thousands of ash trees in the area in the next five years (WHC, 2013).

The volunteers and administrators working with the Trees for Woolwich program and other WHC programs have observed how local farmers are recognizing the significance of tree planting through the

advantages of natural windbreaks (Respondents 2 & 3, personal communication, September 5, 2013). According to a representative from WHC, farm owners are also benefitting from greater crop yields, lower heating costs, increased shade for livestock and reduced erosion (Respondent 3, personal communication, September 5, 2013) Farmers are encouraged to participate in the tree-planting program with financial assistance from the Rural Water Quality Program, administered by the Grand River Conservation Authority (WHC, 2013). Greater tree cover in the community contributes to better air and water quality, with all members of the township able to appreciate the benefits. As two of the respondents comment, a particular focus has been given to planting along the Canagagigue Creek (Respondents 2 & 3, personal communication, September 5, 2013), formerly one of the most contaminated tributaries in the Grand River system (Dance & Hynes, 1977).

The Clean Waterways group, another subsidiary of WHC, is also contributing to environmental improvement in Woolwich Township by planting trees and shrubs along waterways and creeks with the goal of improving water quality through reduced stream bank erosion, lower water temperatures and the reduction of pollutants entering the water system (WHC, 2013). Community volunteers and local school groups often join the Clean Waterways group, providing support in the achievement of their goals. Each spring, with the help of three local schools, approximately 250 shrubs are planted for each project. The trees provide a wildlife corridor, a natural habitat for birds and increase shade cover on farmland (WHC, 2013). As part of the program, farmers are encouraged to install fencing to keep cattle out of the creeks, thereby reducing erosion. Some of the students who have participated in the tree-planting program are now farm owners who have learned to appreciate the importance of land and water stewardship (WHC, 2014).

The third case study group, Kitchener's Natural Areas Program (KNAP), offers a variety of stewardship activities that encourage community members, groups and schools to engage in the conservation of Kitchener's natural areas. Projects include natural area and creek cleanups, ecological restoration and monitoring, and tree planting (City of Kitchener, 2014). KNAP is extensively involved in the preservation and conservation of Kitchener's largest and most significant natural area, the Huron Natural Area (Section 4.4).

5.2.1.2 Examples of Biophysical Changes: Other Groups

It became apparent during this research that other local groups are contributing to creating biophysical change within the Grand River basin. Examples of the work being done by these groups were provided by

interviewees, survey respondents and other external sources, such as websites. In addition to the detailed information provided through the case studies, it is important to acknowledge other groups in the Grand River basin that are working on stewardship goals in the community.

In Waterloo, the Laurel Creek Citizens' Working Group (LCCWG) is involved in stewardship activities targeted towards local streams and strives to educate the public around stream stewardship and ecology. The premise for the LCCWG is to work both as an independent group, and with other local groups to implement projects where there is a need and an interest expressed. It is necessary for there to be a fit between what groups want to accomplish and what LCCWG can offer. A representative from LCCWG indicated that they recognize the importance of their role in working closely with partners in the environmental planning department and with the environmental advisory committee at the City of Waterloo (Respondent 5, personal communication, July 24, 2013).

The Friends of Mill Creek is another locally successful group which, working in partnership with the Mill Creek Rangers, the Grand River Conservation Authority and other stakeholders, are completing a number of on-ground projects aimed at the restoration of Mill Creek in Cambridge, Ontario. According to an interview respondent and representative of the city of Cambridge, the projects implemented by these groups have garnered considerable community interest and support including the initiation of a successful fundraising campaign and the establishment of effective partnerships with local businesses and corporations (Respondent 13, personal communication, August 7, 2013). The Friends of Mill Creek developed an opportunities plan to help distinguish areas of low and high priority. Projects deemed too large in scope, such as dam removal, were given low priority. High priority was given to manageable projects within the means of the group, such as working with landowners to improve channels within the creek (Respondent 13, personal communication, August 7, 2013).

The Trees for Guelph group was acknowledged by a representative from the GRCA as making some important contributions to environmental stewardship in the river basin (Respondent 6, personal communication, August 28, 2013). Started in 1991 with the goal of improving forest cover in the city of Guelph by planting trees and creating urban forests on parcels of factory land, the group has since branched out to other areas in the community, while maintaining a focus on trees (Respondent 6, personal communication, August 28, 2014). After the first decade, having exhausted many of the available options with industry, the group changed its focus to begin working with schools, engaging school children in programs, and planting trees on city land and school grounds (Respondent 6, personal communication, August 28, 2013).

The groups and projects identified through this research by no means represent an exhaustive list. The Grand River basin is fortunate to have a large variety of stewardship groups and organizations partaking in stewardship activity across a range of communities. The groups examined in greater detail are those that have provided strong evidence of meaningful contributions or involvement in making positive biophysical changes. Through this investigation, the actions of these groups became evident through the dialogue and responses from interviewees and survey participants.

It is observed by one respondent that biophysical and social changes do not occur in isolation, but rather tend to exact an influence on each other (Respondent 10, personal communication, July 23, 2013). If a group works on an issue to create biophysical change, by that same process, social change will be initiated through the evolution of stronger networks and through the development of management plans (Respondent 10, personal communication, July 23, 2013). KNAP, for example, is in the process of developing longer term plans for natural areas within urban neighbourhoods. The concept involves working with a community or neighbourhood to identify issues, then engaging the community through monitoring or restoration projects. The result is a growing community network that works toward a community engagement process as well as a natural areas improvement process (Respondent 10, personal communication, July 23, 2013). The following section considers the importance of social change and education as part of the effect that stewardship groups are having in the Grand River basin.

5.2.2 Stewardship Groups Initiate Social Changes and Education in the Grand River basin

One of the goals of my research is to determine how social change may originate in various ways in relation to stewardship activities. By creating awareness and understanding around the need for environmental stewardship, groups may be able to better educate the public, while also encouraging the engagement and involvement of the community. One respondent notes how the initiation of a biophysical change such as tree planting can create subsequent social change as people begin to recognize the value of planting native species (Respondent 13, personal communication, August 7, 2013). While many stewardship projects involve planting trees and re-vegetating areas stressed by negative environmental factors, social and biophysical changes can also begin around backyard gardens and the removal of invasive species (Respondent 13, personal communication, August 7, 2013).

5.2.2.1 Education, Awareness and Understanding

Of the 14 key agency informants, ten indicate that stewardship groups are playing an important role in providing education to the public and enhancing awareness and understanding regarding environmental

issues (Respondents 1, 3, 4, 6, 7, 10, 11, 12, 13, & 14, personal communication, 2013). When people are educated about the watershed, there is an extended benefit beyond the local or community level, to the broader scale of the river basin (Respondent 7, personal communication, August 23, 2013).

The significance of educational programs was mentioned by seven of the interview respondents, who note that emphasizing the importance of the environment to young people can be instrumental in mediating social change (Respondents 1, 3, 4, 10, 11, 13, & 14 personal communication, 2013). By improving the ecological knowledge of students, there is an increased awareness towards social issues relating to environmental management. Two of the environmental group leaders express hope that some of these students will be inspired to pursue leadership roles in social justice or the environment (Respondents 1 & 3, personal communication, 2013).

The *rare* Charitable Research Reserve (*rare*) is one group that recognizes how it can play a significant role in bringing and/or enhancing awareness to the Grand River basin, giving reason to ensure certain components of the river valley are preserved (Respondent 14, personal communication, September 11, 2013). It is part of the vision of *rare* to provide influential, educational programs for both young people and the general public. Programs such as ‘ECO’ - Every Child Outdoors (Section 4.2) - are geared towards greater environmental understanding and appreciation for the value of the natural resources that exist in the Grand River basin and beyond (WHC, 2014).

Woolwich Healthy Communities (WHC) and the Trees for Woolwich group are providing education for school children through tree planting programs. An emphasis is placed on helping children learn how tree planting offers an immediate benefit to wildlife and aquatic life, as well as understanding the significance of connective green corridors (Respondent 14, personal communication, September 11, 2013). WHC coordinates a ‘Healthy Communities Month’ every April during which the community is encouraged to participate in a variety of scheduled activities ranging from birding hikes, painting yellow fish on roadway storm drains – an initiative of Trout Unlimited, to enjoying a local food festival – ‘A Taste of Woolwich’. According to one interview respondent, a representative of WHC, one advantage of ‘Healthy Communities Month’ is that the coordination of the various events brings together people who are active with more than one group, so there tends to be a cross-pollination of ideas and strategies (Respondent 8, personal communication, September 12, 2013). The goal of hosting ‘Healthy Communities Month’ is to engage community members in a range of activities that promote an awareness of the benefits of healthy eating, healthy living and a healthy environment (Respondent 8, personal communication, September 12, 2013).

Laurel Creek Citizens' Working Group (LCCWG) is involved in a variety of initiatives that aim to educate people across the river basin, and at a local, community level. LCCWG has a presence at a number of environmental events in the region at which it provides education on stream ecology and the importance of monitoring and maintaining water flows. Additional impacts can be seen in neighbourhoods through work with neighbourhood associations, leading to a more localized effect (Respondent 5, personal communication, July 24, 2013).

Despite the indication that stewardship groups are offering meaningful educational experiences that lead to increased understanding and awareness of environmental issues, a representative from the GRCA and a founding member of the Trees for Guelph program suggests that perhaps the desired impact is not as great as what might be expected (Respondent 6, personal communication, August 28, 2013). Through the Trees for Guelph program, the majority of schools in Guelph has been involved with tree planting for the past generation, yet there is little evidence to support the idea that change has been made with respect to the attitudes of the students involved. The same respondent reports that perhaps a certain mental awareness has been created, but still lacking is an emotional, heart-felt connection towards environmental issues with a desire to take action and make changes (Respondent 6, personal communication, August 28, 2013).

Perhaps in order to establish a more emotional connection to the land and the environment these students need to be given an opportunity to experience nature at a more personal level. If the only experience they have with the environment is in the context of tree planting on the school property they may not be able to separate from the mindset of the urban school environment to what the greater tree-planting project is hoping to achieve. It might prove beneficial for these students to participate in environmental educational programming that is away from the school, such as through programs offered by the *rare* Charitable Research Reserve, or at one of the nature centres operated by the Grand River Conservation Authority. With these types of programs, the students can be immersed in a natural environment while learning about the benefits of protecting the natural world from a social and biophysical perspective.

5.2.2.2 Community Engagement

There is an important biophysical component to engaging a community and increasing participation and commitment to stewardship concepts. A respondent who works with the *rare* Charitable Research Reserve (*rare*) feels that when people are not directly involved with hands-on work there is a tendency to

lose perspective on what needs to be accomplished (Respondent 14, personal communication, September 11, 2013). According to the interview respondent, a certain intimacy (towards environmental issues) is required in order to inspire commitment and caring (Respondent 14, personal communication, September 11, 2013). The same respondent continues, stating that *rare* is a group that can offer an opportunity for community members to come into a natural area and make such connections (Respondent 14, personal communication, September 11, 2013). Furthermore, the same respondent believes the garden plots available through the community gardens are one way to get in touch with the soil, but there is also an opportunity created to connect with others who might be doing different things that inspire a new interest or direction for work in a different area. *rare* aspires to be part of a community of people able to commit to contributing to the wellbeing of the environment (Respondent 14, personal communication, September 11, 2013). Also noted is how commitment can take many forms, and people at all skill levels, regardless of ability, or the amount of time commitment, need to be recognized and embraced (Respondent 14, personal communication, September 11, 2013).

A representative with the Woolwich Healthy Communities (WHC) group notes that the group is very passionate about the stewardship work being completed throughout the township; however, it is also recognized for its gentle approach to working with others (Respondent 8, personal communication, September 12, 2013). The respondent observes core members who work with WHC have a way of reaching out to the community by inviting residents to partake in activities in such a way that the participants have a sincere desire to be there (Respondent 8, personal communication, September 12, 2013). In the opinion of this respondent, WHC has been very successful in building relationships and making connections in the community (Respondent 8, personal communication, September 12, 2013). According to the interviewee, as part of WHC, Trees for Woolwich reaches a diverse array of community members by striving to engage service clubs, church groups and school children (Respondent 3, personal communication, September 5, 2013).

Based on the results of the participant surveys and from an interview with a representative from Kitchener's Natural Area Program (KNAP), this is a group that illustrates the value that can be brought to a program by successfully engaging people in the community (Respondent 10, personal communication, July 23, 2013). While KNAP was originally developed under a grant from the Trillium Foundation, acknowledges one respondent, by demonstrating the value behind what was being accomplished through community engagement, the program achieved permanent funding, with ten years of capital guaranteed by the city of Kitchener (Respondent 10, personal communication, July 23, 2013).

Another respondent notes another successful example of community engagement where the Rotary Club of Guelph partnered with the Grand River Conservation Authority (GRCA), the City of Guelph, and other sponsors to create a Rotary Forest with the goal of increasing canopy cover in the City of Guelph (Respondent 12, personal communication, September 4, 2013). The nature and location of the project took into consideration the potential for involving school children from the area. Additionally, the ecological implications were significant because a swath of interior land with forest habitat was created (Respondent 12, personal communication, September 4, 2013).

Other groups such as the Friends of Mill Creek are creating awareness in the community, leading to a community that has an appreciation for the health of the watershed (Respondent 13, personal communication, August 7, 2013). Another interviewee agrees that the importance, or value, of the group may be less related to what it does on the ground, but rather in the value of community engagement. For example, a program at the City of Cambridge, City Green, is the catalyst for community organized litter cleanups. Cambridge has declared a goal of having 11.2% of the population involved in the cleanup, and with the dedication of considerable resources to the project it is hoping to see a significant result. In the Grand River basin, the majority of the population lives in cities or urban areas. The result can be a disconnect between humans and the natural world or lack of understanding and empathy for environmental needs. By promoting the contagious element of community awareness and engagement – whereby the positive actions and behaviours of some community members influence and encourage similar behaviour in others – subsequently, local groups are having a broader social influence across the watershed (Respondent 6, personal communication, August 28, 2013).

One respondent observes that some groups may opt for a more social atmosphere when promoting environmental events such as ‘Cleanup Days’ hosted by companies or organizations (Respondent 11, personal communication, July 23, 2013). However, according to the same respondent, within the social context, community members are getting involved and subsequently increasing community pride around the river, green spaces, or other natural areas. The effect on the river basin is cumulative and additive (Respondent 11, personal communication, July 23, 2013). Another respondent tells how the University of Waterloo Environmental Reserve group uses a variety of measures to illustrate how the work being done is the sum of more than just the efforts of the stewardship group (Respondent 4, personal communication, July 24, 2013). By initiating a working group, a staff planting day and involvement with school groups, it is expanding community awareness regarding the benefits of stewardship (Respondent 4, personal communication, July 24, 2013).

The GRCA has increased its commitment to management in trail development, according to a representative from the organization, and the focus has widened to include the promotion of trails in the Grand River watershed, not just for recreation, but as a means to create better awareness of the natural environment and to foster stewardship ideals (Respondent 11, personal communication, July 23, 2013). Another representative from the GRCA, and an interview respondent, notes that motivation to take on stewardship efforts is often a direct result of getting people into an outdoor setting where they can enjoy nature. Participation in outdoor activities is becoming increasingly important for many people (Respondent 12, personal communication, September 4, 2013). The same respondent observes that, through volunteer stewardship activities, people can participate in outdoor experiences while contributing to the betterment of their community (Respondent 12, personal communication, September 4, 2013). People get involved in different ways and sometimes it can be more of an oblique involvement, but there is an interest on the part of many families to do something together that is going to have a long-term positive impact on the environment and the community (Respondent 12, personal communication, September 4, 2013).

5.2.2.2.1 Towards Greater Community Engagement

A representative from the Grand River Conservation Authority (GRCA) suggests that community awareness in the river basin needs to mature in order to reflect the changing needs of the environment. As part of an increased awareness, stewardship groups should be nurtured and recognized for the value of their contributions to the community (Respondent 11, personal communication, July 23, 2013). Another interview respondent observes that, by participating in stewardship groups and activities, community members become more educated about the environmental issues in the area and are more likely to advocate, volunteer time and energy towards making changes, and generally become more engaged (Respondent 10, personal communication, July 23, 2013).

A representative for the GRCA notes a positive public response to stewardship programs has given the GRCA and the Grand River Conservation Foundation (GRCF) a consistent and clear mandate to expand existing programs (Respondent 12, personal communication, September 4, 2013). Community members are contacting the GRCA because they are becoming more aware of issues in the river basin and they care about what is being done to mitigate these concerns. Work being done in the community can only be considered successful if people are aware of it and notice the impact (Respondent 12, personal communication, September 4, 2103). The affect that can be gained from reaching out to the community and encouraging participation in stewardship is not going to make the GRCA more efficient, or

necessarily even save money. The value is in making connections and creating awareness, which can more than compensate for time invested. If the goal of a group is to utilize volunteers for the sole purpose of saving money, it is likely missing the main objective of stewardship and will ultimately deny participants from the experience they are looking for (Respondent 5, personal communication, August 28, 2013).

One respondent suggests that the GRCA would benefit from establishing a framework to assist in attaining new stewardship goals. The present system tends to operate on an ad hoc basis. A dedicated program would decrease the amount of staff time required and would streamline the process of community engagement (Respondent 12, personal communication, September 4, 2013). There is an opportunity for the GRCA to position itself in the community in a way that has not been done before, but in a way that will allow an increased amount of on-ground work to be accomplished. Through community connections, the GRCA has a role in creating awareness for the private sector within the GRCA. By influencing the GRCA in this manner, the tendency to respond to environmental issues and community concerns on a reactive basis can be reduced (Respondent 12, personal communication, September 4, 2013).

One role for stewardship groups will be to continue to engage local communities and encourage greater involvement in stewardship initiatives. A community that is engaged and aware of the environmental issues within the watershed will be better able to understand and support the challenges faced by the agencies tasked with managing the natural resources of the river basin (Respondent 6, personal communication, August 28, 2013). As capital resources diminish at the agency level, a key step forward will involve mobilizing the public to take ownership in a positive manner, and to understand and enhance the value of the public resources (Respondent 9, personal communication, August 22, 2013).

5.3 Motivation for Participation in Stewardship Groups and Activities

Volunteers participate in stewardship activities and events for a variety of reasons. The motivations behind an individual's decision to become involved with a particular group or activity, although often diverse, tend to exhibit a number of similarities. The data indicate a number of commonalities among participant responses relating to the motivations or reasons behind volunteering to participate in a stewardship group or activity. Totals for all three categories are greater than 52, the number of surveys collected, due to respondents making selections in more than one category. Three key themes emerge through an analysis of the survey results (Figure 5.1).

A majority of survey respondents indicates that the priorities for volunteering with a stewardship group relate to:

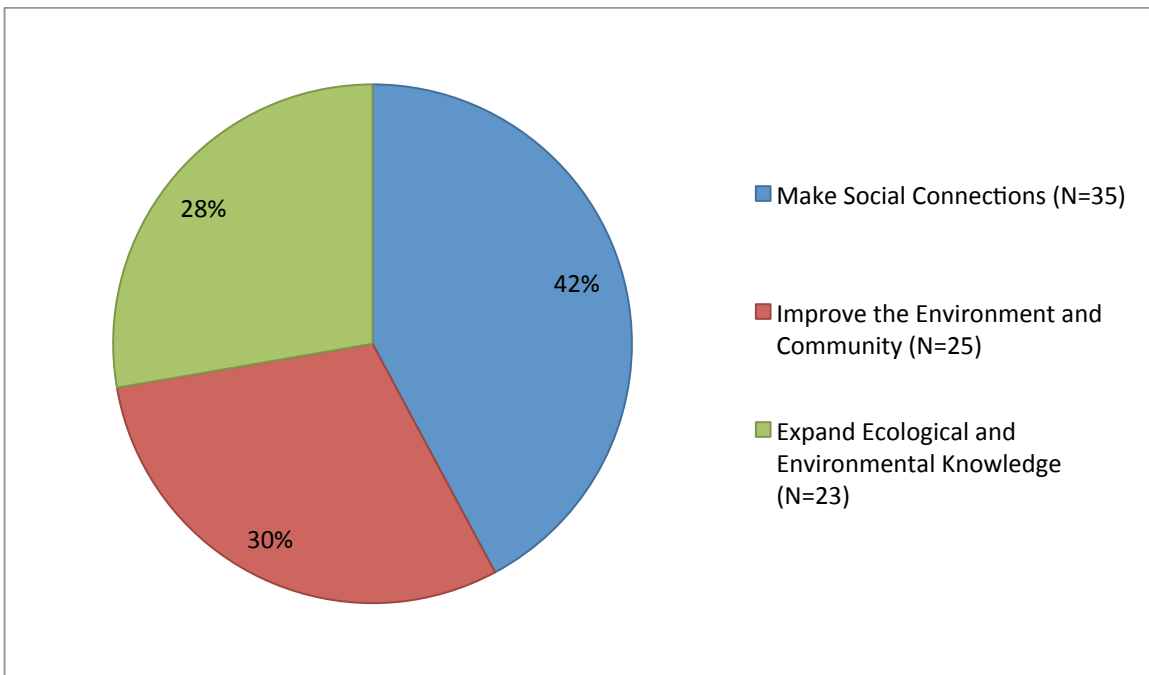
1. A desire to make social connections and share their experience with others of similar interests: N=35 (42%)
2. A wish to improve, or contribute to positive change in the environment and the community: N=25 (30%)
3. A quest to increase knowledge and understanding around environmental and ecological issues in the community and river basin: N=23 (28%)

Respondents from both the surveys and the interviews indicate that the needs of the volunteers must be considered in reviewing how stewardship groups are promoting participation and engagement in the community. As one survey respondent summarizes:

I enjoy the work, the company, and the sense of making a meaningful contribution to environmental and human wellbeing. I've also learned a lot from others involved (Respondent HC9, survey, October, 2013).

There is concern among both the participants and the agency informants regarding the potential for volunteer burnout, but also noted are recommendations and strategies for avoiding the phenomenon of burnout.

Figure 5.1 Motivations for Volunteer Participation in Stewardship Groups



5.3.1 Making Social Connections

The results from the survey respondents illustrate how, for 35 survey respondents (42%), social factors play a powerful role in motivating participation in stewardship activities (Figure 5.1). When respondents were asked to provide reasons for participation and their preferences for the type of atmosphere in which to participate, the largest percentage of respondents state that they enjoy the opportunity to make new social connections, while engaging in an activity that is perceived to be especially fun when shared with people of similar interests. One respondent states, “The social aspect of volunteering is one of the reasons I volunteer. A big reason.” (Respondent RV7, survey, September 2013). Time spent volunteering on environmental projects is observed to be more enjoyable when shared with others who express a passion for the environment (Respondent KN4, survey, September 2013).

Of the 52 survey respondents, 45 note that the opportunity to participate in outdoor activities with a group of people makes the experience more enjoyable and promotes bonding, whether working with co-workers, family members, or as part of another group. Fifteen of the participants claim that stewardship activities provide families with positive experiences that promote quality, productive family time while demonstrating the importance of upholding stewardship principles to the younger generation. One respondent notes that it is important that programming is offered in an accessible location within the community, as well as being an inclusive event enjoyable for family members of all ages. Another respondent comments that involvement with various stewardship projects is enjoyable, gives a chance to meet interesting people, learn from project participation, and build local connections by socializing with neighbours and community members at group-led events (Respondent KN5, survey, September 2013).

Group participants (N=10) show an appreciation for the chance to share outdoor experiences with other community members who have similar concerns regarding local and broad scale environmental issues. It is also acknowledged that an added benefit of participating in stewardship work as part of a larger group is the potential for contributing to the completion of larger projects (Respondent RT2, survey, September 2013). One respondent acknowledges that participation in stewardship work is seen as part of a corporate commitment to the community as well as a chance to partake in a social gathering (Respondent KN3, survey, September 2013). From the respondents who were participating in a stewardship program as part of a corporate volunteer program, 18 of the 23 feel that by contributing to hands-on work in restoration and rehabilitation, they are getting in touch with the needs of the community and environment in a new way.

5.3.2 Improving the Environment and Community

Through interaction and participation with the survey groups, it becomes apparent that an overarching desire exists on the part of the participants to be involved in stewardship at a level that makes a difference or contributes to positive change in the community or river basin. Thirty percent of survey respondents (N=25) make direct reference to these concepts. One respondent expresses great passion for participating in stewardship work through the following words:

I am very passionate about the stewardship of the natural environment as I feel, as humans we have degraded it so much and perhaps are the worst invasive species of all. I enjoy working with like-minded people who care about leaving a beautiful, healthy, peaceful Earth for generations to come (Respondent HC3, survey, October, 2013).

Other survey participants (N=28) comment on the importance of the environment and the need to participate in hands-on work such as restoration, rehabilitation, regeneration and planting projects offered by stewardship groups and programs.

According to one respondent who works with stewardship group volunteers, there is a growing desire among community members to be connected in some way (Respondent 9, personal communication, September 12, 2013). The same interview respondent notes that for many individuals the solution to becoming connected does not necessarily lie in joining a group, or through some other form of membership. Rather, individuals express a yearning to get out and do something that will be of value to the community (Respondent 9, personal communication, August 22, 2013). Survey respondents (N=31) also state a need to make a positive difference in their community by contributing to community organizations with which a connection is felt. Others express a compassion for the environment and a desire to give back to the community by contributing volunteer time and labour (N=3).

A majority of the volunteer participants (N=39) states their reasons for participation as relating to a broader goal of restoring natural areas for the purpose of improving overall environmental health and for the betterment of recreational opportunities for the public. Two respondents have connections to specific locations that are meaningful at a very personal level and that also are influential at the larger scale. One respondent gives the example of preserving and protecting Lakeside Park, as part of Kitchener's Natural Areas Program (KNAP). As a citizen who resides adjacent to the park, there is a personal significance. However, it is also acknowledged by that individual that the preservation of the glacial lake and surrounding parkland also contributes to a healthier river basin, better water quality and ultimately, improved human health (Respondent KN5, survey, September 2103). Another respondent comments that

the participation in stewardship work is personally rewarding and makes a small contribution to improving the health of the planet (Respondent HC1, survey, September 2103).

It is reasonable to conclude that as the Region of Waterloo continues to experience growth and expansion, the Grand River waterways will be under increased stress resulting from factors such as increases in population, challenges related to managing agricultural and urban land use as well as new and ongoing threats from climate change (Farwell, Boyd, & Ryan, 2008, p. 1) Therefore, it is important for the local communities to play a part in preserving and enhancing the natural environment. Community members need to be aware of the environmental challenges and be prepared to take steps to reduce negative impacts on the environment. Aspects of particular concern include wetland preservation, maintaining and improving water quality and the protection of wildlife and habitat. There is an understanding demonstrated by volunteers that the participation in stewardship activities contributes to the preservation of natural resources (N=35) and has a local impact with meaningful results for involved communities (N=26).

Three survey respondents note that they are motivated to participate in stewardship work because of a love or passion for the outdoors and there is a desire to share that passion through shared experiences in local projects. The respondents concur that part of the reason for participation in stewardship comes from a personal passion for the environment; however, there is also an awareness of the need to improve the state of the environment for the sake of future generations.

The results from the surveys completed by stewardship volunteers and participants indicate a distinct awareness among involved community members regarding the importance of protecting, restoring and preserving the natural areas of the Grand River basin. There is a sincere desire on the part of participants (N=10) to make meaningful contributions towards positive change in their communities with the goal of enhancing both the natural environment and the quality of human life and wellbeing.

5.3.3 Expanding Ecological and Environmental Knowledge

Strong evidence exists to support the idea that aside from contributing to biophysical changes on the land and in the water, stewardship volunteers are also interested in expanding their ecological knowledge and improving their understanding of the natural environment. The data shows 28% (N=23) of respondents are interested in increasing education around environmental issues within the communities and at the broader scale, a further indication of how stewardship groups may be effecting social change in the Grand River basin (Figure 5.1). The demonstrated interest in education and understanding around

environmental issues is noteworthy in that it relates to the data collected from interview informants portraying environmental education and awareness as a key role to be assumed by stewardship groups (Section 5.2.2.1).

Volunteer participants in stewardship activities expressed an interest in learning about the natural environment, particularly with regard to specific topics and local areas of significance. One respondent commented that it was beneficial to take part in hands-on activities led by an expert in the field (Respondent RB2, survey, July 2013). Twenty-six respondents emphasized a desire to become more educated about the ecological environment in the community and to experience and learn about native plant and animal species. The responses relating to an appreciation for environmental learning opportunities were recurrent in the groups of volunteers who were participating in a stewardship activity as part of a corporate initiative or employer volunteer program.

There is recognition among 14 of the respondents that stewardship group work encourages individuals to learn more about the area they are working in and increases awareness about the green spaces within the urban landscape. Through stewardship work, an understanding develops toward the implications in protecting and preserving local flora and fauna (Respondent KN2, survey, September 2013). It is vitally important for community members to learn the key components to healthier living and how integral healthy, functioning natural systems are to environmental and human health (Respondent HC2, survey, October 2013)

Some groups are contributing to ecological research and monitoring, resulting in better knowledge and understanding regarding the health of the natural systems in the community and the extent to which human impacts are affecting natural areas (Respondent KN3, survey, September 2013). Another respondent feels that with greater participation in stewardship initiatives on the part of the public, gains will be seen in the extension of knowledge between community members and an overall greater appreciation for nature (Respondent KN4, survey, September 2013). There is an acknowledgement that great benefits can be achieved through the sharing of acquired knowledge and six respondents noted that their work with stewardship groups had provided occasions to learn from others, while also gaining environmental knowledge and insight that could be further disseminated within the larger community.

From the survey responses, 42 individuals express an appreciation for being able to participate in programs that offer educational outdoor experiences that could be shared with family, friends or co-workers. Two interview respondents note how it is important for the motivation and desire to do something positive for the environment to come from caring about something (Respondents 11 & 14,

personal communication, 2013). According to one respondent, the impetus for caring can be attained through learning or through experiences in the natural environment. For example, the feeling an individual has in response to canoeing the river or hiking the trails can be instrumental in creating a wish to protect those areas (Respondent 11, personal communication, July 23, 2013). One perceptive participant observes that if successful community involvement and education are going to occur, strong, positive leadership such as that demonstrated by Woolwich Healthy Communities, needs to be in place in order for a group to be truly influential (Respondent HC9, survey, October 2013).

5.4 Looking for Tangible Results – Avoiding Burnout

The existence of volunteer burnout is a real phenomenon, and with Canadian statistics showing that 25% of volunteers are completing 77% of all volunteer hours, it is understandable how problems can develop in the volunteer community (Volunteer Calgary, 2012). Volunteer burnout may present in the form of guilt over lack of time for family and other responsibilities, fatigue, and loss of passion for the work. Various steps can be taken to combat the likelihood that volunteers will become burned out in this capacity. A volunteer schedule should complement time spent with family rather than detract from it – in many cases opportunities for family participation can provide an ideal situation where volunteers are able to dedicate time to a cause for which they have an interest or a passion, while sharing an interest and educating other family members about the cause (Volunteer Calgary, 2012).

This concept of sharing volunteer experiences with family and friends is well supported by the survey respondents with 27 noting they enjoyed participating in an activity for social reasons, and 15 responding that they appreciated the chance to partake in activities with family members. In addition, ten respondents felt it was important to work with people of similar interests and 31 noted the importance of an educational component to the volunteer experience. For most volunteers, feeling passionate about the work they are involved with is often key to avoiding burnout. If the work is something that is truly believed in as worthwhile and needed, that can play a big role in maintaining motivation and enthusiasm for a cause. Finally, volunteers should understand that there can be various needs and time commitments within the scope of donating their time, and it is acceptable to refuse to take on more than has been agreed, or that is reasonable (Volunteer Calgary, 2012).

There is an acknowledgement on the part of two respondents that some volunteers are motivated to participate in stewardship activities by the prospect of seeing tangible results from their contributions (Respondents 9 & 10, personal communication, 2013). As a result, there can be a lot of pressure on

stewardship volunteers and emphasis on the work of stewardship groups, leading to concerns over volunteer burnout (Respondents 8, 9, 10, 11, 13, & 14, personal communication, 2103). Due to the relatively small network of people involved in environmental issues compared to other causes (Vezina & Crompton, 2012, p. 39), burnout of the core volunteer constituency is an ongoing threat and it can be difficult for groups to maintain longevity in light of high rates of turnover and burnout (Respondent 9, personal communication, August 22, 2013).

In 2010, Statistics Canada released a report on volunteering in Canada. Information outlining volunteer rates and the distribution of volunteer hours revealed only about 2% of volunteer hours are dedicated towards environmental causes in comparison to 19% for sports and recreation, 18% for social services, and 15% for religion (Vezina & Crompton, 2012, p. 39). Although volunteers in any field can be at risk from the mental and physical exhaustion of burnout, there may be particular concern for those who work in the environmental field due to the often physically demanding nature of the work that is repeatedly done by the same small group (Byron & Curtis, 2002, p. 64). There is a need for champions in the community, claims one respondent; however, the recruitment of new volunteers is a challenge for most groups (Respondent 10, personal communication, July 23, 2103).

Two of the interview respondents with connections to stewardship groups identify a need to improve volunteer recruitment. One notes the importance of increased recruitment of younger volunteers (Respondents 2 & 10 personal communication, 2103), while another feels that government-based initiatives are already focusing primarily on the engagement of youth when the emphasis should be on recruiting a broad range of volunteers in terms of age, background and skill sets (Respondent 1, September 9, 2013). There is a thought that in some areas, retirees are an underutilized population, but they are also often already aligned with other interests and commitments (Respondent 1, September 9, 2013).

Many people in the Grand River basin remain unaware of, or fail to appreciate, the amount of work actually done by stewardship groups. According to a representative from Woolwich Healthy Communities, on the administrative side, there is often a lot of background work involved and it can be difficult for volunteers or group participants to access some of the contacts and information required to coordinate a successful event or activity (Respondent 8, personal communication September 12, 2013). One role for an administrative coordinator working with a stewardship group is to deal with the background details, allowing the volunteers to participate in the activities of particular interest while alleviating the chance of burnout (Respondents 8, 10, 11, & 13, personal communication, 2013).

Through feelings of accomplishment and success, there is hope that many groups and volunteers will continue into other areas of stewardship. Volunteers and participants need to perceive their work to be meaningful and worthwhile, while the tangible results provide a rewarding opportunity and lead to feelings of accomplishment and appreciation. Without evidence of the results of their efforts, volunteers can become frustrated and experience burnout (Respondent 11, personal communication, July 23, 2013).

As discussed in section 2.2.2.1, the nature of environmental stewardship work can often involve substantial time lags between the inception of a project and the time when meaningful tangible results are observable. It is important, particularly in projects with delayed results, that volunteers are encouraged by group coordinators to maintain a connection and a commitment to the group with a view to long-term satisfaction for the participants and sustainability for the group (Shandas & Messer, 2008, p. 416). Frequently, stewardship groups and volunteers are encouraged by their own initiatives, but the same initiatives, if they are volunteer-based, need to be supported at a higher level whether it is through agencies such as Conservation Authorities, or through municipal governments. By playing a supporting role, an agency such as the Grand River Conservation Authority (GRCA) could act as an umbrella group, bringing communities and groups together (Respondent 14, personal communication, September 11, 2013).

At the present time the GRCA does have a program whereby individuals or groups can be nominated for awards from one of two categories: *The Honour Roll Award*, which recognizes sustained achievement over a period of time, or *The Watershed Award* for outstanding environmental and conservation work. For 2014, to commemorate the 20-year anniversary of the designation of the Grand River as a Canadian heritage river, an additional ‘*Special Heritage*’ category has been added (GRCA, 2014). These types of programs and awards are important in recognizing and promoting the work of environmental volunteers and acknowledging the important role of stewardship groups in the community and in the Grand River watershed.

5.5 Perceptions of Volunteers towards Stewardship Groups

While previous experience plays a role in the wish to contribute to the community through stewardship, 28 survey respondents indicated that they were participating in a program or activity for the first time (Figure 5.2). Although the results from this study indicate a large representation of volunteers are new to environmental stewardship, an additional survey question asking participants to select from a list of stewardship activities and indicate whether they had participated in the activity previously, or if it

was something they were interested in participating in at a future date, suggests a definite interest in participation in future stewardship activities. The result corresponds to an average of 25% of respondents describing a positive experience related to their participation and an intention to continue their involvement at some level (Figure 5.4). This result is encouraging and suggests that stewardship groups are having a positive influence in the community.

The surveys in this research were designed to collect a variety of information from the stewardship group participants. Several survey questions pertain to how group volunteers and participants felt, not only about their own role within the group, but also regarding the role stewardship groups are perceived to be having in the Grand River basin. Furthermore, participants were prompted to disclose their thoughts and ideas about the future role for stewardship groups and how they may continue or improve upon the changes being made in a biophysical and social regard. These aspects are discussed in the following subsections.

5.5.1 The Importance of Past Experiences for Group Participants

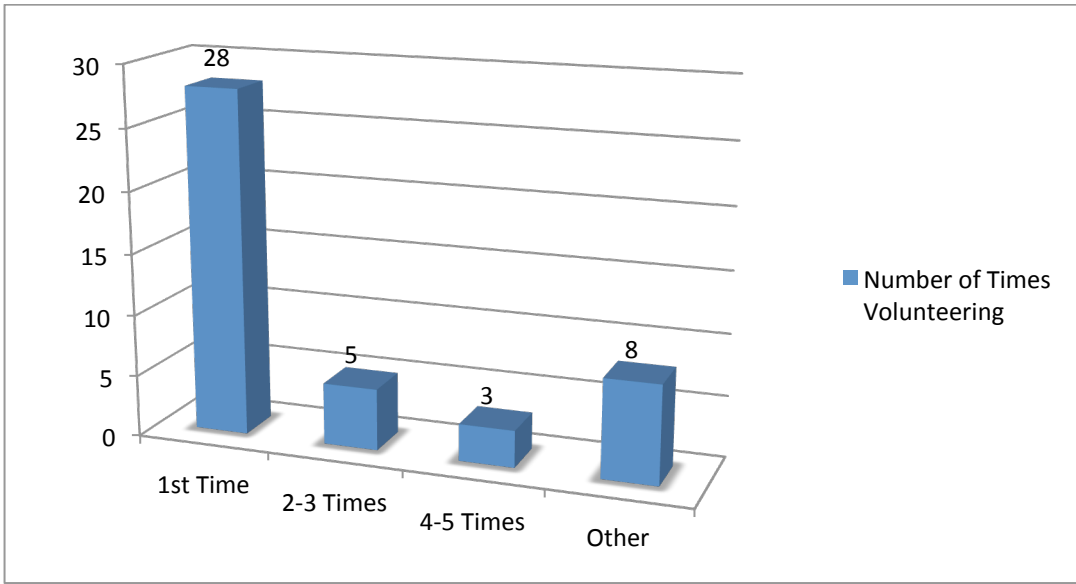
A key finding of this research is that 28 of the 52 respondents indicated, at the time of the survey, they had previously never participated in a stewardship activity or event. A related observation illustrates that many of participants also note an interest and motivation towards participating in future stewardship activities. Figure 5.2 provides results relating to the number of times volunteers had worked with a stewardship group, or participated in a project or event.

Of the survey respondents who took part in stewardship activities at the *rare* Charitable Research Reserve (*rare*), the majority participated as part of a corporate volunteer employee program. It was among these respondents that there was the greatest tendency to have never previously taken part in a stewardship activity or event. However, the corporate respondents were also highly positive in their review of the activity, citing an appreciation for an opportunity to contribute to the community by participating in hands-on work, while gaining education and awareness for the natural environment, which is part of the local community.

One respondent commented that there is a need to build capacity in communities by getting individual community members to feel that they can take an active or organizational role that will contribute to stewardship (Respondent 7, personal communication, August 23, 2013). Based on this observation, it is important that groups like *rare* provide opportunities for volunteers to experience stewardship activities which not only provide benefit to the natural environment during the activity, but which may have a far

broader reach by introducing individuals to the environmental issues and needs within the community. Once participants become aware of an existing need and the ways in which they are able to contribute, there is an acquired sense of ongoing commitment.

Figure 5.2 Total Number of Times Survey Respondents Volunteered



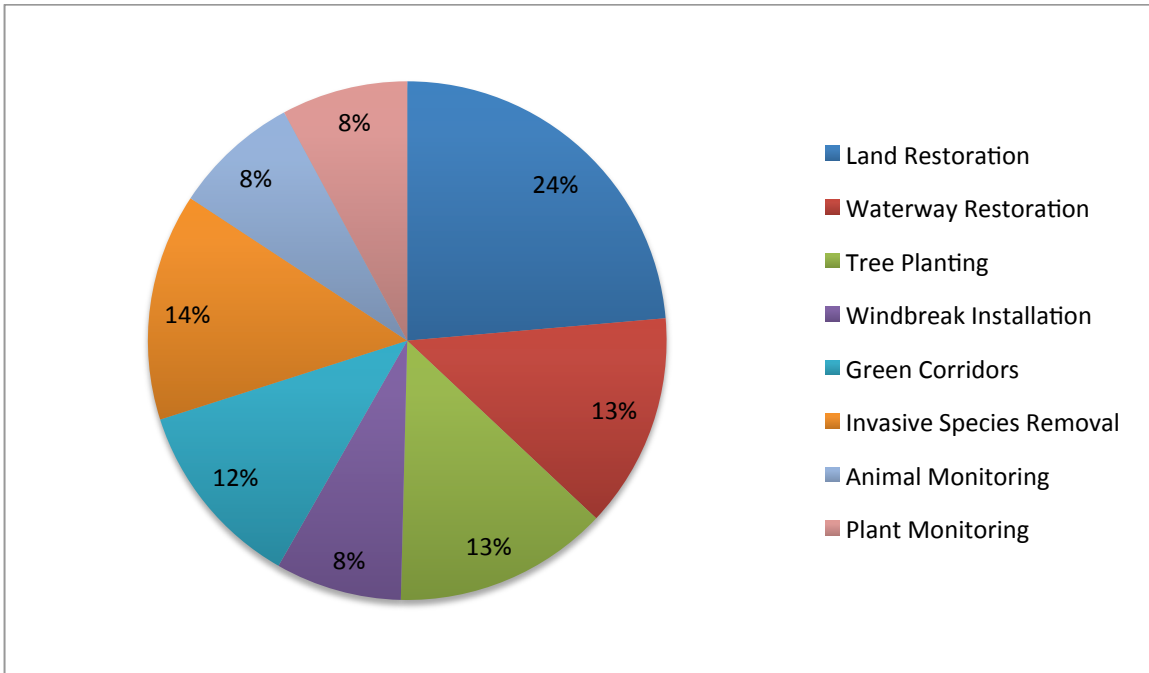
5.5.2 The Current Role of Groups in Creating Biophysical and Social Change

Although it is important to note the impact of volunteering experience for first-time stewardship participants, it is equally important to acknowledge the influence that previous stewardship experience has in the ongoing commitment of community volunteers. Survey respondents were asked to indicate how they might have participated in stewardship activities on previous occasions, in addition to the surveyed activity. The results are summarized in Figure 5.3 and represent a wide range of stewardship activities in which respondents had participated. As would be expected, most respondents participated in more than one category of stewardship activity and therefore 127 responses were recorded. These data relate not only to the types of stewardship experiences that volunteers are having, but also to the perceived effect that the actions of stewardship groups are having in the river basin.

An analysis of the surveys presents multiple perspectives relating to the role that stewardship groups presently play in the Grand River basin. Among the various responses, a common theme emerged demonstrating that the work initiated by stewardship groups is perceived to be having a significant positive impact on the local environment, as well as having an influence at the social level with a more

direct human impact. There is recognition that one of the key roles that stewardship groups are performing involves the restoration of land and waterways in ways that will benefit both the natural environment and the members of the community (Respondent RE6, survey, September 2013).

Figure 5.3 Volunteer Participation by Stewardship Activity



5.5.2.1 Biophysical Change

The survey responses from stewardship group participants and volunteers reveal an array of areas for which contributions to biophysical change are being made. As depicted in Figure 5.3, the greatest number of respondents, at 24% (N=30), cite participation in some level of land restoration activity. Other common responses include involvement in invasive species removal at 14% (N=18), participation in tree planting at 13% (N=17), and contributions to waterway restoration at 13% (N=17). These results demonstrate that through work with stewardship groups, volunteers are involved in diverse activities, which are improving the biophysical features of the Grand River basin. A more detailed examination of the responses of the volunteers and participants (N=26) indicates that the work by stewardship groups is perceived to be playing a significant role in creating positive change for the environment, local natural areas and the members of the community.

Groups are recognized for efforts in providing preservation of biodiversity, as well as the protection and procurement of exceptional lands from degradation related to future development (Respondents RE1, RE3, & RE8, survey, September 2013). It is acknowledged by several respondents that stewardship groups are achieving real results for on-ground work and are operating proactively to protect natural areas of the watershed that are sensitive to the negative impacts of humans (Respondents RE8, RM4, RM5, HC9, & RT11, survey, September 2013). Stewardship groups are also creating connections between the natural world and humans through actions such as creating and enhancing natural habitat for wildlife, while simultaneously maintaining recreational trails for the public (Respondents RT3 & RT4, survey, September 2013). Three survey participants note an appreciation for the work stewardship groups are doing to preserve the natural environment for the benefit of plants and wildlife, as well as for the benefits that are provided to humans through the preservation of natural spaces that can be easily accessed from urban areas for recreational purposes (Respondents RT3, RT5, & RT11, survey, September 2013).

Stewardship groups are observed to be playing a key role in the protection of ecological integrity by protecting native species, habitat and water quality. The goal of protecting ecological integrity is attained through monitoring, educational programs, restoring riparian buffer zones and replanting native species (Respondents RT16 & KN2, survey, September 2013). Some groups are aiming for a more specialized focus and are developing a certain level of expertise in particular aspects of restoration, such as tree planting (Respondent KN8, survey, Sept 2013). The remedial and restorative work carried out by stewardship groups should not be underestimated. Without such intervention, it would take considerably longer for disturbed areas to return to a natural state (Respondent HC5, survey, October 2013).

5.5.2.2 Social Change

Through community outreach and engagement, stewardship groups provide an important function in keeping the health of the watershed prominent in the minds of local citizens (Respondent KN2 survey, September 2013). One respondent notes that by encouraging involvement at all levels in the community, the value of each contribution is enhanced and, with greater public awareness, there is a subsequent increase in respect for the environment and the need to conserve and protect it (Respondent HC9, survey, October, 2013). By creating an awareness of environmental problems, citizens are prompted to act more positively in terms of stewardship (Respondent HC9, survey, October 2013). Through hands-on involvement, group participants and volunteers are given a sense of ownership for the natural environment in the community (Respondents KN9 & KN10, survey, September, 2013).

It is the opinion of one respondent that, "...through active involvement, groups are raising awareness (in the community) and gaining a vested interest from participants" (Respondent RT4, survey, September 2013). There is a feeling among some stewardship group participants (N=10) that groups are helping to demonstrate how everyone can make a difference by becoming involved in some way, whether at a small or large scale. Every group contribution has the potential to make a positive difference. According to the opinion of 39 of the survey participants, by creating a greater awareness for environmental concerns such as endangered species and invasive plants, it is possible to take steps to mitigate negative impacts that are occurring. Twenty-one survey respondents also believe stewardship initiatives are able to bring together groups of community members with an appreciation for nature and subsequently instill a sense of pride in the natural areas within the community. With regard to monitoring programs, as an example, it is felt that discovery and education can take place through the various stages of a monitoring process (Respondents KN5 & KN8, survey, September 2013).

The preservation of local ecosystems is essential to ensure a healthy environment for the future and can also be viewed as a means to preserving the local heritage of the area (Respondent KN7, survey, September 2013). One respondent opines that groups are providing a way for individuals to get involved and gain knowledge about the complexities of watershed management (Respondent KN5, survey, September 2013). In the experience of one survey respondent, it appears that over time, groups are establishing a niche in the community and are experiencing greater influence in areas where there is less government control, such as conservation authorities and non-profit organizations (Respondent RT16, survey, September 2013). In a similar regard, another survey participant notes, "groups are effecting positive change but it is a slow process because it is not considered a mainstream issue to the general public; raising public awareness of the positive impacts that can be made by individuals is needed to increase progress" (Respondent HC1, survey, October 2013).

A representative from the Woolwich Healthy Communities Group is of the opinion that the grassroots type of work by stewardship groups contributes to planning for future environmental involvement through building relationships and establishing partnerships. In addition, groups are creating better awareness of local and river basin issues that are essential to prompt a commitment to progressive action and thinking on the part of the government and conservation authorities (Respondent HC9, survey, October 2013). Groups such as Woolwich Healthy Communities (WHC) are committed to providing a high quality and healthy lifestyle for local residents. Programs instituted by the group are improving the immediate environment, as well as benefitting downstream townships and municipalities. WHC provides a good

example of the important work that can be accomplished in the watershed by small groups, at the local level, with little associated cost (Respondent HC2, survey, October 2013).

5.5.3 The Future Role of Groups in Creating Biophysical and Social Change

The results from the surveys distributed to stewardship volunteers reveal that participants were not only eager to provide feedback on the current role of stewardship groups, but were also able to comment on the perceived future role of stewardship groups. Based on the survey questions, respondents offer insight relating to personal goals for future stewardship involvement, and also make recommendations in terms of the direction that stewardship groups should take moving forward.

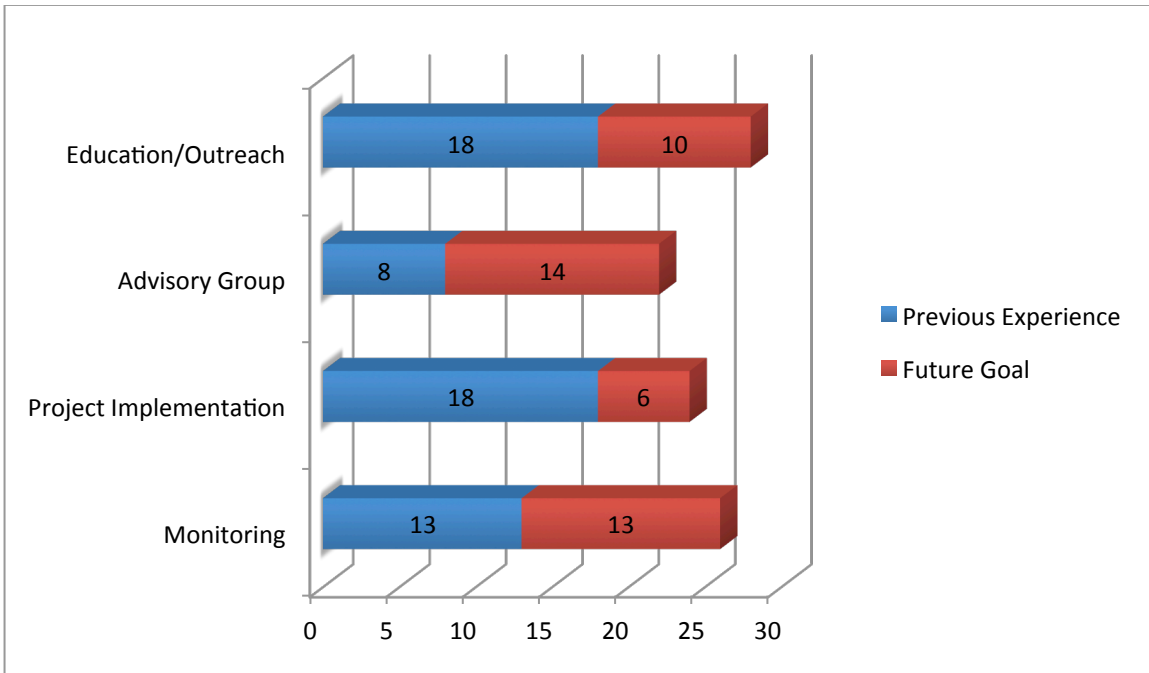
5.5.3.1 Past Stewardship Experience and Future Goals

Stewardship volunteers are influenced by previous experiences as well as future aspirations regarding contributions to the community and the natural environment. Figure 5.4 provides a comparison of participants' previous stewardship experience with their goals for future involvement. Survey respondents (N=52) were able to respond in more than one category with regard to their past experience and future stewardship goals. Some discrepancy exists between the aspects of stewardship in which volunteers have participated in the past, compared to the activities in which they foresee future involvement. Specifically, although a relatively large number of respondents (N=18) indicated having participated in education or outreach, a much smaller group (N=10) anticipated future involvement in this capacity. Similar results are seen in the project implementation category. While 18 respondents had participated in this manner, only six respondents indicate this type of contribution would be part of their future goals. Volunteers who had participated in stewardship through some form of monitoring program seemed likely to continue in that type of work.

Another interesting result can be found in the advisory group category. While only eight respondents claimed to have participated as members of an advisory group or committee, a larger number (N=14) indicates an interest in becoming involved in an advisory capacity in the future. This finding makes it possible to find similarities between the views of stewardship group participants and the agency and organizational informants with regard to an acknowledgement of the important role for stewardship groups, but also an understanding for how that role may be changing. Given that the majority of groups is focusing on biophysical and social change at the community level, it may be beneficial for some groups to expand their focus, having an impact in more of an advisory role, for which collaboration and

partnerships are key. Through greater collaboration could come opportunities to influence water management decisions and governance (Section 6.3.1).

Figure 5.4 Comparison of Participants’ Previous Stewardship Experience and Goals for Future Involvement



5.5.3.2 The Focus for Stewardship Groups in the Future

Along with the personal goals for stewardship participants, there is a strong indication from survey respondents regarding the future role for stewardship groups in the Grand River basin. Responses pertaining to the aspects that would benefit most from the deployment of stewardship resources vary to some degree, but several common recommendations are apparent on analysis of the survey responses. The main themes to emerge that relate to the future of stewardship include promoting education and awareness for environmental issues, a continued focus on ecosystem preservation and the subsequent biophysical needs within the river catchment, and an increased involvement and influence of groups with respect to watershed management and governance.

Strong agreement exists among survey respondents that a key role for stewardship groups for the future should be to provide greater emphasis on the education of the public, especially school children and youth (Respondents RE1, RE3, RE7, KN6, KN9 & KN10, survey, 2013). It is thought by respondents that by educating the public and working with schools, stewardship groups may improve community

connections and foster a greater appreciation for local natural areas (Respondents KN8 & HC1, survey, 2013). Through improved community outreach, groups should experience subsequent success in gaining greater levels of interest and investment (Respondent RT10, survey, September 2013). There is a definitive need to provide sufficient education to the public regarding environmental issues, such that community members feel empowered to apply pressure to government and agencies to address the local concerns around the protection of land, water and wildlife resources (Respondent HC9, survey, October 2013).

One concern is that programs currently offered by stewardship groups tend to attract and engage individuals who are already well educated about the environment and motivated to take steps for positive change. There is recognition for the need to involve the youth of the community in all levels of stewardship (Respondent KN10, survey, September 2013). In addition, groups need to find a way to promote a commitment to stewardship practices beyond the dedication of the core volunteer members that are part of each group. It is thought that stewardship groups can play a significant role in fostering a sense of obligation to each other, the community and the environment. By instilling a feeling of commitment and responsibility among community members, it may be possible to create a lifestyle that is healthy, sustainable and affordable (Respondents HC2 & HC6, survey, October 2013).

The communities that surround the Grand River need to be educated about the issues threatening the health of the watershed, and need to understand the various levels of human impact (Respondents RM3, RM4 & RT14, survey, September 2013). By connecting communities to the land and water, it is suggested that public awareness is increased and better stewardship behaviour results (Respondent RB1, survey, July, 2013). There will be an ongoing need for groups to partake in environmental advocacy, and to inspire improved education and awareness towards reducing human impacts negatively affecting the natural assets of the Grand River basin. Another recommendation is that stewardship groups ought to celebrate and broadcast localized successes and outcomes, while demonstrating how even small-scale efforts can result in long-acting and far-reaching effects (Respondent HC2, survey, October, 2013). There is a sense that self-promotion is one aspect for which stewardship groups have not been overtly successful. Along with providing education, action and public outreach, groups should create an awareness of the work being carried out with the aim to better inform the community and increase the likelihood of individual involvement (Respondent HC5, survey, October 2013).

Five survey respondents noted that a continued focus for stewardship groups should be to highlight the importance of ecological preservation and the maintenance or enhancement of the quality of the

watershed through the protection of the surrounding waterways (Respondents RE2, RE3, RE6, RM5 & KN9, survey, 2013). Key aspects for which groups can make a difference include mitigation of damage and interference from invasive species, increased tree cover, pollution control, and slowing or halting environmental degradation in sensitive areas (Respondents RM4 and HC1, survey, 2013). Other examples of where groups can be most influential involve the regeneration of natural areas, the protection of wetlands and the preservation of critical wildlife habitat with the re-establishment of green corridors (Respondent RT16, survey, September 2013).

Four respondents propose that groups ought to secure critically significant lands and prevent harmful development. There is an acknowledgement that groups should take priority in maintaining natural lands that will benefit both the community and the environment in the future (Respondents RT2, RT4, RT8 & RT9, survey, 2013). Moving forward, groups will have an important function in monitoring levels of development in and around the Grand River watershed, as well as in preserving integrity and maintaining access to the river itself, ensuring residents are able to enjoy the natural beauty of the river for years to come (Respondent KN2, survey, September 2013). Some participants in stewardship activities (N=10) note that the actions of groups are contributing to a better future for the next generation in a social context by providing education about the environment to the children and in a biophysical context by making sustainable improvements to the natural environment.

A recurrent theme emerges in the thought by 28 respondents, that whatever measures are employed by stewardship groups, the focus should always be towards maintaining and improving water quality in the Grand River basin. Future challenges that need to be considered for the watershed regarding water quality include addressing the impact of population growth and related increased carbon emissions. Stewardship groups such as Woolwich Healthy Communities recognize the need to offset the higher levels of carbon and encourage community-wide tree planting to improve canopy cover and green space (Respondent 8, personal communications, September 12, 2013).

It is suggested by one respondent that stewardship groups could be playing a greater role with water monitoring in connection with drinking water, flooding, rainfall, and general water quality (Respondent RM1, survey, September 2013). Through their work in the field, stewardship groups can help determine the success of on-ground efforts, and define the direction for future projects (Respondent RT13, survey, September 2013). There is an acknowledgement by one survey respondent that the intensity and scope of environmental challenges will likely increase over time, and therefore stewardship groups will need to

consider a broader range of integrated measures to counteract larger issues such as climate change (Respondent KN5, survey, September 2013).

5.6 Summary

Chapter five provides a mainly qualitative analysis of the results pertaining to the first two research objectives: 1) the role of stewardship group participants in the Grand River basin in creating or contributing to biophysical and social change, and 2) the motivation of stewardship group participants. The results indicate that stewardship groups in the Grand River basin are playing a role in creating observable changes at biophysical and social levels in the community and at the broader river basin scale. While biophysical impacts can be seen from the on-ground project implementation undertaken by various stewardship groups, social influence and subsequent positive changes occur through community education and outreach initiatives (Section 5.2.1).

The case study groups, in addition to information sourced from other active stewardship groups, provide examples of the type of work that stewardship groups are having success in promoting throughout the Grand River basin. It became apparent that although some groups tend to be focused on particular aspects of change within the community, frequently a distinct connection exists between programs aimed at increasing social awareness and community engagement, and projects directed towards making specific biophysical changes on the land or in the water (Section 5.2.2 & 5.3.2). Chapter seven will provide further discussion outlining the important relationship between stewardship groups and the community as supported by the literature.

Motivating factors for the stewardship volunteers and participants revealed three primary reasons for participation in stewardship events or activities: 1) a desire to contribute, in a positive way, to environmental improvement or enhancement within the community, 2) a wish to improve ecological and environmental knowledge and awareness, and 3) as a means to make social connections and meet people with similar interests (Section 5.3). The key contributing considerations for volunteer motivation are verified by the literature review and will be discussed in chapter seven. Another factor influential in stewardship participation concerns the need for volunteers to see tangible results from their contribution or involvement (Section 5.4). The importance of tangible results was also linked to improved resilience among group members and greater avoidance of volunteer burnout. Further connections to motivation and burnout with the literature will be considered in chapter seven.

The final section of chapter five illustrates the perception of stewardship volunteers regarding the relationship between the current role of stewardship groups based on recent projects, and the future role that groups will have an opportunity to play in contributing to biophysical and social change in the Grand River basin. These concepts will be further synthesized in chapter seven in connection to the research literature (5.5.3). Chapter six will continue with results drawn primarily from the interview sessions and will address the third research objective.

Chapter 6

Results: Research Objective Three

6.1 Introduction

The results for chapter six relate to the third research objective and are based primarily on the information obtained during personal interviews with key informants from agency and municipal representatives in the Grand River basin. The third, and final, research objective considers the perspective of agency and municipal representatives regarding the work of stewardship groups, and whether the involvement of these groups in mitigating environmental challenges is contributing to improving water governance and decision making. Further consideration also is given to the role of partnerships and collaboration in environmental stewardship and watershed management strategies.

A qualitative analysis (chapter three) also is used related to the information presented in chapter six. Within the parameters of the research objective, several aspects are explored, including consideration from a ‘big picture’ in watershed issues as opposed to addressing local concerns, the role of partnerships and collaboration, and the influence that stewardship groups are having on governance and decision making. An overview of the perspectives of agency and municipal representatives towards stewardship groups and activities is provided. Furthermore, the research examines the impression of the key informants regarding specific aspects for which stewardship groups are contributing to water governance and decision making around environmental issues and planning objectives.

6.2 An Agency and Municipal Perspective regarding Stewardship Activities

Key informants contacted as part of the interview process offer insight about stewardship activities, including recommendations for increased effectiveness and impact with regard to biophysical and social changes at the river basin scale. The informants suggest opportunity exists for stewardship groups as well as agency and municipal members to reach a mutual understanding, and to look at environmental issues from a ‘big picture’ perspective. The ‘big picture’ refers to considering environmental challenges and the need for stewardship intervention from a broader, catchment-wide viewpoint rather than attempting to deal with local, small-scale projects on an individual basis.

Any work being done on the land is creating biophysical change, whether tree planting, stream restoration or other stewardship initiatives. Yet, there is some thought among agency and organizational members that because local groups tend to target areas of interest or need that relate to specific, or local

community concerns, the work being done such as stream restoration or tree planting is not always in the most favourable location or in areas of highest need (Respondent 6, personal communication, August 28, 2013). Despite such uncertainty, it is suggested that the work can still be considered important in terms of the feelings of accomplishment and success that result from volunteer involvement, and may encourage the participation of groups and volunteers in other areas. In the opinion of one respondent, it does not matter what is done. In order to be important, the work just needs to be perceived by the volunteers and the community to be beneficial (Respondent 11, personal communication, July 23, 2013).

6.2.1 Local Issues versus the ‘Big Picture’ – Priorities for Change

A review of the information collected from agency and municipal informants suggests a recurring theme relating to the idea that stewardship groups tend to focus on projects or needs within their specific communities or neighbourhoods (Respondents 7, 10, 13, & 14, personal communication, 2013). Groups demonstrate less consideration for the ‘big picture’, or how the work may affect the river basin at a broader scale or on a cumulative basis, thus limiting the ability to identify and address the most crucial needs in the river basin (Respondents 5 & 9, personal communication, 2013). Both stewardship groups and decision makers recognize that there are advantages and disadvantages to using a localized approach for the implementation of stewardship initiatives.

Informants believe community stewardship groups generally take on issues for which they have a passion. However, that passion may not always be aligned with concerns for intervention in areas or issues considered by larger organizations such as the Grand River Conservation Authority (GRCA) to be of highest priority. Groups are still having an impact through strategic targeting of projects such as tree planting, which when combined with other local stewardship programs, have a cumulative benefit (Respondent 6, personal communication, August 28, 2013). Although there seems to be a general understanding among community members with regard to the connection of the impact of upstream events in the watershed and the resultant downstream effects, there is still a role for agencies or organizations such as the GRCA or Conservation Ontario to illustrate the bigger picture and indicate where local projects may be able to contribute on a larger scale (Respondent 13, personal communication, August 7, 2013).

In the opinion of one respondent, stewardship groups are operating primarily at the community level and are filling a niche not being addressed elsewhere (Respondent 11, personal communication, July 23, 2013). Despite the argument that stewardship groups tend to work on smaller, individual goals, rather than demonstrating awareness for the big picture, ultimately projects may fit into the broader goals of

watershed management (Respondent 10, personal communication, July 23, 2013). Although there are many hands-on activities in which stewardship volunteers participate, including stream cleanups and invasive species removal, it was observed that tree planting is a very visceral and visible project in which a community can choose to participate. In the opinion of one interview respondent, the establishment of greater tree canopy cover provides a historical perspective in terms of increasing the percentage of canopy cover from what was present previously, and a future perspective in terms of providing a protective function towards climate adaptation (Respondent 13, personal communication, August 7, 2013).

One example demonstrating where localized efforts contribute to the bigger picture is the work of Woolwich Healthy Communities on the Canagagigue Creek, in collaboration with the GRCA. A tributary of the Nith River, the Canagagigue Creek was at one time recognized as one of the most contaminated creeks flowing into the Grand River (Dance & Hynes, 1977). Local remediation and restoration goals acknowledged that improvement of the water quality in the creek would also have a significant impact on downstream water quality and subsequently the water quality in the Grand River watershed (Respondents 2 & 3, personal communication, September 5, 2013). Similarly, tree and shrub planting programs initiated on the lands of the *rare* Charitable Research Reserve are aimed primarily at improving the stream-banks on the property. However, by improving the quality of water draining into the Grand River, improvement of water quality off-site is also attained (Respondent 1, personal communication, September 9, 2013).

The Mill Creek Rangers is another group that, with support from the GRCA, was recognized as making restorative changes to Mill Creek, and having an impact at a local level as well as on a cumulative watershed basis (Respondent 11, personal communication, July 23, 2013). One interview respondent notes that while the greatest benefit is evident on-site, in the immediate location of the stewardship intervention, there is still a broader effect that was not necessarily part of the intended impact, but that has a further reaching effect nonetheless (Respondent 1, personal communication, September 9, 2013). Another interviewee observes that with multiple projects and programs targeting clustered, local areas, greater potential exists for increased impact on a wider scale. For example, despite the idea that community groups tend to gravitate towards projects that represent their own interests or passions, strategic targeting with programs such as tree planting can be beneficial in the allocation of funding and resources, thus increasing benefits at the community and water basin scale (Respondent 6, personal communication, August 28, 2013).

Interview respondents are varied in their thoughts on whether stewardship group efforts are being duplicated across the watershed, and, if so, whether that duplication should be considered as a problem.

One respondent feels that there is reason to avoid duplication of programs and services and that greater partnerships and collaboration may be one way to achieve this goal (Respondent 8, personal communication, Sept 12, 2013). In the view of the respondent, the duplication of programs may result in a loss of efficiency in the delivery of stewardship services and cause a depletion of already scarce, funding and manpower resources (Respondent 8, personal communication, September 8, 2013). However, in the opinion of another respondent, there does not appear to be much duplication of groups functioning in the various communities and the programs and initiatives that are being established (Respondent 11, personal communication, July 23, 2013).

In some urban areas where groups may have a very specific focus, there may be some overlap in the types of services provided. According to two interview respondents, a conflict of interest among stewardship groups or between management agencies is not anticipated since all contributions toward stewardship tend to provide a cumulative and beneficial effect (Respondents 11 & 12, personal communication, 2013). One respondent states there can never be too many hands or brains in terms of environmental stewardship, although it would be helpful to see the targeting of more ‘hot spots’ – problem areas determined to be in particular need of some form of remediation or restoration (Respondent 11, personal communication, July 23, 2013). Another respondent agrees that the goal ought not to be to avoid duplication of efforts, since in most cases such as tree planting, stream restoration, or invasive species removal, there is plenty of opportunity for participation at all scales across the community (Respondent 12, September 4, 2013). The same respondent suggests, however, it would be beneficial to streamline the volunteer intake program within the GRCA to assist in a broader based management and organization based on stewardship needs across the watershed (Respondent 12, September 4, 2013).

With most stewardship groups operating at a local scale, a majority (N=9) of agency and organizational informants question whether this type of hands-on involvement is having an impact on the broader scale (Respondents 1, 2, 4, 7, 9, 10, 11, 12, & 13, personal communication, 2013). However, one respondent suggests that some community stewardship groups may bridge the gaps between higher-level management and governance of the watershed, through the completion of meaningful projects that provide a positive biophysical and social impact at the local and river basin scale (Respondent 2, personal communication, September 5, 2013).

As a formally established organization supported by the city of Waterloo, the Laurel Creek Citizens’ Working Group is one group that works at both the municipal and community level, striving to establish a fit between project proposals from community members and groups within the parameters of the existing

program structure (Respondent 5, personal communication, July 24, 2013). There is an acceptance that, within communities, local issues bring people together because when policies are perceived to have a personal impact, greater interest is created. Some groups such as Trout Unlimited serve a broader purpose through work with chapters at the local level, but with a mandate that incorporates the watershed as a whole (Respondent 1, personal communication, September 9, 2013).

6.2.2 The ‘Big Picture’ Perspective in Watershed Management

Several interview respondents (N=5) expressed concern that the number of people able to look at the ‘big picture’ of what is needed in terms of stewardship across the river basin is limited (Respondents 7, 10, 11, 13, & 14, personal communication, 2013). The term ‘people’ in this context can be considered to be residents of the Grand River watershed, those who are both active and inactive in stewardship initiatives, as well as some agency and organizational members. One way to address this concern is through promotion of greater cross-pollination between groups, but from a management perspective such work involves time, commitment and organization (Respondent 7, personal communication, August 23, 2013). The Grand River Conservation Authority (GRCA) for example, works with groups through different programs, staff, outreach, and nature centres, recognizing that stewardship groups have a role in addressing local issues. However, it is acknowledged by one representative from the GRCA that a more coordinated approach among groups would be helpful in creating better understanding for the needs across the river basin (Respondent 11, personal communication, July 23, 2013).

A representative of the GRCA suggests the organization could play a role in the coordination of local stewardship groups by addressing some of the key issues and areas currently lacking a coordinated approach to stewardship in the river basin. The anticipated result would be a more positive impact and influence on the river basin that would advance both the goals of the GRCA and benefit the greater watershed. Presently, the work of stewardship groups, although important, is not being well incorporated into the management strategies of the GRCA, due, at least in part, to the focus of groups on local issues of interest (Respondent 11, personal communication, July 23, 2013).

In order to deliver greater benefit to the watershed as a whole, the GRCA could provide increased benefits by directing local groups to hot spots and advising on what needs to be done. The GRCA often sees the contributions of individual stewardship groups as ‘value-added’ to existing programs, rather than considering groups as significant in the prime delivery of stewardship programs (Respondent 11, personal communication, July 23, 2013). As suggested by one respondent, by streamlining the coordination and organization of a volunteer intake program, the GRCA might be in a position to direct and manage the

overall needs of the watershed and thereby increase the sustainable benefits with a direct biophysical impact and positive influence within the wider community at a social level (Respondent 12, personal communication, September 4, 2013).

It is recommended by one respondent that stewardship needs to happen in both rural and urban areas and it is noted that stewardship groups are operating in both of these areas (Respondent 11, personal communication, July 23, 2013). Despite the trend towards a more inclusive, integrated water management model, in my opinion there is still need for an improved philosophy regarding how the land and water needs to be treated. Two respondents note how in many cases, particularly with respect to the GRCA, environmental issues are often dealt with in a reactive manner, with stopgap measures to deal with the impact of damage or degradation that has already occurred (Respondents 11 & 12, personal communication, 2013). While there is a desire at the agency level for the work of stewardship groups to be involved in projects with a significant impact on the health of the watershed and the environmental awareness of the people, in reality it may be that there is only somewhat of a material effect on the landscape, with only a few lives strategically affected to the extent that they are motivated to become involved in stewardship or make other meaningful changes in their lives (Respondent 12, personal communication, September 4, 2013).

According to one interview respondent, in some cases, local projects are initially low in impact but have the potential to have broader social and ecological impacts in the longer term (Respondent 4, personal communication, July 24, 2013). Thus, the influence of stewardship groups can have a time/scale component – “...when a project is first initiated there is a lot of education and the change is at a local, on-ground level with a narrower impact. As more people catch on and become aware, there is a broader, cumulative impact over time” (Respondent 4, personal communication, July 24, 2013). The Laurel Creek Citizens’ Working Group makes it a priority to attend various environmental events in the region, providing education about stream ecology, stream stewardship and surface water health. By targeting people from around the region, the goal is to connect with a wider audience and have a broader impact (Respondent 5, personal communication, July 24, 2013).

There is a need for water management agencies such as the GRCA to respond to environmental threats in a more proactive manner, and evidence indicates that following the lead of stewardship groups, responding to concerns of the public, and greater coordination and implementation of monitoring programs, may be the best way to move forward in this regard (Respondent 10, personal communication, July 23, 2013). For example, Kitchener’s Natural Areas Program (KNAP) is working on developing a

longer-term plan for natural areas within urban neighbourhoods. The goal is to work with the community or neighbourhood to identify local issues, then engage the community through plans for monitoring and restoration. Through experiences with KNAP, one respondent observes,

Strong communities of people are better able to take on larger issues in the watershed. You need the understanding and involvement and then you can translate that knowledge or interest into an ability to get involved in watershed issues. Community members are then better prepared to make decisions and join a stakeholder group, a working group, or be part of a consultation process. Once people become involved with an issue, they become more educated, and are more likely to advocate, give time and energy and become more engaged. (Respondent 10, personal communication, July 23, 2014)

Another consideration for groups could be to work with agencies or organizations to coordinate bigger projects, such as larger tree planting programs, or to look at the potential of stacked, or mutual benefits, from a number of smaller initiatives, in order to attain the desired result (Respondent 13, personal communication, August 7, 2013).

The following examples identified by respondents demonstrate how groups and agencies can work together on longer term, sustainable, or larger projects that may exceed their immediate boundaries: 1) The city of Waterloo targets areas in need and has a process to determine priorities for what gets done; and, one focus for Waterloo is the development of tree corridors, linking green areas through urban spaces (Respondents 4 and 5, personal communication, July 24, 2013), 2) The Clean Waterways Group, as part of Woolwich Healthy Communities, goes beyond the immediate boundaries of the township with tree planting programs, which by increasing canopy cover in the watershed, is targeting the mitigation of carbon emissions. The Clean Waterways Group also recognizes that the work to restore and improve water quality in the smaller creeks, such as the Canagagigue Creek, will have a positive effect on downstream water quality of the Nith River and the Grand River (Respondent 8, personal communication, September 12, 2013), 3) Similarly, at the *rare* Charitable Research Reserve, restorative measures such as tree and shrub planting to reduce erosion and improve water quality are aimed mainly at restoring local sites on the *rare* property, yet there is recognition there will be a residual benefit of improved water quality in the streams that drain off-site and into the Grand River (Respondent 1, personal communication, September 9, 2013).

A representative from the GRCA states that the conservation authority maintains monitoring standards for water quality, but does not specifically employ the services of stewardship groups or community

volunteers in a monitoring capacity (Respondent 11, personal communication, July 23, 2013). The same respondent believes the GRCA has a tendency to work preferentially with the implementers who possess the resources to make the biggest changes, including federal and provincial agencies and the municipalities. Because these groups have the ability to decide on a solution and provide the necessary funding, they are perceived by the GRCA to have a greater influence on water management in the river basin, rather than the individual groups, each with its own agenda (Respondent 11, personal communication, July 23, 2013). At the municipal level, there is a need for acceptance of the idea that while the provision of funding and support to groups in areas of naturalization and engineering is a starting point, it is also necessary to consider projects over the longer term, including resources needed for the long-term maintenance and sustainability of stewardship initiatives (Respondent 13, personal communication, August 7, 2013). The same respondent suggests that, although some policy exists around monitoring, implementation efforts ought to be more coordinated in order to tie into the ‘big picture’ (Respondent 13, personal communication, August 7, 2013).

Woolwich Healthy Communities (WHC) is successful in several aspects of environmental stewardship, and operates interactively with leadership from the township and local communities. The focus is frequently on tree planting initiatives or addressing local needs; however, the WHC group believes that through increased levels of education and awareness about the watershed, there will be a subsequent benefit to the watershed as a whole (Respondent 13, personal communication, August 7, 2013). Most stewardship groups, including all of the groups that participated in this research, incorporate tree planting as part of their programs. Many groups and communities perceive tree planting as a practical contribution to environmental stewardship with visible results (Respondent 13, personal communication, August 7, 2013). Participation allows volunteers to feel that they are part of something bigger in terms of a biophysical contribution and creates community awareness for social impact (Respondent 1, personal communication, September 9, 2013).

The *rare* Charitable Research Reserve (*rare*) is attempting to create biophysical and social change through the vision of applying an ecosystem approach to its property. A member of *rare*'s Educational Advisory Committee concedes that dealing with issues in an ecosystem context is complex, but there are hopes that others will begin to embrace the approach through *rare*'s example (Respondent 14, personal communication, September 11, 2013). The same respondent recognizes the challenges associated with asking people to embrace an idea and concept that involves an awareness of the ‘bigger picture’, beyond the tree planting, fish re-stocking and other on-ground projects that groups are able to implement. It is

rare's belief that an understanding for the need to take a 'big picture' approach can be accomplished through education and research (Respondent 14, personal communication, September 11, 2013). As an important part of the vision at *rare*, the 'big picture' idea embraces both the natural and cultural heritage of the Grand River. Those who work with, or are involved with *rare*, tend to have a very strong commitment to the vision. "As a part of the bigger implementation process over time, *rare* would like to see other parts of the watershed, and even other parts of Ontario, become involved in similar approaches" (Respondent 14, personal communication, September 11, 2013)

The impact from the efforts of a stewardship group depends, to some degree, on the geographic area of interest. Some groups, for example, Friends of the Grand, have generated substantial biophysical benefits in specific areas, and through projects such as improved filtration, and slowing of runoff by planting trees and shrubs to create buffer zones along creeks and rivers (Respondent 9, personal communication, August 22, 2013). Results are cumulative as well as having a local effect over time, another respondent observes, especially as more projects are completed. It is anticipated that groups that work to achieve changes on the land may be successful in obtaining longer-term impacts, but quantification of such results can be challenging (Respondent 11, personal communication, July 23, 2013).

6.3 The Impact of Stewardship Groups on River Basin Policy, Governance and Decision Making

The Grand River basin is broad in scope, both geographically and politically. As such, it can be difficult to determine how stewardship groups affect policy, governance and decision making. Interviews with key informants provide perspective on the role stewardship groups are having in the watershed area adjacent to the Regional Municipality of Waterloo. The current status of partnerships and collaboration between stewardship groups and agencies is examined. Also evaluated is how stewardship groups may evolve to exert greater influence in policy and governance, with greater impact on decision making in water management.

6.3.1 Partnerships and Collaboration

One of the key areas for reflection by respondents in terms of the influence of stewardship groups relates to the connections or partnerships formed, not only within the community, but also with influential agencies and decision makers. Within the Grand River basin, a collection of municipalities, councils, wards, and townships often work well together (Respondent 13, personal communication, August 7, 2013). Stewardship groups are part of that constituency and their ability to interact at all levels is

fundamental to their success in the community and across the greater watershed. The work of stewardship groups and management agencies is necessarily delineated by political and physical boundaries. Yet, according to one interview respondent, community groups are often able to take on projects that agencies would not be able to do on their own. Consequently, when community stewardships groups collaborate with an agency, the result is often a healthy synergy between the two groups, helping to keep the agency from becoming complacent, knowing it is being held accountable, while the group is prompted to understand the challenges facing the agency (Respondent 6, personal communication, August 28, 2013).

It is anticipated the role of stewardship groups in the community and the river basin will become increasingly important, and having the capacity to create and maintain effective partnerships will be critical. The findings from this research illustrate a collective view with regard to current opportunities for stewardship collaboration (Respondents 4, 5, 6, 8, 9, 11 & 13, personal communication, 2013). The stewardship groups examined for this research are involved in various partnerships and provide examples of success, some of which are highlighted in section 6.3.1.2. Feedback from informants also offers recommendations where improvements for partnerships and collaboration between stewardship groups and agencies may take place. Interesting results are presented in connection to corporate volunteering (Section 6.3.1.3), demonstrating existing success and the potential for new partnerships and collaboration in this area.

6.3.1.1 The Role of Partnerships between Agencies and Stewardship Groups

Through the interview process it became clear there is considerable concern on the part of agency representatives and informants (N=5) regarding an ongoing loss of funding and support for environmental planning and programming at all levels of government (Respondents 2, 3, 6, 10 & 13, personal communication, 2013). Five respondents agree that there is great potential, particularly at the municipal level, for both stewardship groups and the municipalities to benefit through improved partnerships. With funding cuts to municipal budgets, the need for volunteers increases because the city cannot do everything needed to address environmental issues (Respondents 4, 5, 9, 11 & 13, personal communication, 2013).

Despite the fact that many groups have a localized focus, there is a need to recognize groups publicly, in part to increase understanding about how tax dollars are subsidized by volunteer work (Respondents 2 & 6, personal communication, 2013). The same two respondents observe how, even at the council level, there may not be a realization of how much work is actually contributed through volunteer labour, and how even a small amount of work can have a larger ripple effect from which the township or municipality benefits (Respondents 2 & 6, personal communication, 2013).

One respondent spoke of the importance of partnerships in the context of planning. Planning can be thought of as having two aspects: the *product*, such as the desired outcome of a stewardship initiative or program – where there is always compromise, such as hunters and anglers working with a conservation authority; and the *process* – which has to be inclusive (Respondent 13, personal communication, August 7, 2013). According to the same respondent, once a relationship is established, greater efficiency ensues, and what can appear to be a great investment in time and effort in the beginning should really be viewed as building the capacity and confidence of the people. Work with groups has to be symbiotic; even though the groups may not be making the decisions, they can bring the values of the group to the decision makers (Respondent 13, personal communication, August 7, 2013).

Another respondent suggests several ways in which stewardship groups can partner with other agencies and organizations:

1. Stewardship groups and individuals working on the river or land have the ability to relay monitoring information to management sources.
2. Volunteer groups may collaborate at the municipal level on a funding proposal in order to gain greater benefit from working together.
3. Individuals and groups can come together and partner with an agency to leverage greater funds for larger, more influential projects. (Respondent 13, personal communication, August 7, 2013)

In other areas, stewardship could benefit from a streamlining process for volunteer resources. One respondent suggests that the onus ought to be on agencies to look at how stewardship can be improved at the local level rather than asking the stewardship groups to meet the objectives of the larger agencies such as the Grand River Conservation Authority (GRCA). In this way there is the potential for the agency to have a greater impact at a biophysical and social level through direct collaboration with the groups (Respondent 9, personal communication, September 4, 2013). There is recognition from the GRCA and the municipalities about the variety of stewardship groups in the Grand River basin, some with unique objectives, but many with overlapping goals. The mainstream groups are perceived by the agencies to be the groups that achieve their goals through collaboration, and therefore are deemed to have the most impact at the community and river basin scale. Other, outlier groups also play a role, but tend to be seen by agencies and organizations as more advocacy or activism focused, based on the issues targeted (Respondent 6, personal communication, August 28, 2013).

6.3.1.2 Examples of Partnerships

The ability to partner and collaborate with various agencies and institutions is often the key to sustainability and success for many stewardship groups. Through research with the case study groups and from the informant interviews, it became apparent these groups and others are partnering in differing but effective ways, subsequently contributing to positive biophysical and social changes in the watershed. In the Grand River basin, numerous examples exist of successful partnerships between volunteer-based groups and other institutions or agencies. Depending on the agency or group, partnerships may be based on strategic planning or more simply on an opportunistic fit with priorities.

The *rare* Charitable Research Reserve (*rare*) is connected with a number of special interest groups through the nature of its property. For example, the ‘Cliffs and Old Field Alvars’ are similar to those found on the Niagara escarpment; there is a remnant old growth forest on the property, and areas of Carolinian forest also exist. Each of these distinct landscapes is part of a network of life-science connections that exist through southern Ontario and are being explored through research initiatives at a number of universities. *rare* has partnered with other agencies, including the Ministry of Natural Resources (MNR) in bald eagle monitoring and protection, and with the Grand River Conservation Authority (GRCA) in the establishment of tree planting for windbreaks on the property. The Region of Waterloo Community Environment Fund has also been instrumental in supporting *rare* by assisting in funding for rehabilitation projects and for the expansion of the community gardens (McLeod, 2014).

Woolwich Healthy Communities (WHC) has established, and maintains, a strong relationship with the GRCA. The GRCA helped the Township of Woolwich Environmental Enhancement Committee (TWEEC) establish Trout Unlimited’s Yellow Fish Road Program (Trout Unlimited, 2014) in Woolwich, a program designed to create awareness around potential contaminants and pollution that can be introduced to local waterways through storm drains (WHC, 2013). In addition, the GRCA plays a key role in supporting TWEEC’s extensive tree plantings by providing appropriate trees for the projects. WHC also plays an important role in assisting the GRCA in the administration of the Rural Water Quality Program in partnership with municipal, provincial and federal governments. Financial assistance provided in part by the Canada Ontario Farm Stewardship Program, ranges from 30% to 100% for improvements relating to best management practices with the goal of improving water quality. The program is voluntary and incentive-based, helping to balance agricultural production needs with the needs of the environment for individual farms and landowners (GRCA, 2014).

Generally, participation in the Rural Water Quality Program is contingent upon the farmer's completion of an environmental farm plan. However, in Woolwich Township, the majority of farms are owned by Mennonites. Cultural and societal values in the Mennonite community restrict the acceptance of funding in many cases. Through the development of programming and partnerships between WHC and the GRCA, WHC is able to access the funding on behalf of the farmer without the need for an environmental farm plan. The GRCA then supplies the trees for the farmer and assists in providing labour to plant the trees and install cattle fences along stream and river borders. WHC extends its relationship into the community by thanking the farmer for the opportunity to plant trees on the land (Respondents 2 & 3, personal communication, September 5, 2013). The purpose of planting trees and shrubs on the farmers' land adjacent to the stream and creek banks is to provide a buffer zone for farm runoff and to work in conjunction with the installation of fencing to keep cattle out of the creek. The result of the two initiatives is an improvement in water quality both at the local site and downstream.

The environmental, ecological and social component of the support is a key part of the relationship between WHC and the farmers as they each become more cognizant of the issues and needs within the community and understand that they do not have to carry the environmental responsibility on their own. According to a representative from WHC, with an understanding of the benefits to be gained at a personal and community level, most farmers are happy to be involved both for their own sake and for that of the environment and the community (Respondent 3, personal communication, September 5, 2013). WHC has found that by acting as a mediator and providing a culturally sensitive approach with the farmers, trusting relationships are built, and over time the farmers often complete an environmental farm plan in cooperation with the GRCA. Furthermore, through the successful building of relationships and with the establishment of the program, additional farmers in the community are gaining trust and expressing interest in participating in the program (Respondent 3, personal communication, September 5, 2103).

With its participation in the Rural Water Quality Program just one example of success, WHC is extremely proud of its accomplishments and would like to see its model or similar ones duplicated elsewhere. As one representative of WHC states, the group understands that it has had some impact on local government since its inception, but notes the process has been slow and incremental (Respondent 7, personal communication, August 23, 2013). When Woolwich Township hired a Trails Coordinator to support and work with the local volunteer groups, it was argued by the group that for every hour the coordinator put in, the township could count on an additional ten volunteer hours (Respondent 7, personal communication, September 5, 2013). The planning director at the time recognized the limited resources

within the township budget to make a significant environmental contribution and realized the need to engage the volunteer sector. Since the township is provincially mandated to have some involvement in environmental stewardship, Woolwich has designated \$10,000 annually to be used by TWEEC (Respondent 7, personal communication, August 23, 2013).

TWEEC has also had a successful partnership with the Region of Waterloo related to the 'Live Snow Fence' project. This project involved the planting of trees along a 500-metre stretch of Arthur Street in Elmira, ON to reduce the impact of blowing snow across the highway, thereby improving winter driving conditions. Further collaboration originated with the Region of Waterloo through the bale wrap recycling program, an initiative to encourage farmers to recycle the large amounts of plastic bale wrap accumulated through farm operations (WHC, 2013). To grow on the Region's demonstrated enthusiasm for grassroots organizations, a future step for TWEEC will be to encourage the development of a regional tree nursery program in cooperation with the local high school.

The GRCA, as a large watershed-wide organization, is responsible for partnering and collaboration at a number of levels. However, it recognizes that partnerships with stewardship groups are generally based on opportunistic values rather than as an incorporation of strategic planning measures (Respondent 11, personal communication, July 23, 2013). This situation may exist because the GRCA does not have a dedicated program or department that could oversee the coordination and development of stewardship principles and practices. Yet despite an apparent reluctance to take advantage of potential opportunities to fully engage with other stewardship groups, the GRCA has collaborated successfully with certain groups, including a noteworthy partnership between several groups leading to the development of the Fisheries Management Plan. The GRCA and the MNR led this plan, with other stewardship groups such as Trout Unlimited and the Brantford Steelheaders, a fishing and angling group, invited to initiate, comment and participate as part of the process, but not to drive the agenda (Respondent 9, personal communication, August 22, 2013).

One respondent notes that at times smaller groups invite the GRCA to become a participating partner, by proposing collaborative initiatives (Respondent 12, personal communication, September 4, 2013). An example of such collaboration took place when The Rotary Club of Guelph approached the GRCA to consider an opportunity to work together, planting trees to create a Rotary Forest. The City of Guelph would also become involved and the chosen land is adjacent to the existing Guelph Conservation Area. The initiative by the group evolved into a 13-year partnership with multiple sponsors because the shared goal included increased opportunities for school children to become involved in tree planting and other outdoor activities (Respondent 12, personal communication, September 4, 2013).

Another group that receives support from the GRCA is the Friends of Mill Creek, formed after a sub-watershed study identified specific areas in need of remediation at the site of Mill Creek in Cambridge, ON (Respondent 13, personal communication, August 13, 2013). The same respondent explains how the group launched an extremely successful local fundraising campaign and partnered with the unlikely candidates of a large corporation and an aggregate company (Respondent 13, personal communication, August 7, 2013). The GRCA oversees a related, student-based program, the Mill Creek Rangers, which contributes labour for on-ground projects at the Mill Creek site. It is felt that because the Friends of Mill Creek Group exists, there is a demonstrated community interest and the MNR and Ministry of the Environment (MOE) can see the importance of this creek to the community, thereby an influence is being exerted on provincial agencies and programs (Respondent 13, personal communication, August 7, 2013).

6.3.1.3 Corporate Volunteer Programs

Stewardship groups are beginning to note a new trend with the involvement of corporate partners in community stewardship programs. The *rare* Charitable Research Reserve (*rare*) is one organization that is beginning to appreciate the benefit of collaborating with community corporate partners in order to promote and accelerate stewardship programs. The corporate commitment became evident through the participant observation portion of this research at *rare* where 23 of the volunteer participants and survey respondents were part of a corporate volunteer program. The opportunity to work alongside these volunteers was both inspiring and insightful. Of particular note is that the majority of these participants had never before volunteered for a stewardship activity through work or personally, and for most it was also their first time visiting the *rare* property.

Four separate corporate groups encompassed the 23 individual survey respondents, with three groups representing Toyota Motor Manufacturing Corporation (TMMC), and one group representing an accounting company. The groups met at the *rare* property on four different occasions and were involved in a variety of activities including tree and shrub planting to prevent drainage bank erosion, community garden maintenance, and trail maintenance and restoration. The group members, although mostly inexperienced, were keen, hard workers who were eager to explore the property and learn about the implications of their work. Some volunteers expressed an appreciation for a ‘paid’ day off from work, courtesy of their employer, noting it was a nice change to be working in an outdoor environment rather than their usual work atmosphere. Others felt it was beneficial to have an opportunity to meet new people while engaging in a new experience that would benefit the community. Several individuals expressed

gratification for the opportunity to participate in the program and stated a desire to return to the property at a later date.

Corporate volunteer programs are becoming more recognized for the mutual benefits gained by all parties. As a local company located in Cambridge, TMMC is involved as both a corporate donor and with the employee volunteer program at *rare*. During the 2013 planting season, the groups from TMMC were responsible for the planting of over 1,000 trees, made possible through the funding partnership of the Region of Waterloo Community Environment Fund (*rare*, 2013). As one respondent notes, companies no longer just want to write a cheque in support of a cause or an organization; they want to be involved in making some sort of tangible contribution (Respondent 12, personal communication, September 4, 2013).

A representative from the GRCA acknowledges this cooperative opportunity is also occurring more frequently at the organization, which also works with companies such as TMMC when they express an interest in making a donation, combined with sending a group of volunteer workers to participate in hands-on work for a day (Respondent 12, personal communication, September 4, 2013). In response, the GRCA attempts to set up an activity that accommodates the needs of both parties. The GRCA acknowledges that, although it cannot accommodate all requests, the organization benefits from volunteer assistance and understands that individuals and corporations are seeking ways to give back to the community and the environment that will have a lasting, positive impact (Respondent 12, personal communication, September 4, 2013).

Another respondent notes that when corporations make a substantial donation to an organization like the GRCA, and ask to have some employees participate in volunteer workdays paid by the corporation, there is great competition for those positions. The employees who volunteer for those days are very committed and are very dedicated to making a contribution (Respondent 6, personal communication, August 28, 2013). Although there is not necessarily a direct connection between the funding and the volunteer involvement, once the employees are engaged, they also act as representatives of the community and the corporation, who are able to raise further awareness for the facilitating organization and for environmental issues. For a large organization like the GRCA, engaging volunteers to do on-ground work does not necessarily save money, but the benefit is in having people connect with nature while in their community, and in increasing environmental awareness and appreciation (Respondent 6, personal communication, August 28, 2013). Many companies and organizations are interested in making a difference in the environment in some way. In the current economic times, often it is more manageable

to give people and time rather than a monetary donation (Respondent 6, personal communication, August 28, 2013).

6.3.2 Achieving Greater Impact from Stewardship Groups regarding Governance and Decision Making

Within the Grand River basin, stewardship groups are working with the municipalities, the townships and management agencies such as the Grand River Conservation Authority (GRCA). One respondent suggests that it may not be realistic for the municipalities to take on the role of visionary leadership in environmental matters. Instead, it may make more sense for an organization such as the GRCA to lead the way (Respondent 14, personal communication, September 11, 2013). However, they will still be influenced by the thinking of people in other organizations, so there is a need to create understanding and realization around the changes that are in the best interest for the people, the economy, and a sustainable environment (Respondent 14, personal communication, September 11, 2013). If stewardship groups can focus on positive, real world projects and maintain relationships with management agencies and organizations, then when it is time to review a policy, such as changes that can be made through a Municipal or Regional Official Plan, a strong relationship will exist from which to work (Respondent 13, personal communication, August 7, 2013). For example, a new Official Plan for the city of Cambridge is pending approval from the Ontario Municipal Board. The last plan was updated in the late 1990s. Consequently, a number of environmental policies have been reviewed and updated including, but not limited to: floodplain policy, source water protection policy, land use policy and open space designation, restoration and vegetation management, fish habitat, sub-watershed management, urban forestry, canopy cover and biodiversity (City of Cambridge, 2014).

In the Grand River basin, stewardship groups show evidence of influencing governance and decision making in a variety of instances. In some cases, groups choose to appear before city council, drawing attention to particular issues and potentially initiating a process for change (Respondent 4, personal communication, July 24, 2014). While groups demonstrate notable strengths through a variety of examples (Section 6.3.2.1 & 6.3.2.2), interview respondents offer recommendations in regard to how greater impact may be achieved. One respondent agrees that having a presence at city or township council meetings is one way stewardship groups can exert an influence with decision makers. In addition, it is advantageous for groups to present solution-oriented suggestions and recommendations rather than taking an awareness-raising approach (Respondent 13, personal communication, August 7, 2013). Two interview

respondents cite community champions as a beneficial component to any stewardship group or environmental campaign (Respondents 10 & 12, personal communication, 2013).

In addition, the success of any stewardship group can be determined, at least in part, by its structure and organization. Depending on the mandate, goals or objectives of a group, it may be set up as a registered non-profit, a charitable organization; it may be a less formal community group; or it may be funded by, or connected with, a municipality or township. Insight is offered by a number of respondents (N=7) into the advantages of having a paid staff member in a leadership position of a stewardship group, versus groups solely run by volunteers (Respondents 1, 2, 4, 6, 7, 10, & 11, personal communication, 2013). The person who is in an administrative role for the stewardship group may perform many important functions, improving the success and sustainability of the group (Section 6.3.2.4).

6.3.2.1 Stewardship Groups Work With the Municipalities

Stewardship groups operate at different spatial levels and have different mandates for effecting biophysical and social change within the boundaries of the municipality or township in which they operate. Local indications as provided by the key informants (N=9) suggest that stewardship groups are often having a high impact in their particular location of focus and subsequently the leaders of the group may be invited to participate in the management plans for that area (Respondent 1, personal communication, September 9, 2013). An example of where this type of situation has taken place is through the work of the Lakeside Group in the city of Kitchener.

The city of Kitchener is using stewardship as part of its management process, by developing management plans for natural areas in Kitchener's neighbourhoods. The goal is to look at stewardship or restoration projects and determine how they can fit into larger management goals that will feed the stewardship objectives (Respondent 10, personal communication, July 23, 2013). The Lakeside Group is a stewardship group working under the umbrella of Kitchener's Natural Area's Program (KNAP). A small, motivated group of community residents, the Lakeside group is influencing the city through citizen leadership on stewardship projects in the community. Through positive influence and leadership, the group was successful in having the City of Kitchener agree to complete its first environmental plan at Lakeside Park in Kitchener (Respondent 10, personal communication, July 23, 2013).

As one respondent observes, if a group is making a demonstrated difference in an area, it is likely that the city will follow the recommendations of the group, and therefore the group can be determined to be having a direct influence on the decisions affecting that location (Respondent 1, personal communication,

September 9, 2013). According to another respondent, groups involved at the municipal level or through advisory groups often experience greater opportunities for leverage, thereby influencing decisions. When group leadership is chosen wisely and an issue is brought to the attention of the municipality repeatedly, there is the potential for more influence (Respondent 10, personal communication, July 23, 2013).

A representative from the city of Waterloo believes most of the influence of stewardship groups is at the community level. The priority for the city is to target areas of need and define projects that are part of the environmental plan for the municipality (Respondent 5, personal communication, July 24, 2013). Despite having specific environmental goals and objectives for the city, there is still opportunity for partnerships. For example, the city of Waterloo has identified the expansion of tree corridors as a priority. Therefore, if a stewardship group were to present a community concern relating to tree corridors or canopy cover, it may be possible for the group and the city of Waterloo to collaborate in order to address the need in a manner that is beneficial to both parties. Specifically, influence and change in terms of impact on policy will likely take place when the city reviews the Official Plan, or when there is a development application (Respondent 5, personal communication, July 24, 2013).

The city of Waterloo engages an Environmental Advisory Committee (EAC) to assist in issues related to environmental stewardship from a policy perspective, rather than assessing what is being done on the ground by stewardship groups. The role of the EAC is to advise council on matters of environmental policy. Generally, policy changes are triggered by an event, not usually on-ground work, leading to a policy review or update (Respondent 4, personal communication, July 24, 2013). Another respondent notes that Township and Regional Official Plans have evolved over the last two decades to include input from stewardship and community groups that include broader concepts and ideas (Respondent 8, personal communication, September 12, 2013). In Waterloo, the Laurel Creek Citizens' Working Group is an example of a group that has been very successful on a local scale and could be responsible for driving land use planning in the area. Other groups are working with the GRCA or advocating at the municipal level and having an influence on decision making and the institutionalization of certain programs, such as tree planting (Respondent 9, personal communication, August 22, 2013).

In the city of Cambridge, stewardship groups are also having an impact at the municipal level. When more people involved at the municipal level are speaking to their councilors, a greater awareness is created at council for the issues of concern. The Cambridge Environmental Advisory Committee oversees a sub-committee, City Green - a group of volunteers who coordinate and promote local projects benefitting the environment and supporting sustainable living. City Green holds an annual event geared to

bringing the community and the decision makers together. The group was contemplating a theme related to trees for 2014 because Cambridge recently initiated an inventory of trees and will soon be starting a forestry plan. Creating awareness around the forestry plan is important because the plan has the potential to become a major public consultation initiative (Respondent 13, personal communication, August 7, 2013).

Successful groups such as the Cambridge Waters group are solution oriented, beyond just raising awareness, and are playing an advocacy role by attending council meetings, thereby increasing the potential for influencing the decision-making process. Also in Cambridge, the Friends of Mill Creek group, who operate with the assistance of the Mill Creek Rangers, is influencing policies of the GRCA through the implementation of the policies of both groups (Respondent 1, personal communication, September 9, 2013). In the city of Guelph, the group Trees of Guelph originally started with the involvement of community groups and university students who were part of the Ontario Public Interest Research Group (OPIRG). Initially, the decision makers did not drive the actions of the group but they were involved and accepted the approaches taken by the group. Today, the tree planting initiatives have become incorporated into policy and present an example of how decision makers were influenced by a demand expressed by the community and through community groups (Respondent 6, personal communication, August 28, 2013).

6.3.2.2 Examples of Influential Stewardship Groups

An example of the influence that can be achieved by local stewardship groups is demonstrated by a collective of local fisheries groups, which identified an opportunity for improvements in the Grand River basin that would support sport and recreational fishing. Through the collaborative development of a Fisheries Management Plan, along with the Grand River Conservation Authority (GRCA), the groups established the concept of ‘exceptional waters’, which looks at different reaches of the river for their ecological, recreational and economic potential (Respondent 9, personal communication, August 22, 2013).

As another example, the *rare* Charitable Research Reserve (*rare*) involved local citizens in developing a vision for the organization, and by incorporating the thoughts of the people from the community, who were influenced by emotional attachments to the site as well as by an understanding of the ecological importance of preserving a large tract of land (Respondent 14, personal communication, September 11, 2013). While working collaboratively with the community to reach its goals, *rare* has also had an impact

on the approach taken by the Regional Municipality of Waterloo with respect to certain aspects of environmental planning (Respondent 14, personal communication, September 11, 2013).

As a result of the preservation of the land at *rare*, the Region of Waterloo subsequently established the ‘Environmentally Sensitive Landscape’ (ESL) designation for various sites across the region. According to one respondent, when representatives of *rare*, municipal leaders and other stakeholders embarked on a think tank approach to exchange ideas, there was a mutual recognition for the importance of cultural and heritage preservation. The concept of ESL emerged from the activities of the people involved in preserving *rare* and those in a decision-making capacity at municipal and regional levels (Respondent 14, personal communication, September 11, 2013). Ultimately, those involved were able to come up with an approach that would not only embrace what *rare* is about, but extend the thinking beyond the original parameters (Respondent 14, personal communication, September 11, 2013).

According to a representative from Woolwich Healthy Communities (WHC), the group recognizes the significance of public policy and worked with the township to prepare a set of guiding principles that would assist in leading management decisions (Respondent 8, September 12, 2013). The guiding principles included ideas such as giving voice and choice on decisions, determining the impact of proposed projects, consideration for environmental protection and sustainability for future generations, and support for local farmers and the local economy. Another respondent states that the township supported the guiding principles and asked planning staff to consider the principles as part of the strategic plan. In addition, the Township of Woolwich had significant input into the former Regional Official Plan and the guiding principles and values of WHC had a definite impact, if indirect (Respondent 2, personal communication, September 5, 2013). The decision to prioritize improved trails, green spaces and natural corridors in Woolwich Township resulted from the work of the Woolwich Healthy Communities group (Respondent 8, September 12, 2013).

One respondent observes that WHC has been instrumental in other aspects of policy change in the township and the Region of Waterloo (Respondent 2, personal communication, September 5, 2013). The original Rural Water Quality Program from the GRCA did not provide for the participation by farmers who did not complete an environmental farm plan or apply for funding through the official application process. Through the work of the WHC in building relationships with the Old Order Mennonite community, and the GRCA, the program has seen increased participation and success, culminating with a change in policy that now allows WHC to accept funding on behalf of the farmers (Respondent 2, personal communication, September 5, 2013). The policy change resulted from the partnerships and

collaboration of the various stakeholders, as well as from an acceptance on part of the GRCA that WHC was better suited, based on its relationships and position in the community, to bridge the socially sensitive barriers that are part of the Mennonite culture (Respondent 2, personal communication, September 5, 2013).

The subsidiary groups of WHC have also been influential in terms of policy, comments another respondent (Respondent 7, personal communication, August 23, 2013). The Clean Waterways group is concerned with water quality issues and although it has a primarily local focus in areas such as fencing cattle out of the Canagagigue Creek, the group is also involved in improving habitat for fish and wildlife and notes that water quality maintenance and enhancement is part of existing policy at the township and regional level (Respondent 7, personal communication, August 23, 2013). A representative from The Township of Woolwich Environmental Enhancement Committee (TWEEC) notes how the group played a key role in setting up a program with transfer stations in Crosshill and Elmira where plastic farming bale wrap would be collected for recycling by a company in New Hamburg instead of going to landfill sites or being burned on site by the farmers. These programs are now part of the township's mandate and policy (Respondent 8, personal communication, September 12, 2013).

6.3.2.3 Community Champions

While there is recognition of the importance of relationships among stewardship groups, municipalities and other decision-making agencies, it is further acknowledged by several respondents (N=4) that it is beneficial for stewardship groups to have a champion behind their work, whether that support comes from the municipality or from some other backing in the community. There is a perception that groups will perform more willingly and more efficiently if there is a champion (Respondents 7, 10, 11 & 12, personal communication, 2013). A community champion can be defined as:

A public official, a concerned leader, a community citizen or a volunteer who works hard to support an initiative or intervention, to bring a program or idea to reality, or to otherwise improve the quality of life of the group or of the community as a whole; they may work directly with or for the organization, or they may start movements and organize other people to challenge the decision makers; they are committed to making things better for everyone (University of Kansas, 2014).

At the Grand River Conservation Authority (GRCA), for example, the 16 member board of directors acts as local champions through representation and support for each section of the watershed (Respondent 12, personal communication, September 4, 2013). It is suggested by one respondent that the Grand River

basin stewardship community needs an overarching support system or network to champion stewardship (Respondent 10, personal communication, July 23, 2013). The benefits include being able to identify similarities in causes and projects, collaboration on identification of resources, ability to put layers of projects together, and knowing how to look for funding and submit funding applications together (Respondent 10, personal communication, July 23, 2013).

One respondent stated that the effectiveness of stewardship groups could be improved by better communication and education. Furthermore, there is a sense that some government organizations are championing certain issues, but usually not as much as they could be (Respondent 10, personal communication, July 23, 2013). Many of the local projects, educational programs and initiatives are related to issues that would benefit from improved stewardship but there is a need for consistent messaging when trying to achieve the goals of a policy or plan so that local groups can be actively involved. There is a need for a champion to convey the message of the group (Respondent 10, personal communication, July 23, 2013).

Since non-profit groups and organizations have to follow certain governance models, one respondent believes that these groups tend to be more focused on activities with minimal advocacy (Respondent 11, personal communication, July 23, 2013). However, as one respondent notes, these groups are contributing to getting work done on the ground, yet tend to be very modest about their efforts (Respondent 11, personal communication, July 23, 2013). In some cases, community-based groups are more focused on individual interests and are more advocacy-based. These groups, such as the Grand River Environmental Network, in the opinion of one respondent, are trying to have a voice and influence the decision makers (Respondent 11, personal communication, July 23, 2013).

From the perspective of one representative from the GRCA, when trying to coordinate stewardship goals with the GRCA, groups can be most influential towards decision making if they appear before the GRCA board members as a delegation presenting their issue or concern (Respondent 11, personal communication, July 23, 2013). Recognition is important and by appearing before the GRCA board, or before council, groups increase their chances of recognition and commendation for the work being done. When decision makers are commending the work being done, they can begin to be influenced by the changes effected by stewardship groups (Respondent 11, personal communication, July 23, 2013).

6.3.2.4 Stewardship Group Structure and Credibility

Just as the stewardship groups in the Grand River basin have different goals and mandates, groups also vary in their structure, operating methods and terms of credibility. Groups that are or appear to be more organized and cohesive, in the opinion of one respondent, will promote a more positive perception from the public and policy makers which in turn will influence how successful the group will be over the longer term (Respondent 5, personal communication, July 24, 2013)). Well-established, well-organized groups, which collaborate successfully with other organizations, will gain the most credibility (Respondent 10, personal communication, July 23, 2013).

The interview respondents (N=7) indicate strong agreement for the advantages of an administrative role in stewardship groups. The administrative position is often served by a paid staff member and, depending on the group, may contribute in a number of ways towards effective group functioning, including:

- Providing leadership
- Applying for funding
- Being a spokesperson
- Assisting with promotion
- Completing reports
- Organizing events

Depending on who is in the leadership position, skills and personality may allow for increased credibility on the part of the group. With better credibility, a group is usually perceived to be more trustworthy and inclusive in decision making (Respondents 1, 2, 4, 6, 7, 10 & 11, personal communication, 2013).

Representatives from Woolwich Healthy Communities (WHC) note that stewardship groups such as WHC tend to establish credibility over time by demonstrating responsibility and a good work ethic (Respondents 2 & 3, personal communication, September 5, 2013). Groups such as WHC also prefer to have volunteers in the leadership role, with the majority of the decisions supported by staff or administration. By having someone who can take care of the background work, the volunteers are able to concentrate on the on-ground work that is usually of greater interest to them. The administrative function often performed by a staff person provides a resource and can help keep the group engaged in decision making (Respondents 2 & 3, personal communication, September 5, 2013).

Several interview respondents (N=3) agree with the importance of group structure. It is acknowledged that structure is important with regard to fiduciary matters. Financial records are necessary for credibility and accountability. In many cases, it is beneficial for groups to be registered as a charity or non-profit organization in order to increase the perceived level of professionalism and to permit application for many grant and funding opportunities (Respondents 1, 6 & 13, personal communication, 2013). After its initial inception in 1991, WHC advocated for sustainable funding which was ultimately provided as \$10,000 annually from Woolwich Township (Respondent 3, personal communication, September 5, 2013). Group members observe WHC is developing greater credibility as it becomes better known and this acknowledgement can be very significant for a group when submitting grant or funding applications to various sources (Respondent 8, personal communication, September 12, 2103).

Various factors contribute to the success of a stewardship group from year to year. Two of the key informants interviewed for this study make some recommendations in that regard. Depending on the group and activities, if there is to be an ongoing impact from year to year it is essential to have someone, such as an administrator, who knows what happened the previous year and has all the contacts (Respondent 6, personal communication, August 28, 2013). Also, groups should not try to be everything to everyone. The most successful groups focus on working on what they do best, with the help of dedicated volunteers, and have the ability to achieve and show results (Respondent 11, personal communication, July 23, 2013).

6.4 Summary

Chapter six provides an analysis of the results relating to the third research objective: understanding the role of stewardship groups in the Grand River basin from the perspective of agency and organizational informants. Despite claims from agency representatives that stewardship groups tend to have a strongly local focus, with less concern for the 'big picture' or the cumulative effects of various projects, examples indicate that some groups are in fact having an impact on the biophysical environment and at a social level beyond the immediate local scale (Section 6.2.1). There is awareness of the work that stewardship groups are undertaking in the catchment and, although recognition could be greater, partnerships continue to develop and strengthen between groups and decision-making parties (Section 6.3.1). Chapter seven will provide a synthesis of the research literature and the results from the research relating to how partnerships between stewardship groups and agencies can continue to evolve.

Stewardship groups in the Grand River watershed are showing some evidence of influence with decision makers and water governance agencies. At present, there is an indication that groups are having a greater influence at the municipal level than with the larger management agencies such as the Grand River Conservation Authority (Section 6.3.2). However, organizations are choosing to work more collaboratively with stewardship groups, understanding the greater benefits for the river basin that can be attained by all parties, from a biophysical and social perspective.

Within the Grand River basin community, stewardship groups benefit from collaborating with corporate and community allies at a number of levels. One successful form of partnering has been through corporate volunteer programs (Section 6.3.1.3). Stewardship groups fortunate to be linked with a community champion (Section 6.3.2.3) are also likely to see increased levels of success. Finally, group structure and organization (Section 6.3.2.4) is a key consideration in relation to the perception of the group with regard to credibility and sustainability. Chapter seven will provide a synthesis of the previous chapters and will make connections to the literature review.

Chapter 7

Findings, Conclusions, Limitations and Future Opportunities

7.1 Introduction

The research for this thesis and the subsequent analysis of the qualitative and quantitative data, collected from survey participants, key informants, and from the three case study groups, addresses the three main three research objectives. During the study, five main themes with specific connections to the literature became evident. The first section in this chapter considers the importance of *community connections* in relation to biophysical and social stewardship goals and initiatives. The material in this section relates to the first research objective and is also related to the literature. The next section discusses the *motivations and perceptions* of stewardship group volunteers in the context of the second research objective, while making connections to the research literature. The third and related section, also supported by the literature, discusses the importance of *tangible results for volunteers* in stewardship work, and the factors that contribute to, and the strategies that can be taken to avoid, *volunteer burnout*. The last two sections discuss the *role of partnerships and collaboration* in the success of stewardship groups, as well as the *future role of stewardship groups* in the Grand River basin. Each of these topics receives consideration in the literature, and connections are made to examples in this study.

The chapter concludes with a section outlining limitations of the study and potential aspects for future research. Table 7.1 provides an overview of the key findings, implications and recommendations.

7.2 The Community Connection to Biophysical and Social Stewardship Initiatives

Successful community engagement and educational outreach initiatives on the part of stewardship groups, and the subsequent implementation and completion of on-ground, biophysical projects, are closely connected (Table 7.1). For example, when a group such as Kitchener's Natural Areas Program (KNAP) works on an issue to create biophysical change, by that same process, social change can be initiated through the evolution of stronger networks and the development of management plans (Respondent 10, personal communication, July 23, 2013) (Section 5.2.1.2). KNAP is connected with the work of the Lakeside group, a local organization of community members who rallied around the environmental significance of protecting and preserving a neighbourhood park containing a glacial lake and other natural features. For the Lakeside group, the social aspect of the program plays a key role in the process of developing the biophysical changes.

Another group that appreciates and utilizes the benefits of social interaction with the community in order to achieve its biophysical goals is the Woolwich Healthy Communities Group (WHC) and its various sub-groups (Section 5.2.1.1). WHC has been extremely successful in furthering the objectives of the group by promoting community engagement through connections with landowners, citizens, and schoolchildren, as well as by partnering with the Township of Woolwich. According to Shandas and Messer (2008, p. 416), the opportunity for community members to take part in environmental stewardship within local neighbourhoods and river basins re-establishes connections between their actions and the health of the environment. In addition, such participation encourages a sense of empowerment and belonging in the community (Table 7.1).

Respondents with a connection to the *rare* Charitable Research Reserve (*rare*), individuals in leadership roles, and volunteer participants, noted community engagement to be of great importance (Section 5.2.2.2). *rare* is an organization that inspires an intimacy and caring towards environmental issues and offers community members an opportunity to come into a natural area and make connections through on-ground projects (Respondent 14, personal communication, September 11, 2013). The literature supports how the engagement of volunteers can result in far-reaching benefits beyond the participation in community life (Gooch, 2005, p. 18). Other rewards include increased confidence, a sense of belonging and attachment and an appreciation over the satisfaction of working towards a common goal (Gooch, 2005, p. 18). Feelings of connection and engagement among community volunteers are related to the factors that influence motivation to participate in stewardship activities (Table 7.1).

An important sector that has undergone significant growth recently is corporate volunteerism (Section 6.3.1.3). Particularly through my work at *rare*, I observed a very active corporate stewardship program, and the land steward for that organization advised me this is a very exciting area of growth and potential (S. Craig, personal communication, September 23, 2013). Organizations like *rare* and the GRCA are finding they are being approached by corporations looking to contribute to environmental stewardship in a number of ways: some make a monetary donation; others make a monetary donation in conjunction with employee volunteer workdays; while still others offer people, time and labour, or even in-kind donations. The motivation for the corporations is to give back to the community in a meaningful and visible way that is not always dependent on a cash amount (Table 7.1). The employees who come out to workdays are highly motivated and keen workers who want to be there.

During my participant observation sessions at *rare*, I worked alongside corporate volunteers on several occasions and enjoyed learning how, for the majority of the participants, it was their first time partaking

in that type of activity. I observed an obvious appreciation for the work in which they were taking part along with an understanding for the importance of learning by doing, while sharing in the experiences of others (Section 6.3.1.3). Most participants expressed a desire to expand their environmental learning further by looking into future stewardship opportunities. Bruyere and Rappe (2007, p. 510) note that, for many, the first experience with a volunteer group or organization may be related to a desire to learn more about a particular interest in the natural world. According to Bramston et al. (2010, p. 785), volunteers can recognize the value in sharing and learning new knowledge, and Gooch (2005, p. 17) states there is an appreciation for the type of hands-on work experienced through environmental volunteer work. Positive first experiences with volunteer work are important. However, a number of other motivating factors can play a role in participation in stewardship activities.

7.3 Implications Regarding the Motivations and Perceptions of Stewardship Volunteers

Participation of volunteers in stewardship group activities and events is influenced by several factors. The data from my research indicate that motivation for volunteers who participate in environmental stewardship activities can depend on their perceptions about the benefits of the work. In addition, there are perceptions relating to an understanding and knowledge of the potential barriers that exist regarding a positive impact on the local or river basin community (Table 7.1). The data also reveal that the motivation of volunteers is often influenced by previous involvement with environmental groups and activities (Figure 5.4). Whether directed toward biophysical or social goals, prior experiences and expectations often play a role in how volunteers choose to commit time and energy to environmental initiatives (Section 5.5.3.1).

Comparisons can be made between the results from the surveys and the evidence in the literature regarding motivational factors for volunteering (Section 5.3). While the top three motivations for environmental volunteering were the same in both the literature and my survey results, differences exist in the order of the results across the three primary categories. The research by Bruyere and Rappe (2007, p. 510), Measham and Barnett (2008, p. 540), and Bramston, Pretty and Zammit (2020, p. 779) lists, in order of importance, the primary motivators as: 1) helping the environment, 2) learning/personal growth, and 3) social connections. The results from the surveys in my research identify the same top three motivators. However, respondents rated social connections as the most important motivator in participation, followed by a desire to help or make a change to the environment, and then a wish to increase learning or environmental knowledge (Section 5.3).

Asah and Blahna (2012, p. 471) discuss the idea of a functional approach with respect to volunteer motivation and suggest how environmental stewardship groups can look to this approach to increase volunteer retention and the frequency of participation for volunteers. Utilizing a functionalist approach to increase volunteerism involves taking into consideration the most significant functions that the act of volunteering serves to the volunteer. In other words, the motivation of volunteers involves the understanding of if, and to what extent, motivations influence participation in activities or events (Asah & Blahna, 2012, p. 472). According to Asah and Blahna (2012, p. 471), there is often a functional mismatch between the requests for participation and the planning and management of volunteer events. Based on the literature, group organizers may not be drawing upon the most salient motivations, such as those that are personally or socially driven, cognitively relevant, or obvious to the volunteer (Asah & Blahna, 2012, p. 471).

As noted previously in the literature, most volunteers, and subsequently group organizers, perceive the primary reason for becoming involved in an environmental cause to be related to a desire to help, or make a change in the environment or natural world. Therefore, the focus for environmental group recruitment and involvement is generally targeted toward these goals. Yet, on consideration of the functional approach of Asah and Blahna (2012, p. 471) and the results from my research, there is a strong indication that volunteers are more likely to be inclined to participate in environmental groups and stewardship programs for social reasons before being influenced by any of the other factors (Figure 5.1).

Based on the observations by key informants from groups such as Woolwich Healthy Communities, *rare*, and Kitchener's Natural Areas Program, recruitment and retention of committed, long-term volunteers is an ongoing challenge, even for well-organized and structured groups (Section 5.4). By incorporating the concepts of the functional approach to motivation, discussed by Asah and Blahna (2012, p. 471), it may be possible for group organizers to promote volunteerism and participation by matching motivations through the facilitation of events that emphasize social interactions. Bruyere and Rappe (2007, p. 513) argue it is still important to highlight for environmental volunteers the importance of helping the natural world, but it may be just as important to emphasize other potential benefits of participation such as social and learning opportunities (Table 7.1).

Recruitment of new volunteers for stewardship groups is cited as an aspect that would benefit from improved diversification, according to three interview respondents (Respondents 1, 2, & 10, personal communication, 2013). While targeting younger volunteers is a common goal for many groups, one respondent suggests it may be best to focus on engaging volunteers from a variety of ages, backgrounds

and skill sets (Respondent 1, personal communication, September 9, 2012). Retaining a committed and sustainable volunteer base is vital to the success of a stewardship group and is key to maintaining a group of volunteers and participants who remain passionate about the work they are involved with and who are resilient against burnout (Section 5.4).

7.4 The Importance of Tangible Results and the Avoidance of Volunteer Burnout

Concern over the potential for volunteer burnout was mentioned by six of the key respondents interviewed for my research (Respondents 8, 9 10, 11, 13, & 14, personal communication, 2013). Active volunteers or participants in any sector may be susceptible to burnout. However, it is thought that those involved with environmental groups may be particularly at risk due to the often physically demanding nature of the work completed by a small, core group of volunteers (Byron & Curtis, 2002, p. 64). Based on interviews with representatives from the various case study groups and other informants, including Woolwich Healthy Communities (WHC), the *rare* Charitable Research Reserve (*rare*), Kitchener's Natural Area Program (KNAP) and the Grand River Conservation Authority (GRCA), there is agreement that along with small group numbers and physically challenging work, another contributing factor to burnout among environmental volunteers can be a lack of tangible results for the on-ground efforts (Section 5.4).

It is acknowledged among the group administrators, and in the literature, that the incorporation of tangible results into the work of environmental stewardship volunteers can play a key role in mitigating some of the factors leading to burnout (Table 7.1), while increasing volunteer satisfaction and the likelihood of repeat participation and longer term commitments (Shandas & Messer, 2008, p. 415). Depending on the activity, some stewardship projects, such as tree planting or the removal of invasive species, produce a very visible, instantaneous result. Other projects, such as habitat improvement for an endangered species or stream bank erosion control to improve water quality, involve a much longer time frame before the beneficial effects are realized, and in such cases it is important for volunteers to remain engaged and motivated so that they will be committed to future goals and projects with the group (Shandas & Messer, 2008, p. 415).

Key informants agree that volunteers who work with stewardship groups are very dedicated, yet they are also highly motivated by the rewards of demonstrated results and the subsequent feelings of appreciation (Respondent 11, personal communication, July 23, 2013). According to one informant, stewardship groups need to be supported and above all, recognized by other agencies and stakeholder groups for the work they are doing in the Grand River basin (Respondent 14, personal communication,

September 11, 2013). Related to recognition of volunteers within the stewardship group and the greater community is the successful achievement of both personal and group goals (Table 7.1). Strong, effective leadership ought to establish reasonable, attainable priorities for the group, thus encouraging success and minimizing burnout (Section 5.4).

One notable example of leadership within a stewardship groups involves the Lakeside group in Kitchener that works in conjunction with KNAP (Section 6.3.2.1). The Lakeside group has provided a model of citizen leadership that has created change within Lakeside Park and has influenced the city of Kitchener to do its first environmental plan at the park (Respondent 1, personal communication, September 9, 2013). Second, the Friends of Mill Creek group has created strong community engagement around shared values and interests for the environmental restoration and preservation of Mill Creek (Section 6.3.2.1). As part of the process, the group created an opportunities plan that assisted in designating priority needs for both the community and the group (Respondent 13, personal communication, August 7, 2013).

Steps can be taken to ameliorate some of the risks associated with volunteer burnout, particularly when participants have difficulty making connections between the physical actions of their work and the longer-term effects. Group leaders can provide positive feedback and encourage group morale, but perhaps more importantly, Byron et al. (2001, p. 65) suggest the development of a monitoring system to provide information regarding the success of extended projects. Furthermore, the literature proposes emphasizing organizational and process outcomes as indicators of success that can be reasonably expected as part of the physical impact process (Byron et al., 2001, p. 65).

7.5 The Development of Partnerships and Collaborations

For stewardship groups in the Grand River basin, the development of partnerships and working collaboratively continues to take on increasing importance (Section 6.3.1). From the perspective of governing agencies such as conservation authorities and city planning departments, it can be challenging to determine the best ways to acknowledge and accept input and involvement from the public and other stakeholders (Table 7.1), including environmental stewardship groups (Borden et al. 2007, p. 93). One representative from the Grand River Conservation Authority (GRCA) acknowledges that this exclusionary trend needs to change (Respondent 12, personal communication, September 4, 2013) and agrees with the literature regarding taking a new approach and incorporating new insight into the complex issues around river basin management that were traditionally resolved through top-down administrative

models (Borden et al. 2007, p. 93). Kitchener's Natural Areas Program (KNAP) is one group that has been successful with integrating newer models of stewardship and environmental management into the city of Kitchener's management goals. By identifying stewardship and restoration goals, KNAP is able to incorporate stewardship and restoration projects into larger management plans, serving stewardship objectives and meeting the needs of natural areas within the city (Respondent 10, personal communication, July 23, 2013).

Furthermore, an inclusionary decision-making approach that allows stewardship groups to become more active and contributing partners in local issues can provide for greater integration with water management goals and create the potential for broader impacts across the river basin (Table 7.1). According to Hillman and Brierley (2005, p. 65), when community representatives and stewardship groups are engaged early in the decision-making process, members are involved, have ownership, give direction and take responsibility for integrating the program, and as a result positive outcomes are achieved (Table 7.1). The respondent from the GRCA supports the idea that the organization could be more responsive to the intentions of the local stewardship groups in the watershed, rather than expecting the groups to conform to existing GRCA platforms (Respondent 12, personal communication, September 4, 2013). This concept is consistent with Shandas and Messer (2008, p. 414) who found that, if stakeholders are invited to participate through the early identification of concerns within their own communities, there is the opportunity to guide the types of stewardship that may be most beneficial from a biophysical and social perspective.

The GRCA is recognizing that community partnerships are becoming more of a necessity and a priority, both from a funding perspective and in order to gain recognition and position in the watershed. Individuals and groups in the community are interested in being part of something tangible that is going to make a difference in the long-term (Respondent 12, personal communication, September 4, 2013). Specifically, people are looking for opportunities to learn more about the environment while participating in outdoor activities with their families and friends, corporate groups, and stewardship or environmental groups.

As noted in section 7.4, an increasing and ongoing need exists for environmental volunteers. Asah and Blahna (2012, p. 471) suggest that engaging stakeholders and encouraging volunteer participation in projects that emphasize learning and knowledge collaboration, while working towards community sustainability, can meet this need (Table 7.1). In addition, volunteers from the community are able to contribute considerable knowledge and understanding regarding specific local concerns (Section 6.3.2).

The *rare* Charitable Research Reserve (*rare*) provides an example of a stewardship group that engaged local citizens, academic professionals and municipal representatives in a visioning process for the organization (Respondent 14, personal communication, September 11, 2013). The outcome of the process provided beneficial consequences that extended far beyond the scope of the initial group or process (Section 6.3.2.2). As a result of the think tank approach, there was an incorporation of ideas and concerns relating to the significance of the cultural and natural heritage of the *rare* property, as well as the importance of the preservation of the land by using an ecosystem approach. An unexpected outcome of the process was the development of the Environmentally Sensitive Landscape designation that would be used by decision makers across the Grand River basin (Respondent 14, personal communication, September 11, 2013).

Despite the perspective that there is a tendency for some decision-making bodies to limit the amount of involvement of community groups and citizens in the decision-making process (Hillman & Brierley, 2005, p. 66), my research indicates that some stewardship groups in the Grand River basin have demonstrated an ability to overcome institutional barriers by working collaboratively with agencies and administrations. Woolwich Healthy Communities (WHC) is an example of a group that has established successful partnerships at various levels within the river basin (Section 6.3.2.2). Working with the GRCA, the Township of Woolwich and the rural Mennonite community are just a few of the connections WHC has effectively achieved. Kitchener's Natural Areas Program (KNAP) operates in collaboration with the city of Kitchener and has helped establish the inclusion of stewardship principles as part of Kitchener's management plan. The coordinator of KNAP observes that stewardship groups cannot do all the work alone, and suggests that partnerships are a key to providing greater benefits to the groups involved (Section 6.3.2.2). In addition, partnerships may also result in the ability to participate in larger, more influential projects (Respondent 10, personal communication, July 23, 2013). Chanse (2011, p. 123) supports the concept of beneficial partnerships, noting that management of large-scale natural areas is shifting to include involvement from stewardship groups in the implementation of restoration projects and other initiatives. As such, it is logical for government agencies and other management groups to provide support such as technical expertise, resources or funding.

With regard to stewardship groups and their potential for influence in governance, the literature cites the benefits of a proactive approach that includes community involvement. According to Hillman and Brierley (2005, p. 69), such an approach involves monitoring, strategic, long-term planning, and working on the development and implementation of on-going projects (Table 7.1). The goal ought to purposely

address key issues proactively at their root cause, rather than responding reactively to symptoms (Hillman & Brierley, 2005, p. 69). Two respondents from the GRCA agree that in many cases environmental issues in the Grand River watershed are treated in a reactive way, with stopgap measures employed to deal with the impacts of damage already done (Respondents 11 & 12, personal communication, 2013). Moving forward, taking a more proactive approach to dealing with environmental governance, while promoting community and stewardship group involvement, will also encourage an increased environmental awareness and an understanding and appreciation for the important role stewardship groups are playing in the Grand River basin (Section 6.2.2).

7.6 The Future Role of Stewardship in the Grand River Basin

Should local governing agencies such as the Grand River Conservation Authority (GRCA) and the municipalities decide to adopt a more integrated water resource management (IWRM) approach in the Grand River basin, then the role of local environmental stewardship groups in this context would be to collaborate and partner with local organizations and government offices to streamline goals for sustainability (Butterworth et al., 2010, p. 75). According to representatives from the GRCA, there is interest in taking steps towards this approach with some local stewardship groups (Respondents 11 & 12, personal communication, 2013). Other goals may include continuing to aim for a more cohesive, watershed-wide system with capacity to understand and address local issues, while also considering the wider reaching and longer-term effects that will affect the entire river basin (Section 6.2.2). Hillman and Brierley (2005, p. 51) strongly recommend the creation of a vision statement as part of the development of an IWRM approach. As a preliminary step, the vision statement is valuable in engaging the community and outlining realistic biophysical and social goals for a program.

Several groups in my study, including the *rare* Charitable Research Reserve (Section 7.5), Woolwich Healthy Communities (Section 4.3), and the GRCA (see below) have used a vision statement in some aspect of the group's organization, although not necessarily in the context of an IWRM approach. Based on the literature, the desired biophysical changes can be connected to the social and economic needs of the community to meet overall goals for sustainability. Community participation is key, and strategic integration of a vision statement developed at the river basin scale can successfully blend local concerns with broader objectives (Hillman & Brierley, 2005, p. 59). The GRCA created a vision statement as part of its 'Grand Strategy' that included biophysical, cultural and heritage aspects of planning and management with on-ground activities ranging from river basin management and restoration to water quality concerns and cultural heritage (Hillman & Brierley, 2005, p. 59).

Personal reflections on the future of stewardship in the Grand River basin were varied but some common themes were apparent (Section 5.5.3.2). A strong desire exists to provide education and understanding for the younger generation about environmental issues (Table 7.1). Concern exists around the monitoring of water quality and the preservation and restoration of existing natural areas, with many survey respondents feeling that stewardship volunteers will have an ongoing role to play in this type of environmental protection (Table 7.1). Finally, there is the thought among some survey respondents and several of the key informants that stewardship groups ought to have greater influence with regard to governance and decision making related to issues such as preservation of water quality in the Grand River basin (Section 5.5.3.2).

Table 7.1 Key Findings, Implications and Recommendations

Findings	Implications/Recommendations
<i>Biophysical and Social Changes in the Community and the Watershed</i>	
<ul style="list-style-type: none"> Community connections are important in facilitating biophysical and social changes 	<ul style="list-style-type: none"> Creates sense of empowerment and belonging in community; leads to learning and sharing of knowledge
<ul style="list-style-type: none"> Participation in stewardship groups helps demonstrate connection between health and the environment 	<ul style="list-style-type: none"> Understanding of connections leads to greater motivation for ongoing and repeat participation in stewardship
<ul style="list-style-type: none"> Corporate volunteer programs are playing an increasingly important role in community and watershed stewardship projects; companies are interested in contributing to the community beyond a basic monetary donation 	<ul style="list-style-type: none"> Greater partnerships between stewardship groups or organizations and local corporations demonstrate shared, mutual goals of representing community interests and making environmental improvements
<i>Motivations and Perceptions Regarding Participation of Stewardship Volunteers</i>	
<ul style="list-style-type: none"> Volunteers have varying perceptions of how stewardship work will impact or benefit the community or watershed and motivation is influenced by previous volunteer experiences 	<ul style="list-style-type: none"> Groups often experience challenges in recruitment and retention of volunteers; suggest targeting participants from varied backgrounds with diverse skill sets
<ul style="list-style-type: none"> Stewardship participants are significantly motivated by the potential to make social connections 	<ul style="list-style-type: none"> Group organizers and administrators can be encouraged to emphasize social aspects of stewardship activities to increase participation
<ul style="list-style-type: none"> Other important motivating factors include helping the environment and increasing knowledge 	<ul style="list-style-type: none"> Emphasizing environmental education in the community is important; outreach to youth and student groups is key
<i>Attaining Tangible Results in Stewardship and Avoiding Burnout</i>	
<ul style="list-style-type: none"> Tangible results from stewardship projects are associated with increased volunteer satisfaction and commitment, and the avoidance of burnout 	<ul style="list-style-type: none"> Tangible results often equate to higher rates of stewardship participation, and greater retention rates for volunteers over longer terms

<ul style="list-style-type: none"> • Strong leadership within stewardship groups is indicated, with an emphasis on providing positive feedback to group members and participants 	<ul style="list-style-type: none"> • Greater recognition of volunteer achievements leads to feelings of appreciation; groups can monitor projects for a variety of outcomes that may not be initially evident to participants
<p><i>Partnerships in Stewardship</i></p>	
<ul style="list-style-type: none"> • Though recognizing the work done by stewardship groups as having value, traditionally, organizations such as the GRCA have not invited partnerships and in-depth involvement from the smaller groups 	<ul style="list-style-type: none"> • Through the adoption of IWRM strategies, agencies and decision makers may be able to better partner with and accept input from stewardship groups who are working closely to address community issues that can be incorporated into broader water management plans
<ul style="list-style-type: none"> • Approaches to dealing with environmental issues in the Grand River basin have often been reactive in nature rather than proactive 	<ul style="list-style-type: none"> • Engaging stewardship groups, community members and other stakeholders in a visioning process early on in the development of a strategic plan, has proven to be a successful means of collaborating that is beneficial to all parties
<p><i>The Future Role of Stewardship in the Grand River Watershed</i></p>	
<ul style="list-style-type: none"> • Increased role for IWRM with a more proactive approach to dealing with environmental issues in the Grand River basin 	<ul style="list-style-type: none"> • There is a desire and a need on the part of community members, stewardship groups and stakeholders for a more inclusive approach to watershed management
<ul style="list-style-type: none"> • Ongoing and increased educational programming for youth and students in the watershed; children need to understand the connection between their actions and the larger picture 	<ul style="list-style-type: none"> • It is important to instill a broad-based understanding of the environmental challenges that are occurring in the watershed; by spending time outdoors, with opportunities for hands-on activities, children are better able to understand the positive influence they can have on the natural environment
<ul style="list-style-type: none"> • Stewardship groups will play a continued role in addressing watershed issues such as water quality 	<ul style="list-style-type: none"> • There is opportunity for stewardship groups to play a larger role in various capacities including monitoring of water and other natural resources

7.7 Limitations of this Study and Areas for Future Study

Various specific limitations pertaining to this study were previously mentioned in chapter three. However as this research progressed, some other challenges emerged. First, it became evident through the results and discussion sections that I did not have much data relating to integrated watershed resource management (IWRM) that could be related to the literature review. This limitation could have been corrected by the addition of some questions created for the key informants that pertained specifically to IWRM.

Second, I acknowledge that although this thesis makes extensive reference to various programs, decisions and approaches that are relevant to the Grand River Conservation Authority, these references do not include any information contained in the new draft of the 'Grand River Watershed Water Management Plan' (GRCA, 2014), released on April 1, 2014. Due to the timing of this project, I concluded it was not feasible to incorporate information from the new plan, although every effort has been made to ensure all other information is up to date and accurate.

In my opinion, there is definite opportunity for further research regarding stewardship groups in the Grand River basin (see Table 7.2). This research indicates that a number of groups are very active and very successful with respect to the programs and projects in which they are involved. I was particularly interested in the diverse opportunities available to groups in the form of partnerships and I believe this would be an aspect worthy of further study. It would be interesting to study how evolving partnerships may contribute to the joint success of stewardship groups and governing or management agencies within the Grand River watershed. Further study could attempt to determine if the development of stronger partnerships through collaboration between local stewardship groups and governing agencies such as the Grand River Conservation Authority might lead to larger stewardship initiatives and improved outcomes for targeted areas of need in the river basin.

Another interesting approach might be to evaluate and monitor the success of various group projects over a longer term, ultimately producing a 'report card' for the progress or status of each group. In reality, almost any of the parameters explored in this study could have been taken to much greater depth, given more time and resources. One further topic that would be worthy of greater exploration relates to the result demonstrating that the stewardship volunteers are most strongly motivated to participate in activities or events based on the potential for social interaction and connections. This result was somewhat surprising and counterintuitive as it was presumed the main motivating factor would be to participate in an activity that would be beneficial or helpful to the environment in some way.

Table 7.2 Recommendations for Future Research

Recommendations for Future Research
<ul style="list-style-type: none">• Consider how evolving partnerships may contribute to the joint success of stewardship groups and governing or management agencies within the Grand River watershed. Determine if the development of stronger partnerships through collaboration between local stewardship groups and governing agencies such as the Grand River Conservation Authority might lead to larger stewardship initiatives and improved outcomes for targeted areas of need in the river basin.
<ul style="list-style-type: none">• Monitor and evaluate the success of specific stewardship group projects over a period of time and provide a 'report card' for the progress or status of each group
<ul style="list-style-type: none">• Consider why stewardship volunteers are more strongly motivated to participate in activities and events for social reasons, than for reasons such as helping the environment or improving knowledge.

7.8 Summary

This chapter has provided a synthesis of five major themes, based on the research objectives, which were presented in this thesis. The first theme involved the connections between social and biophysical changes taking place as a result of stewardship work in the Grand River basin. Secondly, I considered the motivations and perceptions of stewardship volunteers and the implications for involvement and participation in stewardship activities. The literature and my own results provided an interesting comparison on factors influencing motivation. The third section focused on volunteer burnout and the importance of tangible results for many environmental volunteers. The fourth theme considered the role of partnerships and collaboration in the context of stewardship groups. The concept of partnerships was a frequently recurring theme throughout many parts of this thesis and certainly plays a significant role in the successful and sustainable functioning of any stewardship group. The fifth, and final, theme generated recommendations for the future of stewardship groups in the Grand River watershed, based on integrated watershed management principles, as well as from the personal perspective of some of the respondents. The concluding section of the chapter offered insight on limitations of the study and potential aspects for future study.

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Appendix A

Interview Questions for Government Officials, Agency Personnel and Organizational Members

Environmental Stewardship Groups in the Grand River watershed

1. Do you believe stewardship groups are currently playing an important role in the Grand River watershed through active contributions that can be incorporated into watershed management?
 - a. Yes – Important... No – Not important...
 - b. Are you able to provide an example of a contribution (economic, social, ecological) made by this stewardship group (pertains to the group being discussed/interviewed) or by a stewardship group you are aware of that was subsequently tied into a watershed policy or management decision?
 - c. How would you rank the importance of the contributions (economic, social, ecological) that stewardship groups in the Grand River watershed are making towards watershed management? (And why?)

	1 Very important	2 Important	3 Somewhat Important	4 Not very important	5 Unimportant
Importance of stewardship group contributions to watershed management					

2. Are local stewardship groups effective in identifying areas of need within the watershed?

Effectiveness may involve, in part, having an impact on an area beyond that of the immediate local scale, for example within the neighbourhood of a community stewardship group.

- a. If yes, could the broader impact be considered to be one of high impact, or low impact for the watershed? In what way(s)?
 - b. If no, how could effectiveness in identifying local needs be improved?
 - c. Are you able to give an example where a stewardship group identified a need within the watershed that was further addressed by the stewardship group, another stakeholder, or the group in partnership with other stakeholders?

If not, why do you think this was the case?
 - d. Do you feel the restoration or education initiatives provided by stewardship groups primarily offer benefit at a localized community level, is there a broader benefit to the watershed as a whole, or are there comparable benefits at both levels?
3. Stewardship groups may facilitate biophysical changes, social changes, or both. Are you able to comment on whether one or both of such changes are being observed at the community level (group of people who live in one area and have certain commonalities, i.e., neighbourhoods, customs, government, interests); the watershed level (within the topographic and geographic boundaries of the catchment basin); or if an influence has been noted at the institutional level (may relate to customs, laws and ways of behaving) affecting governance (who has power, who makes decisions, how other players make their voice heard and how accountability is rendered, Institute of Governance, 2013) and decision-making?
- a. Community level? Why? What are the effects at this level?
 - b. Watershed level? Why? What are the effects at this level?
 - c. Institutional level? How is decision-making influenced?

4. Have the activities of stewardship groups you have been involved with had an impact with government agencies such as municipalities, conservation authorities, etc.? Are you able to provide examples or evidence where this has taken place?
- If yes, how can groups be most effective (provide most meaningful data, information, or necessary biophysical changes) and efficient (coordinate works in a timely and organized manner) in cooperating and collaborating with stakeholders and partners towards improved watershed planning?
 - Will these decisions have high impact, low impact, or no impact on decision-making?
 - If not, why? What is needed to allow stewardship groups to become more influential at the institutional level; to become more active members in decision-making and governance of the watershed?
5. There are a number of ways stewardship groups can participate or contribute to watershed management. Thinking of current management models, for example adaptive management approaches or integrated watershed management, and trends towards future watershed management, please rank up to three stewardship groups on aspects where they may be able to have the most positive impact on improving social and ecological processes in the Grand River watershed. Please use 1 as most important and 5 as least important.

Group 1 _____

	1	2	3	4	5
Monitoring					
Planning					
Implementation					
Education/Outreach					
Advisory Groups					
Other					

Group 2 _____

	1	2	3	4	5
Monitoring					
Planning					
Implementation					
Education/Outreach					
Advisory Groups					
Other					

Group 3 _____

	1	2	3	4	5
Monitoring					
Planning					
Implementation					
Education/Outreach					
Advisory Groups					
Other					

6. Within the Grand River watershed, many groups are contributing to environmental stewardship in many different ways. Do you have any suggestions as to how these groups could become better connected with each other and with other community partners?

- a. What might be the benefits of better networking, communication and collaboration among stewardship groups and participants?
- b. What might be the barriers to establishing a successful network of stewardship groups?

7. Do you think the organizational structure of stewardship groups has an effect on the overall success of the group and how decision-makers perceive the group?

- a. Some groups have a paid staff member as an administrator or in a leadership role of the stewardship group as opposed to being an all-volunteer organization. In your experience, do stewardship groups, which have a paid staff member tend to have more success and sustainability as group? Why?
 - b. Do stewardship groups with a paid administrator or staff person tend to have greater credibility with stakeholders and decision-makers? Why?
8. Can you provide any insight on what you foresee as the future role for stewardship groups in Ontario and specifically in the Grand River watershed?
- a. What is the next direction for this group, or environmental stewardship in the Grand River watershed (pertains to the group being discussed/interviewed) in particular?
 - b. With regard to some of the projects that have been implemented by local stewardship groups like *rare* (research, restoration, SAR, green corridors, land acquisition, education) and **Woolwich Healthy Communities** (tree planting, living snow fencing, community trails, waterways restoration, education), do you anticipate greater partnerships and more importance placed on the role of community stewardship in the upcoming years?

Greater Partnerships: Yes/No

More importance placed on community stewardship: Yes/No

Why?

9. Demographics

a. Age:

<18 years	_____	19-25 years	_____	26-35 years	_____
36-45 years	_____	46-55 years	_____	56-65 years	_____
66-75 years	_____	>75 years	_____		

b. Level of Education:

Secondary _____ College/University _____ Master's _____ PhD _____
Other _____

c. Male _____ Female _____

d. Place of primary residence:

Kitchener _____ Waterloo _____ Cambridge _____
Elmira _____ St. Jacobs _____ Guelph _____
Woolwich _____ Wilmot _____ Wellesley _____
Other (specify) _____

e. How long have you lived in the Grand River Basin?

0-2 years _____ 3-5 years _____ 6-8 years _____
9-11 years _____ 12-14 years _____ >15 years _____

f. How long have you been in this position at this agency/organization?

0-2 years _____ 3-5 years _____ 6-8 years _____
9-11 years _____ 12-14 years _____ >15 years _____

Appendix B

Survey Questions for Volunteers in Stewardship Group Activities

1. I would like to get an idea of the extent of your involvement and participation in activities or events with this stewardship group...
 - a. How long have you been involved with or participated with this group through an activity or event?
First time _____ 6 months or fewer _____ 7 months -1 year _____
2-3 years _____ 4-5 years _____ 6 years or more _____
 - b. How many times have you been involved or participated with this group?
First time _____ 2-3 times _____ 4-5 times _____ Other _____
 - c. What is the average time commitment each time you participate in an activity or event?
1-2 hours _____ ½ day _____ Full day _____ Weekend _____ Other _____

2. Do you prefer to participate in the stewardship group activities...
 - a. On your own _____ With family _____ With friends _____
As part of another group _____
 - b. Why is this your preference?

3. What were your primary reasons or motivations for joining this group or participating in this activity? Please rank your answers from 1 to 5, with 1 being the most important to you and 5 being the least important.

Ranking

Motivation	1	2	3	4	5
Help the environment					
Make changes/improve my community					
Meet new people/make social connections					
Gain environmental/ecological knowledge					
Other (Please specify) _____					

4. What changes or improvements (if any) do you feel have taken place through the efforts of this stewardship group? Please rank your answers from 1 to 5, with 1 being the most important to you and 5 being the least important.

Ranking

Improvements	1	2	3	4	5
Local community education/awareness regarding environmental issues					
General public education/social awareness regarding environmental issues					
Rehabilitation/restoration of land area(s) in the Grand River watershed					
Rehabilitation/restoration of waterway(s) in the Grand River watershed					
Other (Please specify) _____					

- a. Why do you feel these changes or improvements were necessary and what is their significance to your community or watershed?

5. What specific stewardship group activities have you participated in?
(Check all that apply)

Restoration/rehabilitation of land area(s) _____

Restoration/rehabilitation of waterway(s) _____

Tree planting ... Windbreaks _____ Green corridors _____ Other _____

Removal of invasive plant species _____

Planting of native plant species _____

Monitoring or inventory counts... Animals _____ Plants _____ Other _____

Educational/outreach events _____

Fundraising programs _____

Other (specify)

a. Why did you choose to participate in these particular activities?

6. Stewardship group volunteers can contribute to watershed management in a number of ways. Please indicate how you have participated or would like to participate in the future.

	Have done	Would Like to Do
Monitoring	_____	_____
Watershed planning	_____	_____
Implementation of project	_____	_____
Advisory group	_____	_____
Education/Outreach	_____	_____

7. Do you feel the actions of stewardship groups are contributing positively to waterway management and governance in the Grand River watershed?

a. Yes _____ No _____

b. Why or Why not?

8. Moving forward, what do you see as the most important role for stewardship groups in the Grand River watershed?

9. A bit about you...

a. Age:

19-25 years _____ 26-35 years _____ 36-45 years _____

46-55 years _____ 56-65 years _____ 66-75 years _____

>75 years _____

b. Level of Education:

Secondary _____ College/University _____ Master's _____ PhD _____

Other _____

c. Male _____ Female _____

d. Place of primary residence:

Kitchener _____ Waterloo _____ Cambridge _____

Elmira _____ St. Jacobs _____ Guelph _____

Woolwich _____ Wilmot _____ Wellesley _____

Other (specify) _____

e. How long have you lived in the Grand River Basin?

0-2 years _____ 3-5 years _____ 6-8 years _____

9-11 years _____ 12-14 years _____ >15 years _____

10. Please add any additional comments or feedback you may have regarding your experiences or participation with this stewardship group.

Thank you for taking the time to complete this survey. Your assistance is greatly appreciated. I sincerely hope you continue to enjoy your outdoor experiences as a participant in environmental stewardship activities.

Should you wish to receive the results of this survey and my related research, please fill out the attached form with your email address. Your confidentiality is assured. Email addresses will be used solely for the purpose of relaying the results of this research, after which all records of email addresses will be destroyed.

Request for Research Summary

I, _____ would like to request a summary of the results of this survey and the related research upon its completion (Summer 2014). I understand that my email address and any other personal information shall be held in strictest confidentiality and is to be used solely for the purpose of the research being conducted by Janette Kingsbury, M.E.S. candidate at the University of Waterloo. All email records shall be destroyed at the conclusion of the distribution of the research results.

Signed

Date

Email: _____

Appendix C

Information Letter for Interview Candidates

July 25, 2013

Dear Sir or Madam:

This letter is an invitation to consider participating in a study I am conducting as part of my Master's degree in the Department of Geography and Environmental Management at the University of Waterloo under the supervision of Dr. Bruce Mitchell and Dr. Derek Armitage. I would like to provide you with more information about this project and what your involvement would entail if you decide to take part.

Environmental stewardship groups play a number of important roles in the adaptive management of complex and diverse environmental challenges. World wide, river and watershed degradation is an increasing concern, and is an issue that is often addressed at the local or community level with the participation of stewardship groups. Within the Grand River watershed, environmental stewardship groups are active in a number of ways, particularly by directing resources and attention towards areas of concern.

While adaptive management processes usually recognize the value of incorporating local knowledge and information with scientific expertise, it may be difficult to determine whether the work done by stewardship volunteers is being recognized at a level that will influence governance or decision-making. I will be interested in trying to determine how much of an impact stewardship groups are having on the planning and programming decisions of the Grand River Conservation Authority in conjunction with municipal, provincial, and federal government partners. In addition, my study will consider how stronger connections and influence may be initiated on the part of the stewardship groups with regard to participation in the early strategic development of watershed policy.

Participation in this study is voluntary. It will involve an interview of approximately one hour in length to take place in a mutually agreed upon location. You may decline to answer any of the

interview questions if you so wish. Further, you may decide to withdraw from this study at any time without any negative consequences by advising the researcher. With your permission, the interview will be audio recorded to facilitate collection of information, and later transcribed for analysis. Shortly after the interview has been completed, I will send you a copy of the transcript to give you an opportunity to confirm the accuracy of our conversation and to add or clarify any points that you wish. All information you provide is considered completely confidential. Your name will not appear in any thesis or report resulting from this study; however, with your permission anonymous quotations may be used. Data collected during this study will be retained for one year in a locked office in my supervisor's lab. There are no known or anticipated risks to you as a participant in this study.

If you have any questions regarding this study, or would like additional information to assist you in reaching a decision about participation, please contact me at 519-577-3189 or by email at janette.kingsbury@gmail.com. You can also contact my supervisor, Dr. Bruce Mitchell at (519) 888-4567 ext. 37502 or email mitchell@uwaterloo.ca.

I would like to assure you that this study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Committee. However, the final decision about participation is yours. If you have any comments or concerns resulting from your participation in this study, please contact Dr. Maureen Nummelin, the Director, Office of Research Ethics, at 1-519-888-4567, Ext. 36005 or maureen.nummelin@uwaterloo.ca.

I hope that the results of my study will be of benefit to those organizations directly involved in the study, other stewardship groups not directly involved in the study, as well as to the broader research community.

I very much look forward to speaking with you and thank you in advance for your assistance in this project.

Yours Sincerely,

Janette Kingsbury
M.E.S. Candidate, University of Waterloo

CONSENT FORM

By signing this consent form, you are not waiving your legal rights or releasing the investigator(s) or involved institution(s) from their legal and professional responsibilities.

I have read the information presented in the information letter about a study being conducted by Janette Kingsbury of the Department of Geography and Environmental Management at the University of Waterloo. I have had the opportunity to ask any questions related to this study, to receive satisfactory answers to my questions, and any additional details I wanted. I am aware that I have the option of allowing my interview to be audio recorded to ensure an accurate recording of my responses. I am also aware that excerpts from the interview may be included in the thesis and/or publications to come from this research, with the understanding that the quotations will be anonymous. I was informed that I may withdraw my consent at any time without penalty by advising the researcher. This project has been reviewed by, and received ethics clearance through a University of Waterloo Research Ethics Committee. I was informed that if I have any comments or concerns resulting from my participation in this study, I may contact the Director, Office of Research Ethics at (519) 888-4567 ext. 36005.

With full knowledge of all foregoing, I agree, of my own free will, to participate in this study.
YES NO I agree to have my interview audio recorded. YES NO I agree to the use of anonymous quotations in any thesis or publication that comes of this research. YES NO

Participant Name: _____ (Please print)

Participant Signature: _____

Witness Name: _____ (Please print)

Witness Signature: _____

Date: _____

Appendix D

Information Letter for Survey Participants

Dear Volunteer:

I am a master's student in the Department of Geography and Environmental Management at the University of Waterloo conducting research under the supervision of Dr. Bruce Mitchell and Dr. Derek Armitage on the role of stewardship groups in the Grand River watershed. World wide, river and watershed degradation is an increasing concern, and is an issue that is often addressed at the local or community level with the participation of stewardship groups. Within the Grand River watershed, environmental stewardship groups are active in a number of ways, particularly by directing resources and attention towards areas of concern. Your opinions are important to this study.

I would appreciate if you would complete the attached brief survey. Completion of the survey is expected to take about 10 minutes of your time. You may omit any question you prefer not to answer. There are no known or anticipated risks to participation in this study. Participation in this project is voluntary and anonymous. Further, all information you provide will be considered confidential. The data collected through this study will be kept for a period of 1 year in a locked office in my supervisor's lab at the University of Waterloo.

If you are interested in participating in this study, please return the completed questionnaire at the end of the event or activity, or in the self-addressed, stamped envelope within two weeks of participating in a stewardship event or activity. If after reading this letter, you have any questions about this study, or would like additional information to assist you in reaching a decision about participation, please feel free to contact Dr. Bruce Mitchell at 519-888-4567 ext. 37502.

I would like to assure you that this study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Committee. However, the final decision about participation is yours. Should you have any comments or concerns resulting from your participation in this study, please contact Dr. Maureen Nummelin, the Director, Office of Research Ethics, at 1-519-888-4567, Ext. 36005 or maureen.nummelin@uwaterloo.ca.

Thank you in advance for your interest in this project.

Sincerely,

Janette Kingsbury
M.E.S. Candidate, University of Waterloo

Appendix E

Interview Feedback Letter

Dear Sir or Madam:

I am writing to thank you for making time in your busy schedule to meet with me last week. I appreciated the opportunity to learn from your expertise in the field of environmental stewardship and watershed management. It was indeed a pleasure meeting you.

My project, The Role of Environmental Stewardship Groups in the Grand River Watershed, is proceeding according to design, and in particular my research with administrators and decision-makers is progressing very well.

I hope you will get in touch with me if further thoughts occur to you about the subject of our conversation. Should you have any comments or concerns you could also contact Dr. Maureen Nummelin, the Director, Office of Research Ethics, at 519-888-4567, Ext. 36005, maureen.nummelin@uwaterloo.ca. This project was reviewed by, and received ethics clearance through a University of Waterloo Research Ethics Committee.

My research will be complete by Summer 2014. If, at that time, you wish to receive a copy of the research results, please feel free to contact me at jkingsbu@uwaterloo.ca. If you have any further questions about the study or the findings please do not hesitate to contact one of my research supervisors, Dr. Bruce Mitchell at 519-885-4567, Ext. 37502, mitchell@uwaterloo.ca, or Dr. Derek Armitage at 519-885-4567, Ext. 3579, derek.armitage@uwaterloo.ca.

Sincerely,

Janette Kingsbury
M.E.S. Candidate, University of Waterloo

Appendix F

Notification of Research Ethics Approval

Notification of Ethics Clearance

Dear Researcher:

The recommended revisions/additional information requested in the ethics review of your ORE application:

Title: The Role of Environmental Stewardship Groups in the Grand River Watershed

ORE #: 19034

Faculty Supervisor: Dr. Bruce Mitchell (mitchell@uwaterloo.ca)

Faculty Supervisor: Dr. Derek Armitage (derek.armitage@uwaterloo.ca)

Student Investigator: Janette Kingsbury (janette.kingsbury@gmail.com)

have been reviewed and are considered acceptable. As a result, your application now has received full ethics clearance.

A signed copy of the Notification of Full Ethics Clearance will be sent to the Principal Investigator or Faculty Supervisor in the case of student research.

Note 1: This ethics clearance through a University of Waterloo Research Ethics Committee (REC) is valid for one year from the date shown on the certificate and is renewable annually. Renewal is through completion and ethics clearance of the Annual Progress Report for Continuing Research (ORE Form 105).

Note 2: This project must be conducted according to the application description and revised materials for which ethics clearance has been granted. All subsequent modifications to the project also must receive prior ethics clearance (i.e., Request for Ethics Clearance of a Modification, ORE Form 104) through the Office of Research Ethics and must not begin until

notification has been received by the investigators.

Note 3: Researchers must submit a Progress Report on Continuing Human Research Projects (ORE Form 105) annually for all ongoing research projects or on the completion of the project. The Office of Research Ethics sends the ORE Form 105 for a project to the Principal Investigator or Faculty Supervisor for completion. If ethics clearance of an ongoing project is not renewed and consequently expires, the Office of Research Ethics may be obliged to notify Research Finance for their action in accordance with university and funding agency regulations.

Note 4: Any unanticipated event involving a participant that adversely affected the participant(s) must be reported immediately (i.e., within 1 business day of becoming aware of the event) to the ORE using ORE Form 106. Any unanticipated or unintentional change which may impact the research protocol, information-consent document or other study materials, must be reported to the ORE within 7 days of the deviation using ORE Form 107.

Best wishes for success with this study.

Julie Joza, MPH
Manager
Office of Research Ethics
NH 1045
519.888.4567 ext. 38535
jajoza@uwaterloo.ca